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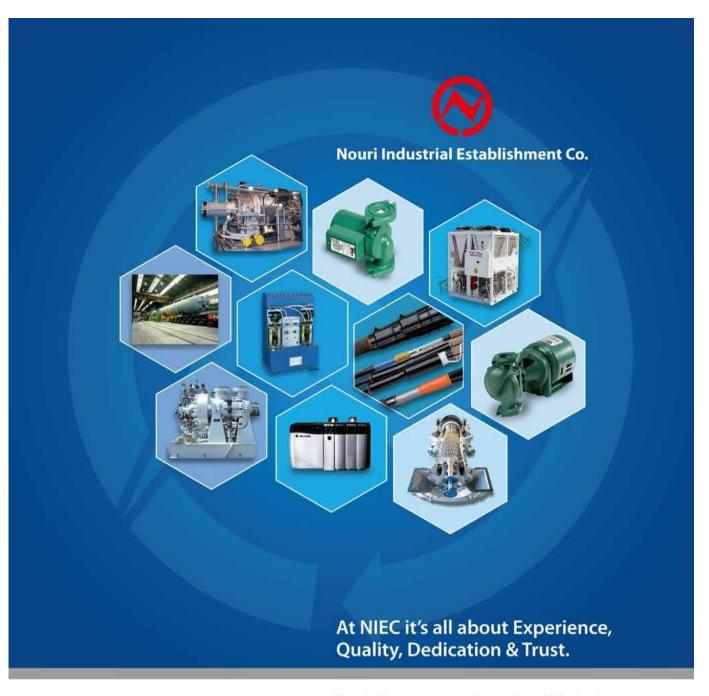












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Amir of the State of Kuwait



His Highness Sheikh

Jaber Mubarak Al-Hamad Al-Sabah

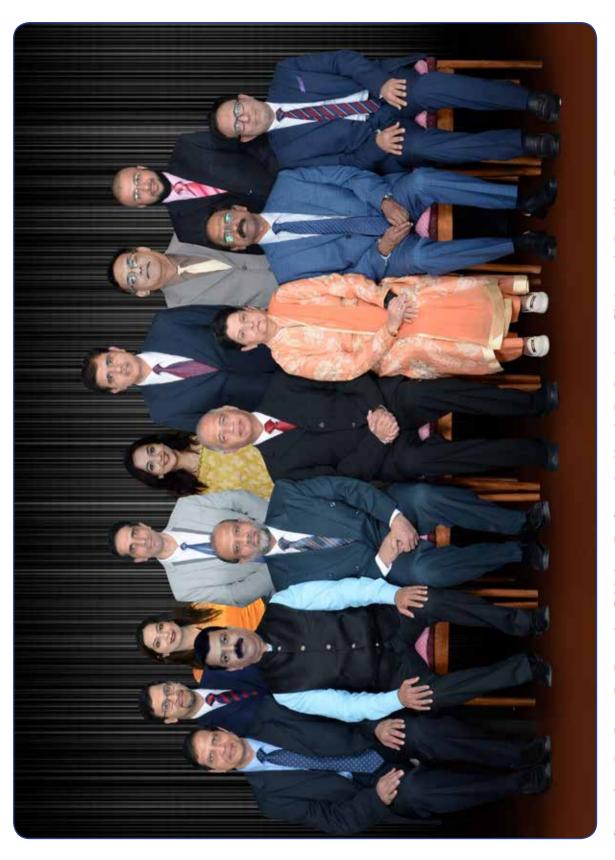
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Crown Prince of the State of Kuwait



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Standing from L to R: Dr. Gautam Hebbar; Dr. Prerana Giri; Dr. Imtiyaz Nawaz; Dr. Pooja Chodankar; Dr. Prashant Purohit Dr. Mahesh Kadam; Dr. Ali Asgar Jetaji

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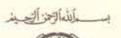
Dr. Girish Yadav



I am extremely happy to learn that the Indian Doctors Forum is continuing its glorious tradition of bringing out IDF health guide volume no. XIII to coincide with its annual mega cultural and social event Docfest in January 2017.

The theme selected for this edition "Cosmetic Procedures: The Science and Art" will be very useful to all. Lifespan of people has increased significantly worldwide due to increased prosperity and better health care. So has the need and desire to look young, active and beautiful has grown in all sections of the society. Due to the effect of social media and expectations from society, one's appearance has gained great significance. Impact of a person's appearance on his/her personal, social, family and sometimes financial health can be tremendous. The number, types, and variety of procedures and products available ranging from cosmetics, lasers to surgical procedures etc. to get rid of effects of aging skin, blemishes and after effects of disease has increased tremendously and so are the people who provide them. However it is important to know and accept that aging is inevitable and so are its effects. With plethora of information available in the media with sometimes very false and unrealistic claims by some practitioners of this field, it is important that this issue of the IDF Health Guide strive to provide an up to date information about these procedures in a balanced and scientific way.

I am given to understand that the articles are written in simple English to be easily understood by any non-medical person.





### Deputy Minister of Al Diwan Al Amiri Affairs

المُبُ وَنِينَ شَوْفُونَ الدِّيْفِاتِ المَّيْعِ

The endeavor by the Indian Doctors Forum to educate the common person through this health guide is highly commendable. The Indian Doctors in Kuwait have contributed immensely and positively towards the development of the health care system in Kuwait.

As the members of the Indian Doctors Forum, Kuwait celebrates 'Docfest 2017', I wish to thank them for their continued efforts, not only in the organized healthcare services, but also in the voluntary community welfare services arranged by them on a regular basis.

I wish the Indian Doctors Forum all Success in the good work they are doing.

Ali Jarrah AlSabah Deputy Minister of AL-Diwan Al-Amiri Affairs

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### Message

I am pleased to know that the Indian doctors forum affiliated to the Kuwait medical association are celebrating their thirteenth year of existence at their grand annual cultural extravaganza "DOCFEST EXPRESS – 2017" ON 27th of January 2017.

As is their tradition, this year also they will release the 13<sup>th</sup> volume of their health guide. Taking into consideration the increasing interest in cosmetic procedures, they have chosen to highlight this theme for the health guide. This will ensure that correct scientific information in simple English reaches the people and they can take an informed decision about their needs.

Following the release of the book the audience will witness a cultural treat -a virtual tour of India by train -aptly named DOCFEST EXPRESS.

I congratulate the Indian doctors forum for successfully conducting so many health camps for the underprivileged members of the community and wish the members all happiness and success in their endeavors.

Dr "Jamal M Al- Harbi

H.E. Minister of Health

State of Kuwait





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16 January 2017

### <u>Message</u>

I am glad to learn that Indian Doctors Forum, Kuwait is holding its annual mega event "DOCFEST-2017" and releasing its annual Health Guide, titled, "Cosmetic Procedures: The Science and the Art" on Friday, 27 January 2017.

The contribution of our Doctors in the field of health care in Kuwait is highly praiseworthy.

While extending my heartiest warm greetings to Dr. Abhay Patwari, President and all members of IDF, I extend my best wishes for the forthcoming the "DOCFEST-2017".

(Sunil Jain)





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### الجمعية الطبية الكويتية Kuwait Medical Association



### Message

We at the Kuwait Medical Association are proud of the great work being done by the Indian Doctors Forum for the past 12 years. They have been serving the underprivileged members of the expatriate community by conducting Health camps in addition to many other activities to benefit the society.

I am very happy to know that they will celebrate their 13<sup>th</sup> year at their annual cultural extravaganza 'DOCFEST EXPRESS – 2017' on 27<sup>th</sup> January, 2017. During this function their annual Health Guide will also be released. It is interesting to know that this year the Health Guide will be on 'Cosmetic Procedures'. It is important, that correct scientific information on this subject in simple English should reach the people so that they can take informed decision about their health needs.

I thank the Indian Doctors for their contribution to medical services in Kuwait and for their sense of social responsibility. I wish all members of the IDF a very happy, healthy and prosperous New Year 2017.

Dr. Mohammed Al Mutairi

President, KMA

Chairman, Department of Cardiology

Chest Diseases Hospital, Kuwait

The second of th

Kuwait Medical Association

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### Ministry Of Health Kuwait Institute for Medical Specializations General Secretary Office





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### MESSAGE

I am happy to know that the Indian Doctors Forum is celebrating its thirteenth anniversary at their annual event, the 'DOCFEST EXPRESS – 2017' on 27th of January, 2017.



This association of Indian Doctors working in Kuwait has grown from strength to strength from a modest beginning in 2004 under the leadership of Late Dr. Narayanan Nampoory. His sudden demise in July this year was a shock to me as well as the members of the IDF. May his soul rest in peace.

This year, the health guide focuses of an important issue for the society, namely cosmetic procedures. Given the great interest in these techniques, it is important that people get authentic scientific information on the subject in simple language. I am sure this health guide will serve that purpose.

I would like to repeat my statement of last year. The Indian doctors have been a very vital part of medical services in Kuwait for the last 50 years. With Kuwait expanding its hospital bed strength, the need for manpower is increasing and we hope India can contribute in this regard.

It is my pleasure to be a part of the DOCFEST celebrations and I wish the IDF all the best in their endeavors.

Dr. Ibrahim Hadi

Secretary General

Kuwait Institute for Medical Specialization,

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### 23 JANUARY 2017

### INDIAN DOCTORS FORUM KUWAIT



### MESSAGE

IT GIVES ME GREAT PLEASURE TO KNOW THAT THE INDIAN DOCTORS' FORUM, AFFILIATED TO THE KUWAIT MEDICAL ASSOCIATION, HAS SCHEDULED TO HOLD, LIKE EVERY YEAR, THE MEGA EVENT "IDF DOCFEST 2017" ON 27<sup>TH</sup> JANUARY 2017

IT IS WELL-KNOWN THAT I.D.F. IS AN EMINENT ORGANISATION OF SELF-LESS HEALTHCARE PROFESSIONALS AND THEIR INVALUABLE CONTRIBUTIONS TO KUWAIT'S MEDICAL SERVICES SYSTEM AND ALSO THEIR NOBLE COMMUNITY SERVICES, ARE INDEED ADMIRABLE AND PRAISEWORTHY.

I WISH THIS FORUM OF DISTINGUISHED, SERVICE-ORIENTED PROFESSIONALS CONTINUED SUCCESS IN ALL THEIR EFFORTS TOWARDS SERVING THE COMMUNITY.

MAY GOD ALMIGHTY BLESS THEM.

MUBARAK NASER AL-SAYER

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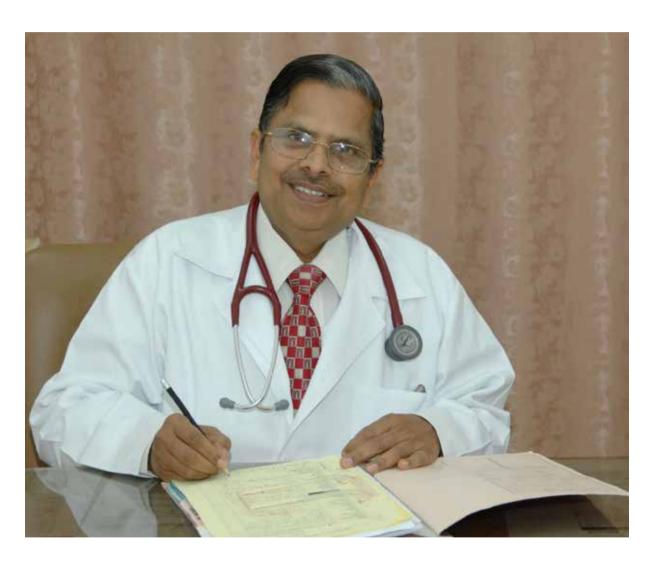


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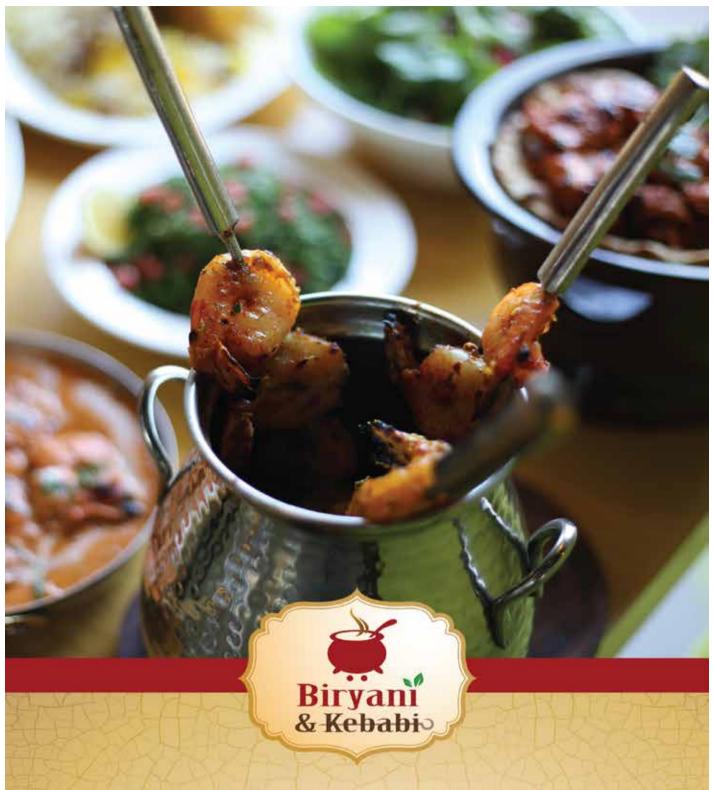
### In Loving Memory

### Dr. Narayanan Nampoory

Founder President IDF

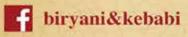


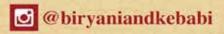
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### President's Message

It gives me great pleasure to welcome you all to the 13th IDF-DOCFEST – 2017. Indian Doctors Forum (IDF), a socio-cultural organization of Indian doctors working in Kuwait, both in the Government and private sector was formed in 2004 under the patronage of H. H. Sheikh Sabah Al Ahmad Al Jaber Al Sabah, the Amir of the State of Kuwait and the Kuwait Medical Association.



The main objectives of the Indian Doctors Forum (IDF) are to spread health awareness among the lay people by conducting regular health screening camps in collaboration with the other Indian associations in Kuwait and to publish an annual Health Guide which provides authentic scientific information in simple English on a chosen theme. Keeping in mind the increasing interest of the society in cosmetic procedures, this year we have chosen this subject. I would like to thank our chief editors Dr. Farooq Belgrami, Dr. Arun Joshi and their team for working so hard to bring out this volume of the Health Guide on time. With this information we hope patients can make an informed decision regarding their specific health needs. We are very grateful to our chief guest H.E.Sheikh Ali Al-Jarrah Al-Sabah for consenting to release this 13th volume today.

IDF also provides a platform for all its members to fulfill their social and cultural interest as you will witness during the cultural extravaganza that follows. In addition, IDF tries to resolve the many difficulties the Indian doctors encounter in Kuwait regarding their career and life. We, as a lobbying group, try to strengthen the long-standing friendly relationship between the people of Kuwait and India. In this regard, we thank H.E. Shri. Sunil Jain, and the Indian embassy for their proactive approach in bringing the two nations together. IDF also organizes the biannual 'KMA-IDF oration to showcase Indian medical talent in order to encourage medical tourism to India and the training of Kuwaiti doctors in Indian medical centers of excellence. Our 'School Health Quiz' is a keenly contested annual competition where children from Indian schools participate with full enthusiasm. My thanks to Dr. Sebastian Mathews and his team for putting on a great show year after year.

From our humble beginning in 2004 under the guidance of our founding president and chairman the Late Dr. Narayanan Nampoory, we have indeed come a long way. Today, IDF is one of the most active and premier Indian associations in Kuwait. In recognition of its social service the Government of India has conferred on it the prestigious 'Pravaasi Bharatiya Samman' award in 2013. Dr. Nampoory's contribution to IDF has been immense and his absence has created a vacuum that is hard to fill. We gratefully dedicate this DOCFEST to his memory. May his soul rest in peace.

I would like to thank H. H. Sheikh Sabah Al Ahmad Al Jaber Al Sabah, the Amir of the State of Kuwait and H. E.Sheikh Ali Al Jarrah Al Sabah Deputy Minister, Al Diwan Al Amiri affairs for their kind patronage of all IDF activities. My thanks are also due to H.E. Dr. Jamal M. Al-Harbi, Hon. Minister of Health and MoH officials, Dr. Ibrahim Al-Hadi, Secretary General, KIMS and Dr. Mohamad Al-Mutairi, President, KMA for helping us to fulfill our social responsibility. I am grateful for the many Kuwaiti and Indian business houses that provide us with resources to do our work. I appreciate the hard work put in by IDF members and their families to present today's cultural extravaganza. The members are our true strength. I want to give a clarion call to all Indian doctors working in Kuwait to become members of the Forum. I thank the members for reposing their faith in me and for giving me the opportunity to serve as their President and I hope I can fulfill their aspirations. Last but not the least, I wish to thank my family for inspiring me to always do my best

I wish one and all a very happy and prosperous New Year 2017. I hope to see all of you and many more at the DOCFEST 2018. JAI HIND.

Yours sincerely,

Dr. Abhay Patwari,

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PRESIDENT- IDE



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### **About Us**



The Indian Doctors Forum (IDF) Kuwait is the premier sociocultural association of Indian doctors in the state of Kuwait. More than 500 doctors working in government and private healthcare facilities are members of this esteemed organization which is under the patronage of the Kuwait Medical Association (KMA). The IDF not only organizes cultural activities for its members but also provides assistance to the public via health awareness programs, screening camps for the underprivileged and school health programs. We are the proud recipients of the prestigious Pravasi Bharat Samman award, granted by the government of India, for our community service activities.

Every year, for the last 13 years, the IDF has published health guides on a variety of topics. The current edition, entitled «Cosmetic procedures- the science and the art», is comprised of a collection of articles authored by experts in the fields of cosmetic surgery, dermatology, dentistry and other related specialties. The topics are written in simple non-technical language with the general public in mind. The articles provide a valuable insight into the pros / cons related to cosmetic procedures and the latest advances in the field. I would like to thank Dr. Farooq Belgrami, Dr. Arun Joshi and all the members of the editorial team for their tireless and commendable efforts.

I would like to take a moment to pay tribute to the great Dr. Narayanan Nampoory, whose untimely demise last year created a huge vacuum in all our hearts. He was an inspiring visionary who not only founded our organization but also help build the IDF into the prestigious association that it is today. He will truly be missed by us all.

Finally, I would like to thank His Highness the Amir and the people of Kuwait for giving us the opportunity to serve in this great nation.

Long live Indo-Kuwait friendship. Jai Hind.

Long Live IDF.....

Dr.Surendra Nayak Kapadi.

**General Secretary IDF** 

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### From the Editors' Desk





### Dear Readers,

Cosmetic procedures worldwide are among the top five surgical procedures conducted nowadays. The desire and demand for these procedures has increased exponentially. Increased longevity, more prosperity, exposure to media and peer pressure from society are some of the causes prompting people to ask for these. They constitute a trillion dollar medical industry. Technological and pharmacological innovations fed by handsome financial returns has resulted in great developments, refinement of techniques and creations of newer procedures and products with excellent results. It is exciting to see the number of procedures being performed today for improving body image. The introduction of new technologies in the field like Lasers, Implants, Fillers, Prosthesis, Hair Transplantation, Toxins etc. has widened the scope of the possibilities. We are entering a new era of "Physical Image Building". The quest to look young longer, more beautiful and to remove blemishes and infirmities has numerous solutions to offer nowadays.

At no time in the past has there been an eagerness on the part of people to improve their physical image as of now. No longer are such procedures being asked by the rich and famous only (actors, sportspersons, TV models, news anchors and presenters etc.) but also by ordinary men and women alike.

Cosmetic or aesthetic procedures are no longer the domains of plastic surgeons or cosmetic dermatologists alone, but certain specific procedures are being done by other specialties too. However the disturbing and potentially harmful trend is the mushrooming of the beauty clinics/saloons where these procedures are being done by unqualified, untrained technicians or beauticians without any supervision, sometimes with disastrous consequences for the patient.

This 13<sup>th</sup> Edition of the Indian Doctors Forum Health Guide 2017 is dedicated to brief the readers about the various contemporary cosmetic procedures available and their results and limitations. The articles have been written by experts in their field and the accuracy of information furnished has been given paramount importance.

We, as editors are sure that the readers will find this guide very interesting and informative. It is not intended to be a prescription advocating any of the procedures but offers a preliminary understanding of the issues. The purpose of the guide is to provide the information in a balanced way to serve as a guide only. Anyone planning to undergo these procedures must first discuss the pros and cons and the expected realistic results of each procedure thoroughly with their respective treating physicians before subjecting himself/herself to the scalpel or being lasered, injected, fillered, threaded etc. With this word of caution, we like to conclude stating once again that "This is worth a read".

Dr. Syed karooqh Belgrami

Editor,

IDF – Health Guide 2017

Dr. Arun Joshi

Editor.

IDF - Health Guide 2017

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### **HISTORY OF COSMESIS**

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### MUSINGS ON ORIGIN, HISTORY AND PHILOSOPHY OF COSMETICS

**Dr. Hasan Ali Khan.**Cardiologist

Cardiologist, Al-Jahra Hospital.



All my life the following part of the poem "The Daffodils" has fascinated me and I cannot forget these lines which carry a lot of meaning and thinking:

For Oft when on my couch I lie,
In vacant or in pensive mood,
They flash upon the inward eye
Which is a bliss of Solitude,
And then my heart with pleasure fills

And dances with the Daffodils.

What does the "inward eye" mean? It is what your eyes can see through your mind. It is also called the visualization. This is what makes us imagine any form of beauty or otherwise, be it the lovely landscapes or the mountain ranges of the Himalayas or be it the complexly created human form with closed eyes.

Our Health Guide this year is based on making "changes to the human form through a cosmetic approach". I just wondered how the word cosmetic came into being? Reading the literature these days has been simplified by search engines. I did it and realized how much I did not know.

This prompted me to write on the origin of the words "cosmetic" itself, a bit of philosophy behind its origin, and history of its usage.. From the mere beautification aspects to the evolution of the surgical procedures like "Breast Reconstruction" to the art of "Hair Transplantation", cosmetics and cosmetic procedures are playing an important role.

How and where did the word Cosmetic come from? It was from the word COSMOS. The dictionary meaning of Cosmos is ORDER, FORM, or ARRANGEMENT, originating from the Greek word Kosmos. It is our universe that we refer to as the cosmos, which continues to move in a state of absolute order with the precision of seconds for the past millions of years. We are a part and parcel of this cosmos.

Apply this word to the human body. It is understandable that we as humans wish to keep our self in an ORDERLY STATE. We all wish to give our own projection to others to be in the best of our bodily arrangement by applying the concept of Cosmos in our day to day life.



The cosmos moving in ORDER

Back to the philosophy of the formation of the universe, It is a chicken first or the egg first story. The concept in modern physics is that existence of the universe is based on the principle of ECTROPY

(molecular and systemic order) as opposed to ENTROPY meaning CHAOS or DISORDER.

From a philosophical aspect, was there a disorder (chaos) leading to an order (cosmos) or the vice versa. Will there come an AGE where the cosmos will go back into such a disorder (chaos) which will lead to a final dissolution of the universe at the end of TIME. (The return of the Cosmos to the dark mother, a Hindu philosophy of the Kali, the Aditi and the Daksa).

On the other hand the Abrahamic (the religions based on the holy books descending from the heavens namely Christianity, Judaism and Islam) theory on the creation of the cosmos(universe) is "Creatio ex Nihilo"(creation out of nothing) and so orderly state was created from nothing, "BE" AND "IT WAS". Similarly there is a mention of an END OF TIME to come, the DOOMSDAY .Therefore all roads lead to the same destination.

Although there is growing concept among some cosmologists that the universe is FLAT and it will continue to expand forever.

Our human body is also like the universe. It is best understood in the following urdu poetry:

Zindagi kya hai? Anaser ka Zahoor e tarteeb. Maut kya hai ? Inhi Azza ka pareshan hona. Which translates into: What is life?

Keeping it in a "state of order" through elements we are made up of.

What is death?

It is the going into CHAOS of the same elements.

(The elements of life are Water, fire, air and earth).



Ancient cosmetics

Thus the maintaining of our body in a healthy happy orderly state is what is needed. When we fail in some ways in not being able to or perceive that we are heading towards a disorderly state we make use of the faculty of Cosmetology.

The History of cosmetics (which includes the simplest of applications of natural or artificial materials to beautify oneself to the use of Cosmetic surgeries) dates back to many centuries.

Since the first time a human being was able to see his or her reflection in a body of water revealing that it was yet another "bad hair day", there have been cosmetologists. The history of cosmetology is a long one, dating back in ancient times. Egyptian woman had perfected the art of using ochres, and dyes on their cheeks and eyes, as depicted in Egyptian art. Many of the

Egyptian women and men wore wigs, and the wig stylist appeared very early in the history of cosmetology. Egyptians had also perfected the art of extracting essential oils from herbs, the same procedure that is used for making essential oils today.

The history of cosmetics spans at least 6000 years and is present in almost every society on earth. Some argue that cosmetic body art was the earliest form of ritual in human culture, dating over 100,000 years ago from the



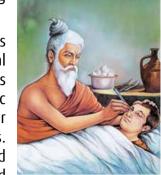
Ancient cosmetics

African Middle Stone Age. The evidence for this comes in the form of utilized red mineral pigments (red ochre) including crayons associated with the emergence of Homo sapiens in Africa.

Reconstructive surgery techniques were being carried out in India by 600-800 BC. Shushruta was a physician that made important contributions to the field of plastic and cataract surgery in the 6th

century BC. British physicians travelled to India to see Rhinoplasties being performed by the native methods

The term plastic surgery, from the Greek "plastikos" (fit for molding), was coined by Pierre Desault in 1798 as a label for procedures to repair facial deformities. In the 19th century, developments in anesthesia and antisepsis made plastic surgery safer and allowed for improvements in technique. Plastic surgeons further honed their skills during the 2 world wars, and applied their techniques to victims of birth defects and automobile and industrial accidents. The American eugenics movement, with its "Better Baby Contests," post-World War II prosperity, and the advent of motion pictures and television all helped Cosmetic Surgery Ancient India to usher in the modern era of cosmetic surgery. The first modern cosmetic



rhinoplasty was performed in 1923, followed by the first public face lift in 1931.

Then on these advances went to beautifying the human body as per a personal liking and we started to tell the surgeons how we wanted to look and got nearly what we wanted, be it the nose, the breasts, the buttocks or be it anything.

--"The best makeup for a man and a woman is passion. But cosmetics and cosmetic surgeries are easier to apply but use prudence before making a decision."



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## AND RELATED PROCEDURES

**By Ashok Kumar Sharma** Dermatologist, Farwaniya Hospital



#### INTRODUCTION

The history of beauty is as old as mankind itself. Throughout history people have tried to improve their attractiveness and to enhance their beauty. Appearance is the most public part of the self and therefore men and women both try to improve their apparent imperfections with the intention to increase their self-perception and quality of life. The market for cosmetic surgery and aesthetic treatments is

booming. The technical basis for many of these procedures was initiated many years ago and evolved into the modern standards of today.

#### **HISTORY**

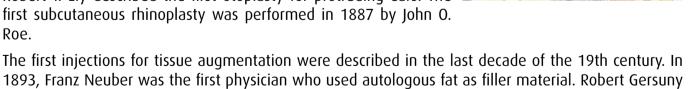
Originating in India over 2000 years ago the forehead flap for reconstruction for noses mutilated by war and criminal punishment is the oldest known procedure in aesthetic medicine. Susruta, considered the father of surgery in ancient India is credited to have the first authentic written record of plastic surgery of the nose conducted way back in 800 BC.

Ancient Egyptians had already been using animal oils, salt, alabaster, and sour milk to aesthetically improve the skin.

In 1845, the Prussian surgeon Johann F. Differbach started publishing several monographs about facial reconstruction, where he mentioned the

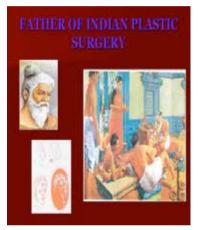
term 'rhinoplasty' for cosmetic reason for the first time. With the development of antiseptic surgery, cosmetic surgery saw a boom at the end of 19th Century.

In 1871, Tilbury Fox described the use of 20% phenol in order to lighten the skin, which became the first chemical peel, a technique that Paul G. Unna refined in 1882 when he described the properties of salicylic acid, resorcinol, phenol and trichloroacetic acid. In 1881, Robert T. Ely described the first otoplasty for protruding ears. The first subcutaneous rhinoplasty was performed in 1887 by John O. Roe.



1893, Franz Neuber was the first physician who used autologous fat as filler material. Robert Gersuny recommended the use of paraffin 6 years later, in 1899. At the end of 19th century, Vincent Czerny introduced the first augmentation mammoplasty. (breast reconstruction)

In 1907, Charles C. Miller published a cosmetic surgery text titled where he introduced procedures for cosmetic eyelid surgery, face lifts and double chin correction. Eugen Hollander introduced one of the first face lifts in 1912. Suzanne A. Noel in the early 20s became the first woman cosmetic surgeon and worked with development of facelift and blepharoplasty.



History of modern augmentation mammoplasty started in 1955, when John W. Pangman described the use of sponge-like breast implants made of polyvinyl alcohol. Thomas Cronin and Frank Gerow are credited with developing silicone-based implants in 1963; they quickly became the implant of choice and a gold standard. Unfortunately over the following years it was noted that the injected silicone could migrate and fistulize (move along tracks); its use was restricted by the FDA in 1976.

Norman Orentreich in 1959 came out with the theory of 'donor dominance' and history of modern hair transplantation began. His punch technique was the basic procedure for hair transplantation for many years, especially in the treatment of (androgenetic alopecia) male pattern baldness.

Now began the era of lasers in dermatology. In 1965, Leon Goldman published a visionary article regarding the treatment of tattoos with a ruby laser. A significant advent influencing cosmetic surgery was Rox Anderson and John Parrish's "Theory of selective photothermolysis" in1981. They used pulsed dye laser for the treatment of vascular lesions in 1981 and paved the way for laser-based innovations like, the Q-switched ruby laser for tattoo removal introduced by William H. Reid in 1983 or the pulsed CO<sub>2</sub> laser for ablative resurfacing introduced by Lawrence M. David in 1989. In 1991, Q-switched Nd:YAG laser was approved for tattoo removal in USA. In 1999, Gregg M. Menaker presented the successful treatment of facial rhytides with a non-ablative Nd:YAG laser and David H. McDaniel demonstrated a significant reduction in leg veins using a long-pulsed Alexandrite laser. An important improvement of laser technology, called fractional photothermolysis, was introduced in 2004 by Dieter Manstein. Based on this Er:diode lasers and CO<sub>2</sub> lasers have been developed with fractional approach, resulting in ablative fractional photothermolysis with high efficacy and a good safety profile.

In 1981, bovine (cow) collagen was the first facial filler approved for cosmetic use in the USA. Since its approval, an immense number of animal- and human-derived, natural and synthetic fillers became available on the market. A new dermal volume filler consisting of particles of synthetic calcium hydroxylapatite has been shown to be safe and effective; its use was first described by Thomas L. Tzikas and Patrick Flaharty in 2004.

In 1992, Canadians Jean and Alastair Caruthers published their article on the treatment of glabellar frown lines with Clostridium botulinum-A exotoxin. The brand name of the drug 'Botox' became extremely fashionable after its approval for cosmetic use in 2002. Today botulinum toxin is used in dermatology for treatment of glabellar and horizontal forehead lines, crow's feet, nasal flare, and chin dimpling and also for localized hyperhidrosis.

Michael Olenius in 1998 in Sweden presented the first clinical study on skin augmentation with hyaluronic acid. Hyaluronic acid quickly displaced collagen as the number one filler substance as its allergenic potential was much lower. These days, dermal fillers based on hyaluronic acid have become the worldwide standard with a wide range of products for all kinds of facial and non-facial augmentation techniques including the treatment of fine and marked wrinkles, and body contouring.

Another dermal filler that emerged around the same time was poly-L-lactic acid. In 1999, it was approved in Europe for increasing the volume of depressed skin areas.

The 90s were the decade when light-based devices such as laser and IPL grew large in cosmetic surgery. In 1996, Mitch Goldman observed reduced hair regrowth after intense pulsed light (IPL) and in 1997, the first study was published by Michael Gold showing the efficacy of intense IPL for hair reduction. Curt M. Littler and David J. Goldberg, one year later published articles on successful hair removal with the Q-switched Nd:YAG laser in humans.

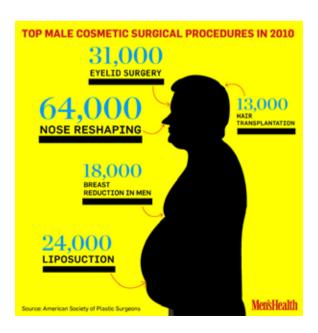
Treatments have now been invented to reduce localized deposits of fat. In 2001 the Brazilian physician Patricia Rittes first published an article about the injection of phosphatidylcholine for this purpose; because of complications its use came to be restricted. In 2004, Adam Rotunda et al. showed that sodium deoxycholate is the major active component responsible for adipocyte lysis. This active agent seems to be better tolerated to reduce unwanted localized fat depots at the hips, abdomen, 'love handles', neck or jowls. The first non-invasive device driven approach to reduce body fat was invented by Sydney R. Coleman et al. in 2009. They demonstrated the possibility to induce apoptosis (programmed cell death) in human fat cells by cold exposure (Cryolipolysis). It is effective to reduce body fat at the flanks and abdomen without damaging the upper skin layers or peripheral nerves.

Skin tightening is an area where many recent advances have been made. In 2003, Javier Ruiz-Esparza used radiofrequency to induce heat within the skin thereby achieving collagen shrinkage. An improvement propounded by Seema Doshi in 2005, was combining radiofrequency with laser to target both skin laxity and facial rhytides. The latest idea is to combine radiofrequency with pulsed magnetic fields to increase collagen production via a non-thermal mechanism. This so-called sublative fractional radiofrequency was first shown to be safe by Basil Hantash et al. in 2009.

#### **CURRENT SCOPE**

One of the new technologies that have the potential to set new milestones in aesthetic medicine is a botulinum toxin gel for topical treatment of facial wrinkles. Another innovation that could become a milestone for aesthetic medicine is the use of autologous platelet-rich plasma (PRP) for skin improvement and rejuvenation. Multipotent adipose-derived stem cells obtained from liposuction fat aspirates have been used for improving aged skin. A non-invasive device using focused microwave energy has been used to cause irreversible thermolysis of apocrine and eccrine sweat glands to treat primary hyperhidrosis.

Rejuvenation of the aging face and body will stay a high priority for the future of aesthetic medicine and promote the development of new techniques and devices. Currently a distinct trend can be seen towards minimal or non-invasive treatments, with miminal risk for the patient, no downtime and highly satisfactory results.

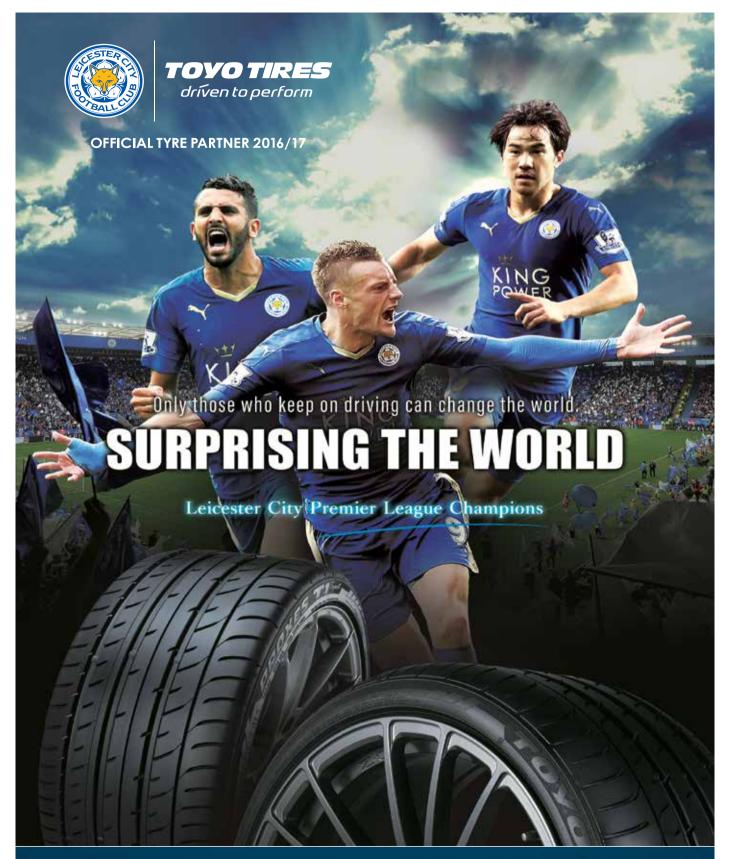




# YOUR SNACKING TIME JUST GOT HEALTHIER.



# **AGING SKIN AND IT'S CARE**







#### A GUIDE TO AGING SKIN AND HOW TO PREVENT IT

**Dr. Arun Joshi**Dermatologist,
Farwaniya Hospital.



The skin plays a major part in our social interactions; the concern is not so much to do with physiological functions, which may remain adequate in old age, but about continuing effectiveness, particularly of the facial skin, in communication. To assert social status it is necessary to have skin and hair that look, feel and smell attractive. (The Ageing Skin: Skin and Skin Diseases Throughout Life. Rook's Text Book of Dermatology,8th Edition)

Aging is a complex process "defined as the accumulation of molecular damage over time". It is controlled by both genetic and environmental factors. Intrinsic factors genetically controlled include skin colour, antioxidant mechanisms in the cells to prevent free-radical damage, mutations in the mitochondrial genome, hormone systems, and the absolute length of the continuous cell cycle. Our body starts aging the moment we are born. All our organs initially grow and then start aging. The effects start becoming appreciably noticeable by the thirties, sometimes earlier if one is not leading a healthy lifestyle.

Skin is the largest organ of our body. It is exposed to our immediate physical environment directly and continuously. It covers, and protects the internal organs from the harmful effects of solar radiation, temperature, humidity, pollution, microbes and self-applied skin care products (cosmetics, perfumes etc.). More than 90% of age-associated cosmetic problems are caused by effects of solar ultraviolet rays (UVR) on exposed skin. Our skin's condition plays an important role in all spheres of our daily life. Its condition tells to the world about our health, physical and mental well-being.

#### Skin aging has two components

- **1. Intrinsic ageing:** also called *chronological* ageing is predominantly genetically determined and happens all the time since birth whether or not the skin is exposed to external influences.
- **2. Extrinsic ageing:** is the accelerated ageing due to effects of external factors most importantly sunlight (Photo-ageing). Others include diet, exercise, stress, smoking etc.

Structure of Our Skin: Our skin is formed of 3 layers.

Epidermis: Topmost layer formed of sheets of epidermal cells/corneocytes,



Fig. 1: Intrinsic/chronological aging

Dermis/Dermal layer: The middle layer predominantly made of connective tissue.

Hypodermis (sucutaneus layer): The deepest layer predominantly made of fat.

# The Layers of Our Skin Hair Folice Collegen Sharets Faccilianis Faccilianis Faccilianis Faccilianis Faccilianis Faccilianis Faccilianis Skin Nerves Osimus Skin Faccilianis Scienceous Gland Blood Viessell and Sopers

Fig. 2: Structure and layers of skin

The dermal layer (middle) comprises a network of fibres (collagen and elastin) making a scaffolding embedded in a cement like material called, the intercellular matrix (ICM). This forms the connective tissue that binds all the cells and structures of our body including our skin. Blood vessels, nerves and some special cells called fibroblasts that produce these fibres are also present in this matrix.

#### Intrinsic aging

With age, the number and function of the cells that produce these fibers decrease whereas the breakdown of these fibers continues and in fact increases so that the skin becomes thin, wrinkled and less elastic (older skin

takes more time to return to its original shape after pinching). In addition collagen fibers become more stiff with ageing because of increase in their cross interlinking. Reactive oxygen species (ROS) and

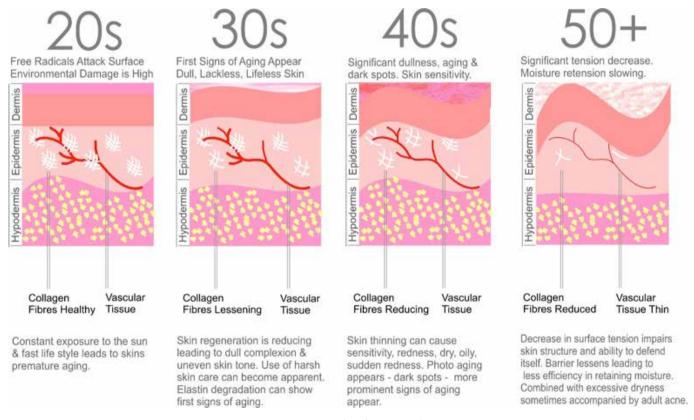


Fig. 3: Microscopic skin changes with age

free radicals generated in the skin from various metabolic processes drives the degeneration that is so characteristic of aged skin. The fat (lipid) content of topmost layer cells (corneocyte) changes causing aging skin, especially that of the lower legs, to become dry, flaky and itchy. The water binding capacity of the epidermis is reduced along with an increase in renewal time if damaged.

Changes seen at microscopic/molecular levels with chronological/intrinsic ageing and their effects.

- a.Reduction in skin blood vessels: Decreased nutrition and oxygen to the skin
- b. Reduction in subdermal fat: increased laxity of skin
- c. Reduction in sebaceous (oil) glands: Dry skin
- d. Skin cell division and turnover is reduced: Delayed wound healing, dry, flaky skin.
- e. Number and lifespan of color producing cells (melanocytes): decreases resulting in pigment changes. This pigment protects against harmful effect of sun rays.
- f. Number and function of antigen presenting cells decreases: Increased chances of infection.
- g. Hyaluronic acid (HA) decreases by 50% by the age of 50 as compared to 20
- h. Hormonal changes especially in women around menopause have additional impact.
- i. Thickness of skin layers decrease by 10 to 50 % from 30 to 80 y:
- j. Superficial layer cells become less sticky to each other causing roughness and scaling.

#### **Extrinsic Ageing of Skin:**

A. Photoageing: is the gradual deterioration of skin structure and function following long-term recurrent exposure to sunlight or artificial UVR (CFL, light bulbs, computer screens, TV monitors). The effects are proportionate to skin type. (Our skin in classified into 6 types based on its ability to tan or burn from Type 1 (fairest) to Type 6 (darkest skin).

About 50% of UV induced damage is from the generation of free radicals, whereas direct cellular injury and other mechanisms accounting for the rest. These influences are superimposed on intrinsic.

#### **Solar Ultraviolet (UV) radiation:**

Sun rays reaching earth consist of visible rays (400-700 nm), and UV rays UVB (290-320 nm) and UVA (320-400 nm) (Fig. 2). Both UVB and UVR have different mechanism of action in causing skin changes. Ozone layer present in the earth's atmosphere does not let the most harmful of these ionizing and carcinogenic (cancer causing) UVC rays (200-290 nm) to reach the surface of earth. UVB penetrates up to epidermis while UVA enters up to deeper dermal layer.

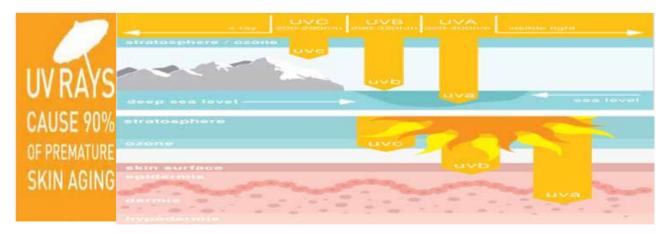


Fig. 4: UV Radiation and atmosphare

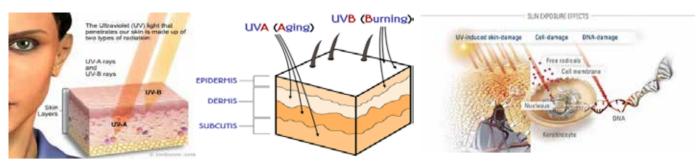


Fig. 5: UV Radiation penetration in a skin layers

Fig. 6: UV Radiation effects at cellular level

- 1. **Effects of UVB:** These rays are able to penetrate up to the upper layers only of the topmost layer (epidermis) of the skin. It is more responsible for the sunburn, and causation of skin cancers. It does serve an important function by way of helping skin make Vit D. Prolonged exposure to UVB is responsible for the induction of most non-melanoma skin cancers, and probably of melanomas.
- 2. **Effects of UVA:** UVA are able to penetrate deeper into the dermis where the collagen and elastin fibres, and ICM are present. UVA effects on dermis are more responsible for the appearance of aged skin such as wrinkles and thinning. UVA may also play a relatively more important part in induction of melanomas.

UVR induces the enzymes which degrade collagen, the major structural protein of the dermis. UVR-induced damage to mitochondrial DNA is important in photoageing. Mitochondria are the power house of cells generating energy and at the same time large amounts of free radicals and ROS. The result is a 20% more reduction of collagen in the sun exposed area compared to unexposed skin and thickening, and disintegration of elastin fibres.

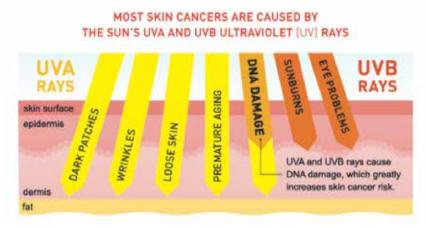


Fig. 7: Effects of UV rays on the skin

- Promotes angiogenesis (new blood vessel formation) and dermal blood vessel fragility.
- UVA radiation damages DNA, cell membranes and proteins, leading to cell ageing and an increase risk of skin cancer.
- UVR-induced immunosuppression may play a major role in skin cancer esp. melanoma.

**B. Smoking and skin ageing:** Besides harmful effects of smoking in causing cancers and heart disease, smoking adversely affects wound healing, and causes accelerated wrinkling causing prematurely aged skin (any smoker will look older than his/her age). Signs of smoker's face include dull and dry, coarse complexion, loss of skin's firmness, premature lines and wrinkles, and leathery skin. Tobacco smoke contains stoxins that can lead to smoker's face.



Fig. 8: Smoking and skin aging

F.Effects of Repetitive facial muscle movement due to facial: expressions Lines, rhytides and drooping features result from physical factors.

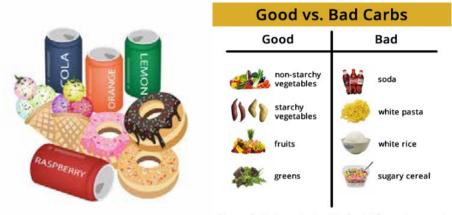


Fig. 9: Crow's feet at the angle of eye, and solar/senile comedones on the cheek.



Fig. 10: Sebaceous hyperplasia (enlarged oil glands on forehead,right cheek), horizontal forehead expression lines, and fine wrinkles below the eyes

- G. **Effects of Gravity:** accelerates facial skin ageing, and this factor becomes more evident in the 30s when skin elasticity starts to decline.
- **H. Diet:** High glycemic (more sugar/calories) diet accelerates skin ageing. The nonenzymatic glycosylation of blood vessels is a normal feature of aging, and is accelerated in diabetes mellitus. All of these triggers can lead to a self-sustaining inflammatory and aging process.



fibrous fruits & veggies > white foods (flour, rice, sugar)

Fig. 11: Good vs. Bad Carbs

- **I. Exercise:** Improves blood circulation to the skin thus helping provide better nutrition and oxygenation to the skin and also in getting rid of the toxins.
- **J. Electromagnetic radiation:** from computers and mobile phones induces histamine, interleukin (IL) 1 and IL-6 release resulting in proinflammatory environment causing structural damage to skin component.
- **K. Environmental pollution**: Mechanisms of underlying damage from free radical/ROS generated from pollutants in the environments are being recognized and understood increasingly and blamed for some of the skin conditions and ageing effects.

#### **Manifestations of Skin Ageing:**

The skin loses volume, bony landmarks become more visible, cheeks and perioral area appear depressed, deepening folds around the nose, rhytides, facial fat pads sags, drooping eyebrows, upper eyelid and infraorbital laxity and fat herniation, thinning of lips, descent of the corners of the mouth, drooping of the nasal tip, lower face and neck sagging and laxity.

**Some of the skin changes and conditions associated with aged skin:** Fine and coarse rhytides, abnormal and uneven discoloration of skin, solar lentiques, dryness and roughness of skin, sparse

grey hair, telangiectasia (visibly dilated vessels), sallowness/yellowness of skin, loss of skin tone, freckles, benign growths (DPN, seborrheic keratosis, sebaceus hyperplasia, skin tags, senile/solar comedones,), Crow's feet, vascular changes (telangiectasia, liver spots/spider nevi), skin cancers (solar keratoses, basal and squamous cell carcinomas, and melanoma—particularly superficial variants such as lentigo maligna)



#### Can skin ageing be prevented:

Chronological or intrinsic aging is natural and predetermined and can't be altered however some of the effects can be prevented/delayed/reversed.

Photo-ageing which contributes very significantly to the visible signs of skin ageing, can be prevented by effective sun-protection (details in chapter on Sunscreens) and regular use of some agents which can delay the appearance of effects of photo and chronological ageing.

#### Topical treatments for preventing/delaying skin aging

- 1. Effective, diligent and regular sunprotection: Should start from early age. Appropriate clothing, avoidance of excessive sun exposure and UV tanning booths, and use of sunscreens are the basic steps for avoiding photo/extrinsic ageing. Repeated sunburns since childhood are also a risk factor for skin cancers later in life besides aggravating skin ageing.
- **2. Topical Vitamin A analogues:** (Retinoids: Tretinoin, Retinol, Retinal, Retinaldehydes): are effective for improvement of both photo-damaged and intrinsically aged skin. They increase epidermal thickness, promote dermal collagen production and reduce its degradation. Major drawback of using retinoids daily is their irritancy (causing dryness, roughness, burning, sensation, and photosensitizing effect) especially during initial couple of weeks of their application. Liberal use of emollients and moisturizers can avoid this common side effect.
  - A word of caution for using retinoids for women who are planning to become or are pregnant. Topical as well as oral retinoids are contraindicated to be used during pregnancy because of their severe harmful effects on the growing babies in the womb.
  - They are to be applied at night only.
- **3. Topical Antioxidants:** Topical vitamin C analogues: have been shown to regulate collagen synthesis, Botanical agents (extracts of grape seed, pomegranate, green tea and raspberry), Polyphenol and isoflavone may be effective for photoprotection and Coenzyme Q which is a component of a mitochondrial electron transport chain acting as an antioxidant in the skin, has also been used as a protective antioxidant.

#### CONCLUSION

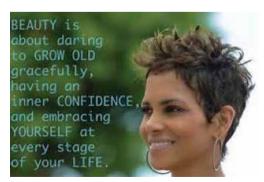
Skin aging is inevitable however adopting sun protection practices diligently, eating low carb diet rich in antioxidants, regular exercises, adequate rest and leading a stress free life can go a long way in delaying effects of ageing on skin including other systems of the body.

#### **Suggested Further Reading**

The Ageing Skin: Skin and Skin Diseases Throughout Life. GWM, Millington and RAC Graham Brown. (Rook's Text Book of Dermatology, 8th Edition) Edited by DA Burns, SM Breathnach, NH Cox and CEM Griffiths. 2009 Blackwell Publishing

Minimally Invasive Treatments and Procedures for Ageing Skin. N. J Lowe

(Rook's Text Book of Dermatology, 8th Edition) Edited by DA Burns, SM Breathnach, NH Cox and CEM Griffiths. 2009 Blackwell Publishing





### ELJOUN MEDICAL CENTER



#### OUR DOCTORS & DEPARTMENTS



#### Orthopedics Dept

Dr. Manimara Chozhan (MB; Mch. Orth UK) is an orthopedic surgeon who underwent basic medical training in India and advanced orthopedic training in the United Kingdom. His special interests lie in the areas of adult reconstruction & deformity correction. His experience in the field of orthopedics & trauma surgery spans a period of 20 years beginning 1993.

Although a surgeon by practice, he advocates the theory of "prevention is better than cure" and during his current practice in Kuwait feels that.

#### Gynecology Dept

Dr, Annabelle Bati (Diplomate and Fellow in Obstetrics and Gynecology) is an obstetrician and gynecologist who has 20 years of experience in the field of obstetrics and gynecology acquired by working in various leading private hospitals in and outside Kuwait.

Her specialty include treating antenatal care, diagnosis and treatment of different cases of urine bleeding, diagnosis and treatment of poly cystic ovarian disease. Vaccination against HPV infection and cervical cancer.





#### Radiology Dept

Dr. Hebat Allah Mohamad Abaas Ouda (M.B.B.Ch) has a master's degree in radiology and has a vast experience of 18 years in the radiology field, she has worked in various hospitals and universities across Egypt. Her work includes x-ray, general radiology, ultrasound, fetal anomaly studies, General abdominal ultrasound etc...



Dr. James Neeruda (MBBS, PGDDM) would be our General Physician who has around 15 years of experience in his field. He has worked with City Clinic, Al Najat Medical Centre in Kuwait. He believes general practice is a first pit stop in health care system. It is highly valued and very essential in building patient doctor relationship, which form the root of effective health care system.





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## DAILY SKIN CARE FOR A HEALTHY GLOWING SKIN

**Dr. Nafees Fatima Syed,** Dermatologist



#### Linden Tyler once said "be good to your skin, it is going to represent you for a very long time."

Maintaining a good daily skincare routine can go a long way in taking years off your face and adding to your personality and confidence.

- **1. Be Sun Sensible:** Sun damage continues to remain the most important factor influencing the quality and age of our skin .UV damage is the most relevant cause of accelerating the ageing process. The use of regular sunscreen becomes our first line of defense in maintaining good skin, providing you protection against the harmful UVA+UVB radiation from the sun. Continuous reapplication of sunscreen every 3 to 4 hours a day for a minimum SPF (sun protection factor) of 30 is considered adequate.
- **2. Foods for healthy skin:** Foods like Salmon, tuna, almonds and tomatoes have been proven to have sun/UV protective effects.



Fig. 1: Foods good for skin

Another vital component in maintaining good skincare routine is vitamin C, which when taken orally (fruits, vegetables rich in Vit. C and oral supplements if needed) and applied topically acts like an anti-oxidant which prevents free radical injury to the skin and promotes collagen regeneration resulting in structurally smoother, more rejuvenated, younger looking skin.

Other antioxidants preventing free radical damage, include green tea that contains protective compounds like flavanoids that prevent skin cancers and breakdown of collagen, which cause wrinkles.

**3. Bad foods for skin:** Skipping on junk food and sodium/sugar rich sodas goes a long way in preventing skin damage since it is the breakdown of these sugars called glycation which damages the collagen that keep skin smooth and firm, so sticking to low glycemic carbs like whole grains, naturally low in sugar helps the body to process these foods slowly to limit the loss of this collagen.



Fig. 2: Foods Bad for skin

4. Water, The Ubiquitous, Natural tonic for the skin: Another vital index in the indicator of skin quality and skin age is the level of hydration of plumpness of the skin presenting itself in the appearance fine lines and dullness.



Fig. 3: Water the natural revitalizer

Apart from the age of the person, this hydration level depends greatly on the daily intake of water. A minimum recommended of 8 to 10 glasses in the day (1.5 to 2 litres a day) maintains skin turgidity and prevents dehydration and shrivelling of skin.

**5. Good work out for a glowing skin:** Apart from these factors, the role of a daily dose of exercise cannot be undermined in the appearance of glowing skin due to enhanced blood circulation. New

research finds that regular yoga practice may reduce the inflammation and stress that speed the process of skin ageing.

6. Sleep for Beauty: Adequate rest and proper sleep also known as "beauty sleep" is a major component of good skin quality as a body repairs



A bit of good sleep is essential for skin care and also for health as a whole.

Tips for Good Sleep:

Regulate sleep and wake up times.

Proper bed and pillows are absolutely essential.

Ensuring the room is sufficiently dark and noise-free is

>Try having warm milk before sleeping to relax the body.

#### Advantages:

➤In fact, sleep is also critical to looking good.

> Provides vital regeneration and repair to the skin.

➤Good sleep will helps to <u>remove dark circles</u> under eyes and a pale washed-out complexion. and rejuvenates itself during sleep. Long periods of restless activity is bound to show up on the skin becoming dull, uneven with areas of patchy pigmentation and dark circles around eyes.

**7. Masks for better remarks:** Maintaining a beauty care routine like application of home-made masks and a daily mild exfoliation followed up by non-comedogenic (pimple causing) moisturizer helps maintain skin on a regular basis. Using natural, herbal, hypoallergenic products including rejuvenating face mists and sprays enriched with antioxidants and minerals like selenium to prevent UV damage have added benefits for the skin.





8. Last but not the least emotional well-being and mental health play a major role in healthy skin. In short being happy on the inside makes you glow on the outside.









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#### **Cosmetics and Cosmeceuticals**

**Dr. Sussama George**Dermatologist
Al-Rashid Hospital.



#### **Introduction**

**Cosmetics:** are products designed "for cleansing, beautifying, promoting attractiveness, or altering the appearance without affecting the body's structure or functions". So soap, shampoo, deodorant, fragrances, make up etc are cosmetics.

**Cosmeceuticals:** are skin care products combining cosmetics and pharmaceutical ingredients claiming to have medical benefits.

Cosmetic products are not designed to effect any long term change deep within the skin whereas cosmeceuticals improve appearance by delivering nutrients. They help reduce fine lines, hydrate the skin, reduce oil production and can address sun damage and pigmentation

#### **FACIAL COSMETICS**

Foundations, facial powders, face masks, eye and lip cosmetics.

**1. Foundation:** is a pigmented cosmetic applied to the entire face, the colouring

agents are based on titanium or iron oxide and sometimes ultramarine blue. There are four basic formulations. Oil based –for dry skin, Water based-for dry to normal skin. Oil free for oily or acne prone skin and water free anhydrous forms for scars.

**2. Face Masks:** Face masks are basically skin cleansers with a variety of ingredients with beneficial effects like deep cleansing of pores, skin tightening, toning, nourishing drying up of acne lesions etc. There are setting masks which are Earth, gel, vinyl or wax based. Non setting masks are basically cleansers and moisturizers. They are warm oil, cream and natural masks.

#### **HAIR CARE PRODUCTS:**

Hair is a complex structure composed of the protein keratin which contains over a dozen different amino acids that join together by covalent bonding which gives hair its properties.

Daily hair care products are shampoos, conditioners, hair styling agents, epilators, & colouring agents.

"Shampoo" is derived from an Indian Hindi word meaning massage. They contain detergents- the cleansing agents and various other agents like foaming, softening preservatives and fragrances.

Types of shampoos are basic shampoos with good cleansing and minimal conditioning for oily, dry and damaged hair. Shampoos are alkaline and conditioners are acidic in nature, so it is better to use them separately.

Baby shampoos for babies who have minimum sebum production and are non irritating to the eyes.

Medicated (anti-dandruff) shampoos. These are normal shampoos with tar derivatives, salicylic acid, sulfur, selenium disulfide, zinc pyrethion and azole derivatives. They cleanse, remove scales and have antifungal and anti-bacterial action. Medicated or anti parasitic shampoos have additives to destroy parasites like head lice.

Types of chemical hair treatment are hair colouring and hair lightening. There are four types of hair colours/dyes. Temporary, semi permanent, permanent and gradual.

#### PERMANENT HAIR DYFS

These dyes are color fast and the primary ingredient is an aniline derivative, paraphenylene diamine (PPD) or paratoludene diamine (PTD) derived from coal tar. This is the most popular hair colouring process and involves permanent oxidation and the common oxidizing agent is  $H_2O_2$ . Since the dye penetrates to the cortex of the hair, the colour looks very natural. Allergic/irritant contact dermatitis can sometimes occur.

#### HAIR LIGHTENING

Hair lightening or bleaching is a special art done to both lighten the hair and also to prepare it to take up hair dye. This is an oxidation alkaline treatment which bleaches melanine. Damage to the hair structure rendering it dry and lead to fracturing of the hair shaft. Hence regular use of a conditioner is required.

#### COSMECEUTICALS

#### a. Moisturizers

Moisturizers have a number of actions on both normal and diseased skin. It increases the water content of stratum corneum by forming a lipid barrier. It has anti-itching and anti- inflammatory action.

#### **B.** Retinoids

The best anti-aging cosmeceuticals recommended is topical Vitamin A. This has been clinically proven to reduce lines, sun damage and uneven skin tones. Retinoids are vitamin A derivatives and vitamin A (retinol) is the prototype of all other retinoids.

#### c. Hydroxy Acids

Hydroxy acids are likely the second most commonly available cosmeceutical. They are organic carboxylic acids classified into alpha hydroxy acids (AHAs) and beta hydroxy acids (BHAs) according to their molecular structure.

The different AHAs include the following: glycolic acid, lactic acid, citric acid, mandelic acid, malic acid, and tartaric acid and Lactobionic acid. By desquamation and stratum corneum thinning a softer and smoother look to the skin is achieved. When used in acne cases the shedding of dead skin cells allows the natural flow of oils/sebum in the skin without clogging.

#### d. Antioxidants

The skin is frequently exposed to a constant assault of endogenous (from inside body) and exogenous (from outside body) damaging agents. Antioxidants intervene at different levels in the protective process.

These are Vitamin C, Vitamin E, Panthenol, Glutathione, Niacinamide and Melatonin.

Vitamin C in Cosmeceutical products helps reduce the signs of ageing, help repair and recover from damage and makes the skin to appear visibly younger.

#### e. Depigmenting Agents

Hyperpigmentation, is one of the most common and distressing condition afflicting a large subset of the population. Depigmenting agents in combination with sunscreens are often the most effective treatment available. Depigmenting agents are phenolic and non-phenolic compounds. Phenolic compounds are Hydroquinone and Monobenzylether of hydroquinone Non-phenolic compounds are Corticosteroids, Tretinoin, Azelaic acid, and Kojic acid.

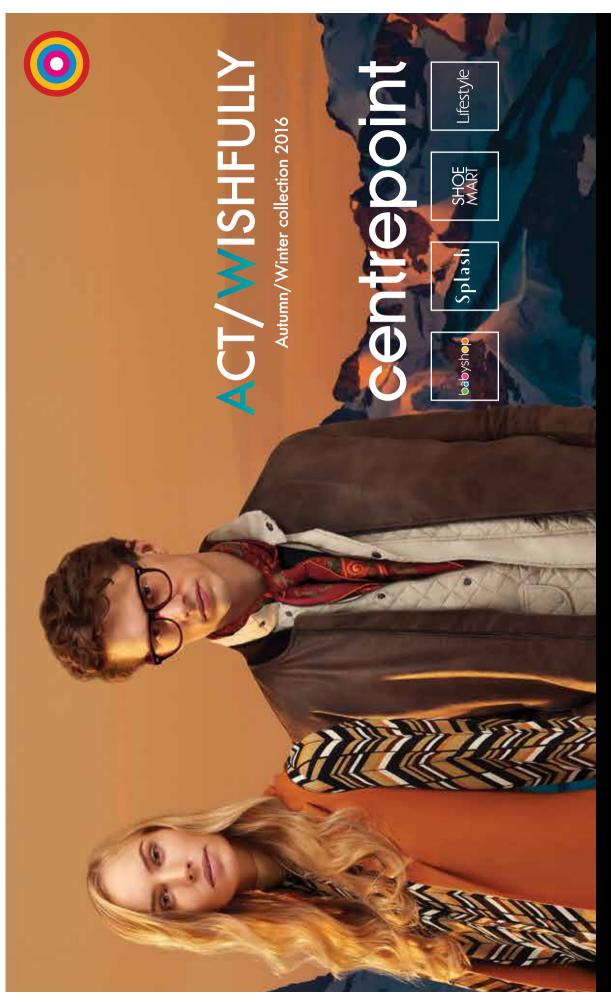
Ideally these depigmenting creams should be used to treat only the primary or secondary localized areas of darker skin such as melasma (pregnancy masks), or post-inflammatory (darkening of skin seen as a complication or end result of a pre-existing skin conditions such as acne, eczemas, injuries, infections etc). They must not be used as whitening creams for lightening the natural tone or color of a person with which he or she is born with as some of them especially steroids and hydroquinone have serious side effects and consequences when used unsupervised for prolonged durations. Many of the OTC proprietary whitening creams may contain these compounds which are usually not mentioned on their labels. Common side effects of prolonged topical steroids use are thinning of skin, acne, easy bruisability, strae (stretch marks), exacerbation, persistence or resistance of skin infections and certain conditions, dilated blood vessels, increased hair (hypertrichosis) and in case of oral steroids systemic side effects of induction of cataract, weight gain/obesity, diabetes, hypertension, and osteoporosis to name a few.

#### e. Topical Sunscreen

Regular sun protection can reduce or reverse the photodamage. Sunscreens are also incorporated in to various cosmetics of daily use. Physical sunblocks include Titanium dioxide, oxides of magnesium iron and zinc. They scatter light and hence are barrier creams. Chemical sun blocks are UVA absorbers, UVB absorbers or Combined.



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#### **SUNSCREENS**

**Dr. Iram Hassan** Dermatologist, Sultan Derma Clinic, Mangaf.



Sunlight is an essential component to life on Earth, but the UV radiation that comes with it can have both

beneficial (vitamin D synthesis, phototherapy) and damaging effects (sunburn, photosensitivity, photo aging, skin cancer).

Human skin is exposed to a spectrum of solar wavelengths on a daily basis and over time can get damaged by this exposure. Sun protection strategies include seeking shade or wearing clothing to reduce the quantity (intensity) of sun exposure and the application of sunscreens specially designed to absorb UV light. Sun protection practices can reduce the risk of skin cancers, including melanoma.

Sunscreen is a cream, lotion, spray or other topical product that helps protect the skin from the sun's ultraviolet (UV) radiation, and which reduces sunburn and other skin damage, ultimately leading to a lower risk of skin cancer. Sunblock is an inappropriate term as there is no compound that can fully block the rays of sunlight entering the skin. Sunscreens protect against UVR by reflecting, scattering or absorbing it.

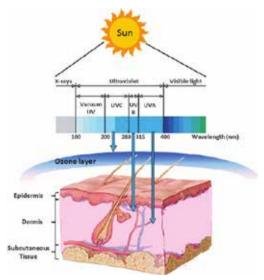


Fig. 1: Solar radiation and skin

#### There are 3 types of sunscreens available (Fig. 2)

**Chemical (organic):** Absorb UVR and do not let it enter into deeper layers of the skin. They are not visible when applied and are more cosmetically elegant. They act mainly by absorbing the UVB. A good range of increasingly effective UVA absorbers is available.

**Physical (mineral micropigments):** act by reflecting and scattering UVB and UVA. They are made of inert mineral oxide micropigments, zinc oxide or titanium dioxide in a suitable vehicle.

Titanium Dioxide is more effective. Physical sunscreens provide more effective and broad spectrum sun protection. Their main disadvantage is that they are visible as a white paste when applied and are therefore not cosmetically or practically acceptable. Being chemically inert, they are less irritating and less liable to cause contact sensitivity., They are very effective against both UVB and UVA. These are the ones you see applied by outdoor players such as cricketers who play outdoors.

**Combination** preparations that absorb, scatter and reflect have also become more common, and appear to provide optimal cover in all circumstance.

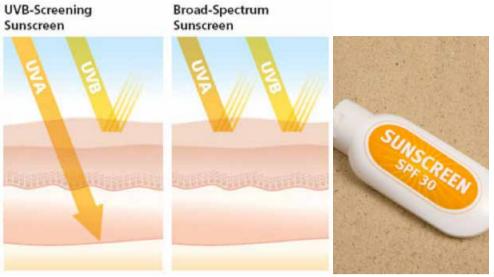


Fig. 2: Types of sun screens

Fig. 3: SPF

#### Sun Protection Factor (SPF) (Fig. 3)

The efficacy of a sunscreen is determined by its ability to afford protection against erythema, which is primarily caused by solar UVB but with some contribution (15–20%) from UVA. The measure of protection, assessed under controlled laboratory conditions, is known as the sun protection factor (SPF). It is the multiple by which UVR exposure may be increased, after sunscreen application, before burning begins. It is the ratio of minimal erythema dose (MED), the amount of sunlight or UVR required to produce barely visible erythema after exposure) of the skin with the sunscreen on and MED without applying the sunscreen.

SPF is mentioned on all sunscreen formulations and it helps guide a person choose one that is appropriate for the indication. A recent development is that SPF now refer to "**sunburn protection factor**," and more explicitly refer to the fact that SPF relates primarily to the erythema produced by sun exposure and does not necessarily relate to any protective effects with regard to cancer and photo damage. SPF figure primarily refers to the protection against erythema by UVB. For UVA protection factor of a sunscreen is determined by the persistent pigment darkening method. Minimum level of UVA protection should be a UVA protection factor of one-third of the SPF.

**'Substantivity' (Water resistance ability of a sunscreen):** Sunscreen resistance to removal by water is known as susbstantivity. It is quantified in terms of its rate of loss of efficacy on submerged skin. Highly substantive preparations are preferable in circumstances where they may be washed or rubbed off.

The sunscreen may be labeled as "water resistant" and must indicate whether this ability lasts for 40 minutes ("water resistant") or 80 minutes ("very water resistant") of swimming or sweating. Products that are not water resistant should inform patients about the need for a water-resistant sunscreen if swimming or sweating.

Only broad-spectrum sunscreens with SPF 15 reduce the risk of skin cancer and photo damage if used with other appropriate sun protection strategies. Other sunscreens (non-broad-spectrum and broad-spectrum with SPF lower than 15) can only claim to "help prevent sunburn."

**The Ultraviolet index or UV Index (Fig. 4)** is an international standard measurement of the strength of sunburn-producing ultraviolet (UV) radiation at a particular place and time. It is an open-ended linear scale with higher values representing a greater risk of sunburn (which is correlated with other health risks), directly proportional to the intensity of UV radiation that causes sunburn on human skin.

An index of 0 corresponds to zero UV radiation, as is essentially the case at night. An index of 10 corresponds roughly to midday summer sunlight with a clear sky. Summertime index values in the teens are common for tropical latitudes, mountainous altitudes, and areas with above-average ozone layer depletion. Many tanning beds generate even higher UV intensities.

When the UV Index is presented along with weather forecast report around the world for vaious cities in the media as a guide to people to adopt the suitable sunprotection measures accordingly on a particular day at a particular place on a daily basis, it represents UV intensity



Fig. 4: UV Index

around the sun's highest point in the day, called solar noon, halfway between sunrise and sunset. This typically occurs between 11:30 am to 12:30 pm.

#### Practical points in relation to solar UV Exposure

UVR intensity is increased by reflection from snow by up to 85%, sand by 25% and rippling water by 5%, but decreased by only 20–90% by cloud cover, and 60% for every 50 cm travelled through water. Radiation intensity is not significantly altered by any accompanying heat, cold, wind or visible light.



Fig. 5: Clouds do not protect against UVR



Fig. 6: Finger Tip Unit

Clothing consisting of close-weave, loose-fitting material covering as much of the skin if opaque to visible light is generally protective against UVR

#### Points to look for before choosing a sunscreen.

- 1. What feels best on your skin
- 2. Which is easiest to apply and re-apply.
- 3. What activities are you participating in? (e.g. Running, biking, hiking, swimming, surfing, skiing or sun bathing).
- 4. Are you using it on your face or body?

Sunscreens formulations: Gel, cream, lotion, spray, colored/tinted, powder. Some people complain that certain types of sunscreens make them develop acne, are too oily, cause allergic reactions, dry their skin out or are full of harmul chemicals.

#### Choosing the right sunscreen

#### If you have sensitive skin:

Look for all natural sunscreen:

- » PABA free (most sunscreens are now PABA-free), Oil free , Hypoallergenic, fragrance free, chemical free
- » Mineral (itanium dioxide and zinc oxide) based sunscreen as they are not absorbed and are inert.

#### If you're acne-prone:

- » Light, oil free lotions will not clog pores
- » With chemical sunscreens avobenzone and oxybenzone
- » Non-comedogenic (meaning it won't clog pores) and is fragrance-free

#### If you have oily skin, look for:

- » Mineral oil-free sunscreen
- » Non-comedogenic sunscreen
- » Sunscreens that are oil free are usually water or gel based

#### If you're a swimmer or outdoor sports "person", look for:

- » Water-resistant or waterproof sun protection
- » The highest SPF you can find (No sunscreen is 100 % water and sweat proof )
- » Keep away from your eyes
- » Re-apply after you get out of the water or every 2 hours

#### If you've got dry skin, look for:

- » Try creams or lotions with extra hydrating ingredients like glycerin and aloe.
- » Avoid sprays and gels with alcohol

#### If you want all organic, look for:

- » Products containing herbs, minerals, and plants only
- » Chemical-free

#### Tips for Acne-prone, oily and sensitive skin:

- » If you are using a topical acne treatment? Apply it first, wait 20 minutes or so and then apply your sun protection over the top
- » Remember to wash your face before going to bed to prevent pores from clogging

#### Tips on how to apply sunscreen correctly for the best possible protection from the sun.

- 1. A minimum of 2 mg/cm2 of sunscreen should be applied for it to be really effective. In reality, people typically apply much less and so will receive a much lower level of protection than the labelled SPF A simple way to calculate this amount is the Finger Tip Unit (FTU) method. 1 FTU covers up an area equal to two palms. For face at least 2 FTU are required. It is the amount of sunscreen expressed out ofthe tube on the middle finger beyond the distal crease.
- 2. Apply sunscreen before you put on your swimsuit or clothing. This gives the sunscreen a chance to absorb into your skin, not your clothing. You'll also be less likely to miss spots near the bathing suit lines.
- 3. Apply sunscreen 20 minutes before getting dresses and going outside.
- 4. Re-apply sunscreen every two hours when you are outside. Sunscreens often degrade in the sun "all-day protection" does not exist. Set your cell phone timer to remind.
- 5. Don't forget your Lips, Ears and Eyelids. Use lip balm with SPF 30+ on lips, eye lids.
- 6. Always choose a Broad-spectrum sunscreen to block both UVA & UVB rays.
- 7. Use water resistant sunscreens when swimming or exercising.
- 8. Don't forget the backs of your hands. It's often the first place for age spots.
- 9. Don't forget the tops of your feet. Re-apply sunscreen after dangling them in the pool or standing at the waters' edge to cool off.
- 10. Avoid the hottest time of the day Between 11:00 am and 4:00 pm
- 11. Don't spend more than 30 minutes in the sun on your first day out after "the winter hibernation". You may be sorry.
- 12. Seek shade when you feel your skin getting "HOT", move to an area under an umbrella, tree or awning. Cover-up with sun protective clothing.

#### **Suggested Further Reading**

Cutaneus Photobiology. J.L.M. Hawk, A.R. Young & J. Ferguson GWM, Millington and RAC Graham Brown. (Rook's Text Book of Dermatology, 8th Edition) Edited by DA Burns, SM Breathnach, NH Cox and CEM Griffiths. 2009 Blackwell Publishing



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#### THE AGEING FACE AND ITS REJUVENATION: AN OVERVIEW

**Dr. Ruchira Vasudeva,** Dermatologist, Yiaco Apollo Medical Center



Rejuvenation of the face involves use of various procedures directed towards restoring a youthful appearance. Chronological (time related) facial ageing begins to appear as early as the third decade.

In progressive decades, facial ageing deepens and intensifies in all the three dimensions. The outer dimension of the skin surface loses its moisture and clarity and skin becomes dry and wrinkly with uneven color and texture. The second dimension of change occurs in the anchoring connective tissue, muscles and fat pads beneath the skin. This leads to sagging of the skin and forms "tear troughs" below the eyes (Fig. 1), "jowls" the jaw line (Fig. 2), deepens "smile lines or laugh lines" (Fig. 3) around the mouth, intensifies "Marionette's" lines (Fig. 4) at corners of the mouth, thins and droops the lips and tip of the nose and forms so called "smoker's" lines (Fig. 5 & 6). The muscles of facial expression also give rise to wrinkles around the eyes (Crow's feet; Fig. 7) and on the forehead (frown lines (Fig. 8).

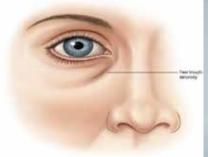


Fig.1: Tear Trough



Fig. 2: Jowls (jawline)



Fig. 3: Smile lines and deep wrinkles around eyes



Fig. 4: "Marionette's" lines

Fig. 5 & 6: Smoker's lines



Fig. 7: Crow's feet

Fig. 8: Forehead lines

The fat pads decrease and get displaced due to weakening of anchoring tissue. The third dimension of changes occurs in the bones and is noticeable especially in the jaws, with the chin loosing its youthful projection, flattening of the mid-face contour and hollowing of the temples. Gravity and sun exposure further modify this chronological ageing. For example excessive sun exposure deepens the wrinkles and damages the anchoring tissue, aggravates the textural changes, causes skin tumors and rarely skin cancer. If an individual sleeps on one side always, gravity can intensify sagging on that side. Thus in an ageing face, the smooth contours of youth are lost to give rise to wrinkles and folds which give the individual a false "tired", "angry' or "sad" look.

Facial rejuvenation is all about minimizing and reversing these changes and needs a comprehensive three dimensional approach. This holistic approach of facial rejuvenation has been termed "3-D" rejuvenation.

- a. The outer dimension of skin surface can be improved in color, moisture and texture with chemical peelings and microdermabrasion (a.k.a. crystal or diamond peel). Peelings remove the old dead surface layers of skin which are replaced by healthy new skin. They also reduce pigment and stimulate the middle connective tissue layer.
- b. Laser resurfacing with fraxel, carbon dioxide, erbium YAG lasers or IPL is also popular for facial rejuvenation. Q-switched laser to remove the dead skin and improve pigmentation and texture. Laser resurfacing has the advantage of more control over the depth and intensity of treatment as compared to manual peels. In fractional resurfacing, healthy skin is left in between the laser treated zones to accelerate healing. Fractional laser resurfacing is a useful modality to improve wrinkles and texture as well as to reduce acne scars. It has lesser down time and fewer complications than total resurfacing.
- c. Botox injections can drastically improve the frown lines and crow's feet. Botox acts on muscles of facial expression. Repeated botox treatments are generally deemed safe. Though Botox alone can effectively treat the wrinkles of the upper face, it is combined with other modalities like fillers to treat the folds of the lower face and neck.
- d. Fillers are gel like substances that are injected to restore the lost volume of the face and fill out the folds and shadows. They have a lifting effect and are also called "liquid facelift". Hyaluronic acid is the safest filler and has almost no incidence of allergic reactions. It can last for a few months to over a year. Fat from one's own body can be extracted and used as filler for the face. It has a more permanent result which tends to wear off slowly over a prolonged period of time (Chapter).

There are various other modalities of rejuvenation which attempt to regenerate the middle connective tissue layer of the skin by heating and shrinking the anchoring tissue and encouraging collagen production. The results are not as dramatic and evolve slowly over a period of time. They are useful tools for tightening the skin when sagging is not profound as in the fifth decade. Various laser (infrared) and nonw-laser (radiofrequency, high intensity focused ultrasound) sources are used for this purpose.

- e. Various vitamins and growth factors required to promote skin health can be injected in high concentration just underneath the skin surface by a technique called mesotherapy. Mesotherapy restores the hydration and glow on a tired face. Its effect tends to fade unless a regular skin care regime is adhered to.
- f. Mesoroller and Dermapen are used to puncture the skin by micro-needles after which active cosmeseutical drugs are applied. During healing of the micro wounds collagen is replenished which is helpful in reducing scars and uneven texture and tone. Though increasingly popular and overall safe, these techniques require further scientific studies.
- g. PRP or Platelet Rich Plasma is a relatively new addition to rejuvenation tools that hopes to stimulate body's own cells to spin the elixir of youth. PRP is derived from the individual's own blood, drawn from a vein and processed in a centrifuge like device. It is then re-injected under the skin to promote collagen production. It contains concentrated growth factors for regenerating the connective tissue as well as improving skin surface irregularities.

Once profound ageing sets in as in the sixties and beyond, sometimes surgical treatments remain the only option to foster desirable improvement.

- h. Surgical face lifts have the advantage of long lasting results but are expensive and have a long downtime. Blepharoplasty, is a relatively simple surgery to lift a saggy eyelid with a good cosmetic outcome. A variety of facial implants can also be placed surgically for facial contouring.
- i. Thread lifts are minor surgical procedures in which, barbed threads are implanted to hold and lift the sagging tissues, most commonly the cheeks and the neck.

Maintaining a youthful appearance is a constant challenge. Facial rejuvenation has come a long way as many safe treatment options are now available with little or no downtime. However, these treatments are complementary to and not a substitute of the skin care regime of cleansing, exfoliating, moisturizing and sun protection.



#### **Chief Agents:**







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# BOTULINUM TOXIN-A: A POWERFUL ANTIAGING WEAPON AND ITS COSMETIC USE

**Dr. Suraj V. Davis**Dermatologist,
Royale Hayat Clinic, Mahboula (Affiliated to Royale Hayat Hospital, Jabriya)

### Introduction:

Since its discovery in 1895, to its introduction as a therapeutic agent in 1977, up to today, botulinum toxin (BTX) has evolved from a poison to a versatile clinical tool with an ever expanding list of uses. The wide range of its uses results from its unique properties, such as its transient duration and reversible effect, easy mode of application, effects that can be localized to the target areas and their degree controlled with varying doses. The visionary of Allergan, an American pharmaceutical company, foresaw the great future of botulinum toxin and named it BOTOX which has become popular around the world. Now Botox injections are the quickest way and the most commonly done safe, non-surgical, cosmetic, anti-aging procedure in the world to ease away the signs of aging on the face.

**Dr. Alan Scott**, an ophthalmologist seeking an alternative treatment or adjunct to surgery for strabismus (squint) conducted the first studies with BTX-A in animals, later in 1977 on human volunteers and the first published reports came out in 1980. In 1985, **Dr. Jean Carruthers**, an ophthalmologist while treating blepharospasm (an abnormal contraction or twitch of the eyelids), observed that forehead & frown lines diminished after injections of BTX-A were given. Shortly afterwards, she and her dermatologist husband, **Dr. Alastair Carruthers** were treating wrinkles of the upper face by injecting BTX-A into the forehead lines and lateral ocular canthi, a muscle around eyes.

In 1989, Pierard and Lapiere from their observation noted that specific facial lines resulted from forces generated by local muscle action. In the same year US Food and Drug Administration (US FDA) fully approved BTX-A for strabismus (squint), blepharospam, and "seventh nerve disorders". As of now the clinical uses of BTX-A have expanded far beyond this list and encompass various disorders in ophthalmology, otolaryngology (ENT), dermatology, neurology and urology. In 1992, Carruthers and Carruthers were the first to report the use of BTX-A for the treatment of forehead lines or wrinkles. Since then numerous studies have been conducted assessing the safety, durability, and outcome of BTX-A in the cosmetic setting and have made this subject a booming field of applied research and increasing interest.

# **Botulinum Toxin (BTX): Mechanism of Action**

Botulinum toxins are produced by the bacterium *Clostridium botulinum*, and exist as eight serotypes. Each type is antigenically distinct and has a different site of action within the neuron. Types A & B are the only one available for clinical use. BTX-A was the first to be developed as a therapeutic agent and seems to be the most powerful. The cellular action of BTX-A results in temporary flaccid paralysis of the injected muscle and thus produces the cosmetic results in the face and neck caused by the over activity of the respective muscle groups.

### Cosmetic use of Botulinum Toxin A:

BTX-A works by temporarily paralyzing the muscles, i.e., reversible paralysis. This effect can be used to treat the hyperactive muscles of facial expression which produces the dynamic wrinkles on the face, i.e., the excessive wrinkles which appears on the face during facial expression. These dynamic lines can

contribute to more aged looks. BTX-A can be used for cosmetic purposes for the following indications:

### A. Face & Neck:

### For upper face:

- a. Forehead lines (Fig.1, Fig.2)
- b. Frown lines (Fig.1, Fig.2)
- c. Lateral eyebrow lift
- d. Crow's feet
- e. Lower eye lid lines

### For Mid face:

- a. Crow's feet
- b. Lower eye lid lines
- c. Bunny lines on the nose
- d. Exaggerated flaring of the nose

### For lower face and neck:

- a. Gummy smile
- b. Lip lines
- c. Jowls
- d. Angle of jaw for masseter muscle hypertrophy
- e. Neck bands & lines

### B. Other cosmetic uses of BTX- A

- a. Excessive sweating of underarms and hands
- b. As an adjuvant in other cosmetic & cosmetic surgery procedures
- c. Used in facial wound repair
- d. Correcting facial asymmetry caused by various causes
- e. Revitalization of the skin by MesoBotox

Discussing the various aspects of the dynamics of the facial muscles and BTX-A interaction of each areas is beyond the scope of this article but some of the pictures included below reveals the clinical indications and the cosmetic results.

Fig.1: Improvement of the forehead and frown lines before and after BTX-A injection. (Courtesy: Techniques in Dermatologic Surgery, Kevyan Nouri & Susana Leal-Khouri)





Fig. 2: Examples severe form of frown lines (Courtesy: Botulinum Toxin A in Aesthetic Medicine, Alessio Redaelli)



Fig.3: Softening of the exaggerated lines around the mouth following BTX-A. (Courtesy: Botulinum Toxin A in Aesthetic Medicine, Alessio Redaell



Fig. 4: Softening of the exaggerated neck bands caused by the muscle action following BTX-A giving a better aesthetic appearance of the neck. (Courtesy: Techniques in Dermatologic Surgery, Kevyan Nouri & Susana Leal-Khouri)

# Excessive Sweating of underarms, hands, soles:

The introduction of BTX-A has completely revolutionized the treatment of axillary and palmoplantar hyperhidrosis. Excessive sweating is called hyperhidrosis and is caused by the over activity of normal sweat glands in these areas due to various reasons. Adult patients who have a substantial impact on their quality of life due to hyperhidrosis can opt for treatment with BTX-A if no contraindications. BTX-A is easy to administer in a short office procedure, with highly effective results, no scars and irrelevant side effects. A pre-injection local anesthesia with an anesthetic cream will make the injections more comfortable in underarm treatment whereas hand and foot hyperhidrosis treatment requires anesthesia using nerve blocks.

# As an adjuvant in other cosmetic and cosmetic surgery procedures:

BTX-A treatment has found to be very effective when used alongside other cosmetic procedures such as laser resurfacing and soft tissue augmentation using fillers for wrinkles. These procedures showed prolonged results of wrinkle improvement when BTX-A injections are given after the above treatments.

The rationale behind this is that, by temporarily paralyzing the underlying causative muscles responsible for the wrinkles, BTX-A will prevent the newly formed collagen bundles from reorganizing into wrinkles produced by facial animation. Also, it has been suggested that, collagen remodeling, the most important event in any resurfacing outcome, could take place in an "adynamic (non-mobile) wound healing environment". Furthermore, continued use of BTX-A treatments following laser resurfacing can add extended longevity to the effects of this procedure.

As far as soft tissue augmentation with fillers (discussed elsewhere) is concerned, BTX-A have a synergistic effect on the results. The paralytic effect of BTX-A will stop the filler material from being extruded from the injection site.

BTX-A helps to oppose residual muscular traction that could jeopardize the cosmetic outcome in lower eyelid blepharoplasty (discussed elsewhere). It helps to reduce the wrinkles over the lower eyelid and also prevent new wrinkle formation after blepharoplasty.

### Correcting facial asymmetry:

BTX-A is useful in correcting the facial asymmetry which is caused by excessive and unbalanced muscular pull of an area in one side of the face versus the other due to causes both non pathologic and pathologic. Paralyzing the hyperactive region with BTX-A can correct and equal out subtle differences and make significant improvements in facial aesthetic appearance eq., unequal eyebrow height, positions of the corners of the mouth and uneven smile, hemifacial spasms etc.

### **Conclusion:**

Botulinum toxin injection is a very safe, versatile antiaging tool, which could produce a remarkably satisfying result in a short office procedure, with minimal downtime. Considering its wide range of applications and its long track record of safety, it's a must do antiaging procedure to those who seek youthfulness, alone or in combination with other resurfacing or augmentation procedures.



# "FILLING UP THE FOUNTAIN OF YOUTH"-----THE INS AND OUTS OF DERMAL FILLERS

**Dr. Sajna Mohammed,** Dermatologist, Boushahri Clinic,Salmiya

The quest for youth is quite unique to our human species and had for eons remained an elusive dream. But not anymore...Welcome to the world of dermal fillers!! Technology and man's search for better and the best has brought us the gift of aesthetic products that are affordable, safe, painless to inject, hypoallergenic (less likely to cause reactions) and long lasting. In addition, new fillers provide consistent and predictable results, feel natural under the skin, take little time to inject, are ready to use, exert no downtime on the patient and have a low risk of complications.

To meet an aging baby boomer populations' expectations and desire for quick and easy lunchtime procedures, the pharma industry has stepped up, making this segment of cosmetic surgery the fastest growing for the past decade..

As the name suggests **Filler** is a thing put in a space or a container to fill it. As we grow older, our skin becomes lax, the bones become resorbed, and due to the effect of gravity and loss of dental support, our skin starts to sag. *Beauty is Harmony, Proportion and Clarity.* So in order to restore the lost volume and proportion, dermal fillers are injected. When injected under the skin, a filler raises or puffs up that area to the point where the wrinkle, depression or fold is erased. Slowly, depending on the type of filler, the body absorbs it and the skin gets back to its normal state.

# **Types of Fillers**

**Naturally Derived** –These are usually obtained from animal sources or by bacterial fermentation. These usually consist of hyaluronic acid (HA) or collagen or autologous fat (fat derived from one's own body) which are a normal component of human skin. Hence there is a very low chance of causing an allergic reaction. Results are immediate but eventually they break down. Once filler starts to dissipate you need to go back to the doctor to get more filler injected to maintain the results.

**Synthetic**-These are made synthetically, last more longer and are considered semi-permanent. The wrinkles start to return only because the face continues to age or due to the damaging effects of sun exposure, smoking etc.

| Temporary:Replacement fillers/Bulking agents:                                   | Semi-permanent: Bio-stimulating or Collagen Stimulating  | Permanent:<br>Synthetic  | Fat   |
|---|--|--|---|
| Hyaluronic acid: Is the most commonly used filler surrently.  Collagen          | Calcium Hydroxy Apatite (Radiesse) Poly L-Lactic acid (Sculptra) Polycaprolactone (Ellanse) Polymethylmethaacrylate (Artefill) | Silicone   | Autologous,<br>derived from<br>own fat            |
| Degradable and dissipate over time  |  | Remain<br>in tissues<br>indefinitely   | 30%-80%<br>absorbed<br>within few<br>months       |
| Require repeated treatments   |  | Difficult<br>to mould<br>and require<br>highly skilled<br>physician                        | Repeated<br>treatments<br>required                |
| Temporary nature allows patients to decide what they like or dislike            |  | Appearance can become distorted because of age related changes due to migration of product | Own fat deposits necessary                        |
| Mechanism of action-<br>Direct tissue filling causing<br>augmentation of volume |  |  |   |
| Side effects are mild and transient   |  | Granulomas,<br>asymmetry,<br>lumpiness<br>and<br>migration                                 | Traumatic, time consuming procedure Long downtime |

### What Dermal fillers are used to fix and what can be achieved

### They can be used to fix a variety of concerns related to facial aging including:

- Adding volume and smoothing out deep creases that run from nose to mouth (laugh lines or nasolabial folds)
- Plumping thin lips or smoothing out vertical lines around lips (smokers' lines)
- · Augmenting cheeks to enhance their shape and restore youthful fullness
- Filling out depressions/hollows under the eyes (Picture)
- Making indented or deep scars from acne or chicken pox more even with the surrounding skin
- Increasing volume to fill out hollows in the temple area or lower cheeks which most often occurs due to fat pads shifting beneath the surface of the skin as a result of weight loss or aging







# Factors affecting results

Age, muscle movement, fat loss, effects of gravity, sun damage, procedures using heat eg. radiofrequency, lasers

#### **Procedure**

At your first visit to the doctor, a detailed medical history will be taken of any illnesses, allergies or medications you are on. If you have recurrent attacks of cold sores, a course of antivirals will be prescribed since such injections can trigger a flare up. Also prophylactic antibiotics have to be taken to prevent infection after the procedure. Ideally aspirin, nonsteroidal anti-inflammatory agents, alcohol,

vitamin E supplements, Gingko biloba should be stopped one week prior to the injections so as to reduce the chances of bleeding and bruising at the injection site.

On the day of your procedure, your skin is first numbed by a local anaesthetic. Then the dermatologist uses a needle to inject the filler under the skin. A treatment session takes about 15 to 30 mins. Some fillers are done in repeat sessions a couple of weeks apart.

After the procedure, expect some pain, redness, swelling and bruising which may last 24 to 36 hrs at times. Ice compresses help in reducing these symptoms.

### Risks or complications due to fillers

### A. Product Related

- Allergic reactions(itching, hives, flu like symptoms)
- Granuloma formation or abscess formation

### B. Injection Related.....

• Needle marks, Bruising, Redness, Swelling, Acne like eruptions

### C. Technique Related.....

- Transient lumpiness,
- Palpable material or visible material through skin surface (due to being injected superficially in the skin),
- · Asymmetry, Under or over correction and
- rarely Blood vessel occlusion(which can lead to immediate blindness)

# What to think about before injections

Each syringe can cost several hundreds of dinars. Cost varies depending on the type of filler and amount used. Ask your doctor how many syringes you will need, your area of primary concern cost of whole treatment and how often you will need before you decide to go ahead with the treatment. Being a cosmetic procedure, health insurance is unlikely to pay for the treatment..

Mark Twain: Age is an issue of mind over matter.....If you don't mind, it doesn't matter...



# FILLING THE LIPS.... SMILES UNLIMITED

### **Dr Anuj Taneja,** Dermatologist, Alsoor Clinic



The use of Injectable fillers for enhancement of the lips is one of the most frequent cosmetic procedures performed. Lip shape and fullness play an important role in the overall attractiveness and beauty of the face.

The corrective needs of the patient can range from subtle enhancement of an already adequate shape and volume to a full correction of the lip thickness and perioral wrinkles.

The choice of filler is very important as it facilitates the success of the injection techniques used. The small particle hyaluronic acid (HA) fillers are most commonly used to fill up the lip area. They provide a natural look and can be easily molded after the injection.

Hyaluronic acid (HA) is a naturally occurring substance in the body. It has a tendency to bind to water which is responsible for the suppleness of skin. The hyaluronic acid used in medicine is made in the lab with the help of specific bacteria. Its structure is then altered with enzymes which gives rise to different types of HA fillers. These synthetic HAs have a longer half-life compared to natural occurring hyaluronic acid. The injectable Hyaluronic acids are generally safe except in rare instances when they may give rise to allergic reactions.

### **Pre Procedure**

Counseling is must before the procedure so that the doctor fully understands the needs and expectations of the patient .All the common queries, the results and side effects are carefully explained to the patient. This helps to alleviate apprehension and set realistic expectations for the patient. An informed consent is taken for the procedure.

### **Procedure**

Topical Anesthetic creams are applied 15 to 60 minutes before the procedure. The area is then cleaned with an antiseptic and the filler injected by the doctor after careful assessment of the lip and the enhancement desired by the patient.

As the procedure is painful additional ice just before injection helps decrease the pain felt. As the lip is highly







Fig. 1: The common points of injection.

vascular, bruising and swelling during the procedure is a common side effect. Some physicians prefer to inject with a cannula to reduce the chances of bruising.



Fig. 2: Pre & Post (HA) Filler Lip augmentation.

# Post procedure

A gentle massage is given post procedure to mold the product to the shape of the lips. An antibiotic cream is applied and continued for 5 days to minimize the chances of infection

An ice pack can be given for 30 minutes to minimize the risk of swelling and bruising.

Swelling and bruising usually resolve 6-10 days after the injection. They are usually managed with non-steroidal anti-inflammatory agents, antibiotics, antihistamines and in some cases oral steroids.

Complications: Intravascular injection is a rare serious side effect of the procedure requiring immediate attention.

Other complications include bumps and lumps on the lips, over correction of the lips. These result from improper injection techniques. If the result are not as expected the filler can be easily dissolved using injection hyaluronidase.

#### **Duration**

All HA filler lasts usually from 3-6 months after which a repeat procedure is desired to maintain the results.

#### **Conclusion**

The enhancement of the lip by injection of HA fillers are increasing in popularity due to the fact that the results are immediate, there is virtually no downtime and the side effects are few or negligible. A good result has a highly positive impact on the patient self-image and self-confidence.

### **CHEMICAL PEELS**

# Dr. Tawkeera Bashir Janwari

Dermatologist, Dr Ghanima's Skin Clinic, Kuwait City.



"There is no beauty....without some strangeness in the proportion".

Edgar Allan Poe

# **Chemical peels:**

Chemical peel is a technique in which a chemical solution is applied to the skin that causes it to exfoliate and eventually peel off. The new, regenerated skin is usually smoother and less wrinkled than the old skin. Chemical peels is an office procedure requiring no admission have gained wide acceptance to improve the appearance of the skin on the face, neck or hands.

# **Indications for chemical peel:**

- 1. Sun-damaged skin:
  - a. fine wrinkling,
  - b. skin thinning,
  - c. sun spots (liver spots or solar lentigines),
  - d. uneven pigmentation, and/or actinic keratoses (very early precursor to skin cancers).
- 2. Acne scars
- 3. Facial rejuvenation

**Types of Chemical Peels:** Chemical peels are classified according to the concentration and type of chemical used and the level of depth of the skin layer at which it is intended to work.

- **A. Light/superfucial chemical peels:** Act upon and removes the outer layer of the skin (epidermis).
- o Alpha hydroxy acids (AHAs) : Fruit acids
- Glycolic acid and Lactic acid (Glycolic acid is the most common peeling agent)
- o Beta hydroxy acids (BHAs).
- Salicylic acid in low concentration

Used to treat fine wrinkles, acne, uneven skin tone and dryness. They are administered as often as once a week for up to six weeks — depending on the desired results. Nowadays it is also common to use fruit enzymes and acids from natural sources such as pumpkins, cranberries and pineapples.

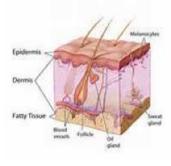




Fig. 2: Pre & Post peel for acne scars.

**B. Medium chemical peel (TCA: Trichloroacetic acid):** removes skin cells from the epidermis and from portions of the upper part of the middle layer of skin (dermis).. Indications are the same as for superficial peels. One might repeat a medium chemical peel after 12 months to maintain results. They penetrate deeper in to the skin and can be used to treat sun damage, pigmentation. Generally recovery takes around a week but your skin can be a little bit pink for up to six weeks afterwards.



Fig. 3: Medium chemical peel.

### C. Deep chemical peel. (carbolic acid (Phenol peels) or high strength TCA)

A deep chemical peel removes skin cells from the epidermis and portions of the mid to lower layer of the dermis. They penetrate the deeper layers, or dermal layers, of the skin. These peels are used for deeper wrinkles, scars or precancerous growths. However this type of peel is painful and can take months to fully recover from. The skin remains very red and feels almost like it is sun burnt after the procedure. Healing takes place in one to three weeks, the redness can still be visible for months after the treatment but the results of the peel are long lasting. The person may feel sick after a Phenol peel and may need to be sedated during the treatment. A lot of peeling occurs and skin may be quite itchy. For some people it can take up to two weeks before they want to go out in public. The most common problem associated with deep peels is patches of white or bleached looking skin, known as hypo- or de-pigmentation, which can be permanent. There is also a risk of scarring.

# Concentration of peels commonly used:

- Glycolic acid (30% 90%):. At different pH levels (levels of acidity) determine how deep it penetrates and how much peeling you get.
- Salicylic acid (10% -30%): is unique amongst the hydroxy acids in that it can penetrate deeper are found in concentration upto 30%.
- Lactic acid (40% to 70%) is least irritating than other AHAs and come in strength of
- TCA or trichloroacetic acid is a stronger acid than glycolic. It penetrates deeper into the skin and is available in concentration from 10% -50%.
- Jessner peel is a popular medium depth peel that is made of resorcinol, salicyclic acid and lactic acid dissolved in ethanol to make a solution.

# When not to use a chemical peel?

- Generally light-haired and fair skinned people are the best candidates for chemical peel.
- The procedure does not work as well on dark-skinned patients.

# Contra-indications (not indicated for):

- Patients having active infections (viral herpes or bacterial infection), active inflammatory skin disease, cut or broken skin, sunburns
- Nursing or pregnant women.
- Those taking isotretinoin (a medicine used to treat acne) in last six months.
- Those having psoriasis, eczema, dermatitis or rosacea.

- Recent surgery/laser
- Poor general health

How you prepare:

### Before you have a chemical peel, your doctor will likely:

- Review your medical history. Tell your doctor about any medications you're taking or have taken recently particularly those that might make your skin sensitive to the sun as well as any cosmetic procedures you've had in the past. Be sure to tell your doctor if you've been using a retinoid cream (tretinoin), which can enhance the penetration of some chemical peels.
- Do a physical exam. Your doctor will inspect your skin and the area to be treated. This will help him or her determine what type of chemical peel you might benefit from most and how your physical features for example, the tone and thickness of your skin might affect your results.
- Discuss your expectations. Talk with your doctor about your motivations and expectations, as well as the potential risks. Make sure you understand how many treatments you might need, how long it will take to heal and what your results might be.

### **Pre-peel measures**

- Take antiviral medication. If there is a history of herpes infections (cold sores; grouped vesicles or erosions around mouth or lips, your doctor will likely prescribe an antiviral medication before and after treatment to help prevent a viral infection.
- Use a retinoid cream. If you're having a light or medium chemical peel, your doctor might recommend using a retinoid cream (tretinoin) beforehand to shorten your treatment time and speed the healing process.
- Use a bleaching agent. Your doctor might recommend using a bleaching agent (hydroquinone) and a retinoid cream (tretinoin) before or after the procedure to prevent skin darkening.
- Avoid unprotected sun exposure. It's important to consistently use sunscreen at least four weeks before the procedure to help prevent irregular pigmentation in treated areas.
- Avoid certain cosmetic treatments and certain types of hair removal. About a week before the peel, stop waxing or using depilatory hair removal products. Also, avoid bleaching, massages or facial scrubs in the week before your peel.

# **Chemical Peels: The procedure**

# Light chemical peel:

- Your doctor will use a brush, cotton ball, gauze or sponge to apply a chemical solution typically containing glycolic acid or salicylic acid. The treated skin will begin to whiten.
- You might feel mild stinging while the chemical solution is on your skin.
- Your doctor will apply a neutralizing solution or wash to remove the chemical solution from the treated skin.

# Medium chemical peel:

· Your doctor will use a cotton-tipped applicator or gauze to apply a chemical solution containing

trichloroacetic acid, sometimes in combination with glycolic acid. The treated skin will begin to whiten.

- After a few minutes, your doctor will apply cool compresses to soothe treated skin. You might also be given a hand-held fan to cool your skin. No neutralizing solution is needed, however.
- You might feel stinging and burning for up to 20 minutes.

# **Deep chemical peel:**

- You'll be given intravenous (IV) fluids, and your heart rate will be closely monitored.
- Your doctor will use a cotton-tipped applicator to apply carbolic acid (phenol) to your skin. Treated skin will begin to turn white or gray.
- To limit your exposure to phenol, your doctor will do the procedure in portions at about 15-minute intervals. A fullfacial procedure might take about 90 minutes.



Fig. 4: Frosting TCA peel. The frosting is the result of the acid acting on and breaking up the protein in the skin.

### After the procedure:

After a chemical peel of any depth, follow your doctor's directions for cleansing, moisturizing and applying protective ointments to your skin.

The treated skin will be red, dry and mildly irritated — although these effects might last from days to few weeks depending upon the depth of peel.

# Complications or potential side effects of a chemical peel?

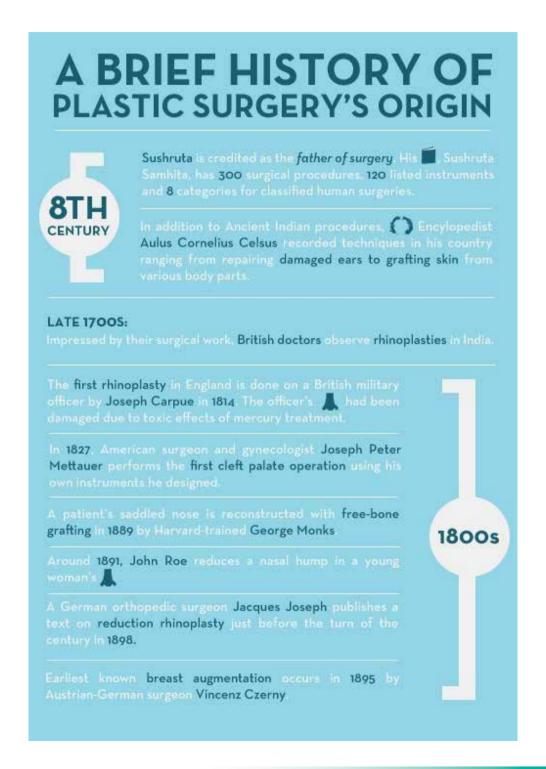
- Temporary or permanent change in skin color, particularly for women on birth control pills, who subsequently become pregnant or have a history of brownish facial discoloration.
- Scarring
- · Reactivation of cold sores

# What can I expect after having a chemical peel?

- Superficial peels require 1-7 days to heal. Treated skin will initially be red and may scale. Lotion or cream should be applied until the skin heals, followed by daily use of sunscreen. Makeup can usually be worn the next day.
- Medium peels require 7 to 14 days to heal. Treated skin will initially be red and swollen. Swelling
  worsens for the first 48 hours. Skin crusts and peels off in seven to 14 days. Skin must be soaked
  daily for a specified period, followed by ointment application. Mild lotion or cream may be applied.
  Avoid all sun exposure until healing is complete. Camouflage makeup may be worn after five to
  seven days. A follow-up appointment will be necessary to monitor progress.
- Deep peels require 14 to 21 days to heal. The treated area will be bandaged. Skin must be soaked four to six times daily, followed by ointment application for the first 14 days. Afterwards a thick moisturizer is applied for the next 14 days. Mild lotion or cream may be applied. Avoid all sun exposure for three to six months. Camouflage makeup may be worn after 14 days. Several follow-up appointments will be necessary to monitor progress.

#### **Conclusion:**

Chemical peels remain popular for the treatment of some skin disorders and for aesthetic improvement. The physician has the responsibility of choosing the correct modality to treat skin conditions such as photo aging skin, scars, dyschromias, and the removal of skin growths. There are many agents available including the three levels of chemical peels reviewed. It is the responsibility of the physician to have thorough knowledge of all of these tools to give each patient the correct treatment his condition warrants.





### **MESOTHERAPY**

# **Dr Vivek Singhal,** Dermatologist, 09 Clinic, Kuwait City



# What is Mesotherapy?

Mesotherapy is a non-invasive technique based on injecting microscopic quantities of natural extracts, homeopathic agents, pharmaceuticals and vitamins directly into the target tissue.

# **History of Mesotherapy?**

Dr Michel Pistor (1924–2003) in France performed clinical research and founded the field of mesotherapy. Multi-national research in intradermal therapy culminated with Pistor's work from 1948 to 1952 in human mesotherapy treatments. The French press coined the term Mesotherapy in 1958.

He liked to summon up this therapy with this phrase "little, rarely and in the right place."

### Where is it useful?

Mesotherapy procedure has been studied for the pain relief of ailments such as tendonitis, tendon calcification, dental procedures, cancer, cervico brachial pain, arthritis, lymphedema, and venous stasis.

Its use for cosmetic conditions hasn't been the subject of gold standard clinical trials; however it can be used for-

- To eliminate cellulite and facilitate body shape
- Promote weight loss by inducing lipolysis
- Treat aging skin and redundant (sagging) skin by promoting collagen synthesis
- Thinning and scalp hair loss by strengthening the hair roots
- Rejuvenate the hands and neck by rehydration and collagen modeling.

### How does it work?

The technique involves the injection of certain sterile active substances, via a very fine needle near the target tissue. Depth of the injection varies with the indication for which it is being used. These injections are painless or have mild tolerable pain.

Mesotherapy usually requires a series of anywhere between 3 to 15 treatment sessions, administered every 1 or 2 week intervals. Every session is 10-30 minutes depending on the extent of area treated.

Side effects and complications?

Side effects and complications?

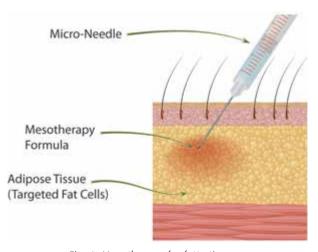


Fig. 1: Mesotherapy for fatty tissue



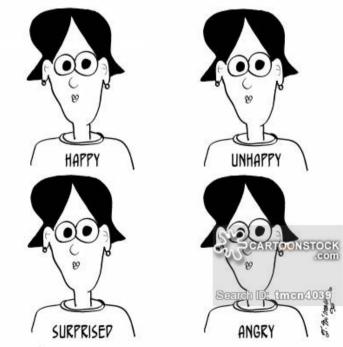
Fig. 2

Because mesotherapy is administered directly to the desired area, it is believed that side effects are limited or reduced. Reported side effects of mesotherapy include:

- Reaction to the product
- Pain, redness, swelling and bruising at injection site
- Nodule and induration
- Rarely abscess and panniculitis at the site
- Scarring and pigmentary changes

# Who Can Provide Mesotherapy?

Mesotherapy should be performed by qualified and trained dermatologists who has ACCME Approved Continuing Medical Education Credits (CME's). A nurse or physician assistant should not administer Mesotherapy.



ALICE'S RANGE OF EXPRESSIONS AFTER HER FACE LIFT.

### **PLATELET RICH PLASMA**

**Dr. Swati Kapadia**Dermatologist,
Yiaco Apollo Medical Center



In the growing era of cosmetic practice with the use of modern technology, non-invasive facial rejuvenation has become a reality.

The use of autologous platelet rich plasma (PRP) in cutaneous rejuvenation is a novel approach to address damaged and aged skin. Autologous PRP has been used in clinical practice since 1990, and has extremely broad range of healing application in oral and maxillofacial surgery, cardiovascular surgery, otolaryngology, burns, wound healing and cosmetic surgery.

# Platelet rich plasma (PRP).

Platelet rich plasma is an autologous (derived from the one's own blood) concentration of platelets in a small volume of plasma. It is prepared from whole blood through the process of gradient density centrifugation .Normal platelet count in blood averages about 2,00,000 platelet/ul, where as effective preparation of PRP yields concentration of 1,00,000 platelets/ul. This concentration of platelets in a 5ml volume of plasma falls in the definition of therapeutic enriched PRP. (Fig. 1)

# Mechanism of action and therapeutic effects of PRP.

Platelets play a central role in the mechanism of hemostasis (the process of stopping bleeding following injury/surgery. In the process of wound healing reaction

which is initiated by formation of a fibrin clot and the degranulation of the alpha granules within platelets to release the complex of growth factors.



These growth factors include: Platelet derived growth factor (PDGF), Transforming growth factor (TGF), Vascular endothelial growth factor (VEGF), Epidermal growth factor (EGF), Insulin like growth factor.

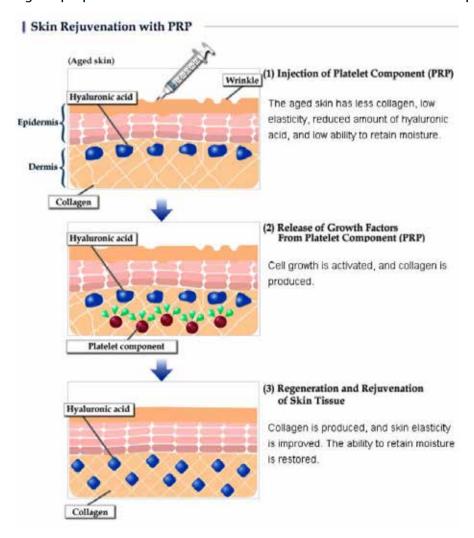
These growth factor stimulate further mitosis (division) of stem cells in the skin and differentiation into keratinocytes, fibroblasts and pre-adipocytes. This ultimately results in neovascularization (formation of new blood vessels) and production of collagen, elastin and new extracellular matrix.

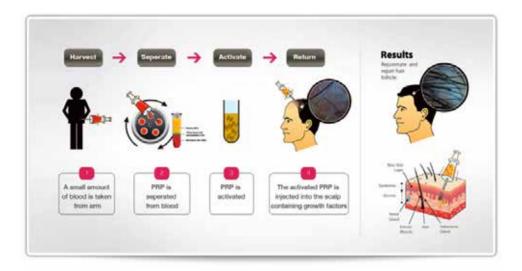
An additional source of growth factors is the leucocytes, a high concentration of which is obtained during PRP preparation process. The presence of leucocytes imparts an added antimicrobial effect to PRP.

#### **Aesthetic Indications of PRP**

- Reduction of fine lines and wrinkles on face and neck.
- Improvement of skin elasticity on face, neck, décolleté and hands.
- Treatment of post acne atrophic scars
- Treatment of infra orbital dark circles and hollows.
- Treatment of upper eyelids.
- Skin rejuvenation in aging skin.
- Treatment of severe hair loss.
- Post hair transplantation to maintain the hair growth.

As PRP is an autologous preparation it is free from transmissible diseases from other persons.





# Frequency of treatment

# In older patients

Once in every four to six weeks until results are achieved and there after annually or every six months.

### In young patients

Once a year for prevention of aging.

### Contraindications of PRP.

- Clotting abnormalities
- Treatment with anticoagulant drugs
- Infection in the area of treatment
- Febrile illness
- •Chronic liver disease.

#### **Conclusion**

PRP provides an ideal safe effective and powerful means of delaying as well as reversing cutaneous aging. The significant increase in skin thickness and elasticity as well as the moderate volumetric effect obtained by PRP provides a safe natural and long term solution of skin rejuvenation.





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### ACNE SCARS TREATMENT: FIGHTING THE AFTERMATH

### Dr Anindita Medhi Saikia

Dermatologist, Shifa Al Jazeera Medical Centre, Fahaheel



"Wear your scars with pride" - so we are told!!! But do we really have to?

### What are acne scar?

Acne scars are usually the result of inflamed blemishes caused by skin pores engorged with excess oil, dead skin cells and bacteria. The pore swells, causing a break in the follicle wall. Shallow lesions are usually minor and heal quickly. But if there is a deep break in the wall of the pore, infected material can spill out into surrounding tissue, creating deeper lesions. The skin attempts to repair these lesions by forming new collagen fibers. These repairs usually aren't as smooth and flawless as the original skin.

### Types of acne scars:

**Hypertrophic scars:** These scars are caused when the body produces too much collagen as acne wounds heal, resulting in a mass of raised tissue on the skin's surface.

**Atrophic or depressed scars:** These scars develop when there is a loss of tissue resulting in depressed area of skin compared to surrounding skin. Three common types are

- a. Superficial atrophic: Slightly depressed areas of skin following healing of acne
- b. «Boxcar» scars are depressed areas, usually round or oval in shape with steeply angled sides.
- c. «Ice-pick» scars are usually small, yet obvious holes in the skin.



# Why treat acne scarring?

Severe acne and its resultant scarring can have a tremendous negative impact on the physical, emotional and social wellbeing of the affected teen or the young adult. The person may withdraw from sports and other social and physical activities, functions and gatherings, resulting in decline in self-esteem, academic, and professional performance. Needless to say that interpersonal relations could also be affected.

### The main reasons for treating acne scars include:

Improved appearance

**Enhanced self-esteem** 

Promotion of better skin healt

# Treatment options available for treating acne scars:

Chemical peels

Dermabrasion

Microdermabrasion

Skin needling (Dermaroller and dermapen)

PRP (Platelet rich plasma) therapy

Laser resurfacing

Laser/light therapy

Subcision

Soft tissue fillers

Excision and punch replacement grafts

Cryotherapy, intralesional therapy for hypertrophic scars

# Avoiding and reducing the chances of acne scarring

- o The timeless adage "prevention is better than cure" holds true for acne scars.
- o Prompt aggressive treatment of acne especially those with positive family history of tendency for scarring is essential. This reduces the intensity and duration of inflammation. (A variety of combination of oral and topical anti acne treatments are currently available which if started early under care of a qualified dermatologist can reduce the chances of scarring significantly). Allowing acne bumps to heal and subside by itself under appropriate treatment reduces the chances of scarring,
- o An acne lesion should never be squeezed out (a very common practice) as it increases the risk of scarring. Do not remove acne forcibly physically.
- o Do not self-medicate. Avoid home or friend or media suggested remedies, some can do more harm than any good.
- o Certain medications like topical retinoid creams prevent and help fill up depressed atrophic scars while topical silicone gels prevent hypertrophic scarring.

# Which treatment will work the best?

Many acne scars are different even in the same patient and different types of scars will respond to different treatments.

» Macular (flat) scars: respond well to chemical peels.

### » Ice-pick and rolling scars will need

o sequential peels and

o home-care treatment with topical retinoids and alpha hydroxy acids.

- » Box-car scars: responds best to laser treatment.
- » Combination of treatment works best in some scars.

No two patients need exactly the same range of techniques. The level of improvement will vary from patient to patient. For example, ice pick scars in a patient with hyperkeratotic (thick) skin are mildly improved even if the skin texture is remodeled.

The key to treatment is patience.

# Can these treatment be taken by anyone?

Before taking treatment certain parameters like age of the patient, gender, skin type, occupation, medication history, medical conditions, pregnancy status, pre-existing skin conditions have to be assessed.

- Certain peels cannot be used in dark skin types because of risk of hyperpigmentation.
- Certain treatments are contraindicated in pregnancy.
- Laser treatments are risky in patients of rosacea and those who are on photosensitizing drugs.

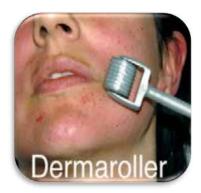
Chemical peels, laser resurfacing, PRP, mesotherapy and fillers are covered in other articles. Rest of the special techniques employed to treat remove acne scars are as follows

### 1. SUBCISION

It is a minor surgical procedure performed by using a special hypodermic needle inserted through a puncture in the skin surface. The sharp edges of the needle are used to break fibrotic strands that are tethering the scar to the underlying tissue. The release of the fibrotic strands and new collagen deposition caused by wound healing leads to improvement of the scar.

#### 2. DERMAROLLER:

Dermarollers are small hand held devices that has a wheel with small microneedles scattered over it. The sharp fine needles need to be rolled all over the scars where they break down and stimulate the production of collagen and elastin by improving the blood supply.

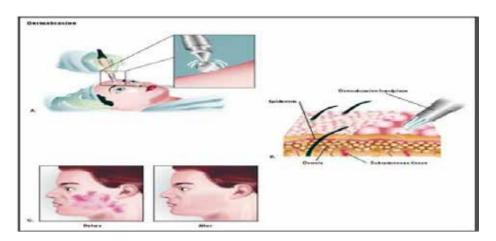






### **3. DERMABRASION** (superficially abrading the upper layers of the skin)

It is an exfoliating technique that uses a rotating instrument (dermabrader) to remove the outer layers of the skin. Adequate training under supervision, experience and skill gained by the treating doctor are very important.



Before the treatment, the medical history will be reviewed and intake of any medications will be discussed including over-the-counter medicine and nutritional supplements and isotretinoin as they may increase the bleeding risk or adversely darken the skin.

The following may also be recommend before dermabrasion:

- o Antiviral medication: use before and after dermabrasion treatment to prevent flare up of past viral infections (esp. Herpes Simplex Virus infection; cold sores/shingles)
- o Oral antibiotics: will prevent a bacterial infection, which is especially important if there is acne

# What happens during dermabrasion?

The type of anesthesia during dermabrasion depends on the extent of the treatment. Local anesthesia is usually used. However, certain cases may require sedation to help the patient relax. During the treatment, an assistant will hold the skin taut and the doctor will move a device called a dermabrader across the skin. The dermabrader is a small, motorized device with a rough surface. On large patches of skin, a circular dermabrader will be used, while on smaller places, such as the corners of your mouth, one with a small tip will be used. Right after the procedure, the treated area is covered with a moist dressing. The dressing is usually changed the following day.

# What happens after dermabrasion?

Complete home care instructions about how to change the dressings, how to cover the treated area, and which products to use will be given. Regular and proper use of sunscreens will be required. The patient can usually return to work in about two weeks.

Following dermabrasion, the skin is red and swollen and there may be a burning sensation. The skin may ooze a clear or yellow liquid or crust over while healing. It will take about three months for the skin to fully heal.

# Complications associated with dermabrasion

Risks associated with dermabrasion are the same as those associated with other surgical procedures.

They include bleeding, infection, and allergic reaction to anesthesia.

Risks specific to dermabrasion include:

- o acne breakouts
- o changes in skin tone
- o enlarged pores, usually temporary
- o redness
- o rash
- o swelling

Though rare, some people develop excessive scarring, or keloids, after dermabrasion treatment. In these cases, some steroid medications can help soften the scars.

The most important thing is to be gentle with the skin. Avoid using harsh cleansers or skincare products, and avoid scrubbing or picking at your skin.

#### 4. PUNCH GRAFTING:

In punch grafting, a small cylindrical cutting instrument is used to punch a hole in the skin, remove the scar and replace it with a plug of new skin.

» Punch therapy is often recommended for deep ice-pick scars.

The skin plugs inserted into the treatment area usually are removed from behind the ear lobe. The plugs are taped into place for about a week to promote healing. While the procedure produces new scarring, the new scar will be smoother and less conspicuous than the old depressed scar. In some cases, color and texture difference may be noticeable, but a skin resurfacing technique can be performed four to six weeks after the grafting to correct this difference.

Are these procedures painful?

» With proper application of topical anaesthetics they are well tolerated.

Will these procedures harm my skin in the long run?

» In fact it's the other way round. They will rejuvenate the skin.

Is there any downside to these treatments?

» Proper patient evaluation by a dermatologist and procedures done under medical supervision are extremely essential. In proper hands these procedures are safe and effective. Beware of treatment in spas/saloons by non-medicos!!

# Are any post procedure care required?

» After care is very important. Use of proper non irritating face wash, moisturizers and regular use of sunscreens are mandatory.

At the hands of dermatologists the risks can be minimized to get the desired results. So if you have acne scars don't grin and bear them!! Get medical help.



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# **Stretch Marks: Causes and Treatment**

# **Dr. Lata Rijhwani,** Dermatologist, Farwaniya Hospital,



### What are stretch marks?

Stretch marks are linear, thinned bands of skin commonly found on the abdomen, breasts, buttocks, hips and thighs. They begin as flat red lines, and over time they appear as slightly depressed white streaks. The medical name of stretch marks is striae.

Stretch marks are particularly common in pregnant women and about 90 % of women will get them, especially during the last trimester.

Stretch marks aren't painful or harmful and do not cause any significant medical problem but can be of cosmetic concern for some people.



# When to see a Doctor?

It is not necessary to seek medical care for stretch marks when they occur around puberty or pregnancy, but if you are concerned about the appearance of the skin or if the stretch marks cover large areas of your body then you can consult your doctor who can help determine the cause of the stretch marks and discuss the treatment options.

### What causes stretch marks?

Stretch marks happen when your body grows faster than your skin can keep up with. This causes damage to the elastic fibres of the dermis (the deeper layer of the skin) accompanied by inflammation, resulting in stretch marks.



Fig. 1: Striae gravidarum (stretch marks of pregnancy)

Fig. 2: Striae distensae skin distention from muscle/height/weight gain

Stretch marks may also occur as a result of an abnormal collagen formation, or a result of medicines or chemicals that interfere with collagen formation.

# **Types of stretch marks**

- **1. Striae gravidarum (stretch marks due to pregnancy):** commonly seen over abdomen, and thighs, during the third trimester of pregnancy
- **2. Striae distensae (stretch marks from skin distention):** Sudden spurt of growth of body causes the overlying skin to stretch during puberty or following quick gain in muscle bulk after intense weight training (commonly seen over shoulders and upper arms) and after abnormal gain in weight (striae are seen on abdomen, breasts, thighs etc.)
- **3. latrogenic/drug induced striae:** The most common cause is the prolonged (> 4 weeks) and inappropriate application (without prescription and without supervision of a doctor) of potent topical steroids especially over groins, axillae and face.

This kind of steroid misuse and abuse is very common in many countries where people self-medicate themselves with topical steroids for indications and sites where they should not be used. Patients who receive oral steroids for long duration can also develop stretch marks.

**4. Striae seen in systemic diseases:** Patients with an underlying systemic disease or a syndrome, such as Cushing's syndrome or Marfan syndrome have striae on their bodies.

### What are the signs and symptoms of stretch marks?

Striae are rarely painful or itchy and do not produce any troublesome symptoms.

### What is the treatment of Stretch marks?

Intensive moisturization of the affected skin and massage may help to improve the appearance of stretch marks. Moisturizing the skin may help to relieve the itchiness of stretchmarks and massaging the skin in a circular motion with oils on the finger to reduce friction is helpful in stretching the skin collagen and elastin and making it more pliable and more normal looking.

Local applications like creams or gels containing onion extract with hyaluronic acid have been found to help in preventing and fading the stretch marks, as are applications containing vitamin C & fruit acids.

Use of cocoa butter, emu oil, vitamin E & other oils and have been advocated but the idea that you can prevent or treat stretch marks by rubbing creams, oils or lotions on your skin is not supported by strong evidence.

If you are pregnant, check with your doctor before using alternative products that claim to treat or prevent stretch marks.

Stretch marks often fade with time and various treatments may improve their appearance. However, no treatment can make stretch marks disappear completely.



» Recent onset red immature stretch marks are more amenable to treatment than those that have matured to a silvery white as the reddish stretch marks are still healing, and the healing can be modified by intervention.

#### Treatments to remove or improve the appearance and texture of stretch marks:

**A. Topical Preparations** (Tretinoin creams): Derived from vitamin A, retinoids such as tretinoin works by restoring collagen, a fibrous protein that helps give your skin elasticity.

It is best to use this cream on recent stretch marks that are red or pink. This cream may cause irritation. It is contraindicated during pregnancy and should never be used in pregnancy because the possible side effects may affect the baby.

**B. Laser and light therapy** A variety of light and laser treatments are available to stimulate the growth of collagen & elastin and shrinkage of dilated blood vessels in treatment of stretch marks. Improvement is accomplished by heating/wounding the affected skin and hoping that the newly formed skin will have a normal, cosmetically acceptable appearance.

Pulse dye laser (PDL) treatment improves the appearance of early stage while the stretch marks are still red or pink.

Other laser and light devices like long pulsed ND:YAG laser, fractional photothermolysis by ablative and non ablative fractional lasers, intense pulsed light (IPL) devices and radiofrequency devices have been used to improve the appearance of stretch marks.

Excimer laser emitting ultraviolet B (UVB) radiation stimulates skin colour (melanin) and improve the

appearance of older whitish striae to match the surrounding skin more closely.

**C. Microdermabration:** involves a hand held device with a spray head to bombard the skin with salt crystals, baking soda or aluminium particles to literally sand the skin, a process medical known as exfoliation. Microdermabration gently removes a fine layer of skin, promoting the growth of new, more elastic skin improving appearance of older stretch marks.



- **D. Chemical peels:** Chemical skin peeling using low concentration of Trichloroacetic acid (TCA) 15-20% may help improve the skin texture, firmness and colour in older stretch marks.
- E. Camouflage: Cosmetic camouflage (cover make up) available over the counter at pharmacies



can be used to cover and hide the visible areas of skin affected by stretch marks. Some cosmetic camouflage are also waterproof and can last for few days even if washed.

**F. Cosmetic surgery:** Abdominoplasty (tummy tuck) is a type of cosmetic surgery where large amount of loose skin with excess fat is removed from the abdomen, which may also helps to get rid of stretch marks below the belly button.

#### Can stretch marks be prevented?

Prevention of stretch marks is challenging. People with better skin elasticity and less rigid collagen are less likely to develop stretch marks, but it is not possible to modify these skin characteristics at present.

Stretch marks during pregnancy are usually caused by hormonal changes that affect the skin. Gaining pregnancy weight steadily may help minimize the effect of stretch marks. During pregnancy, it is normal to gain weight over a relatively short period of time. However, it is a myth that you need to "eat for two", even if you are expecting twins or triplets.

Avoiding rapid weight gain or weight loss ("yo-yo dieting") can help prevent stretch marks. If you need to loose weight, you should do it slowly by eating a healthy, balanced diet and excersizing regularly.



**Conclusion:** Stretch marks though inevitable in certain circumstances can be prevented or their appearance be improved by institution of early treatment under supervision of a qualified physician.



#### **CRYOLIPOLYSIS: A NEW TOOL TO FIGHT FAT**

#### **Dr Ruchira Vasudeva, MD** Dermatologist, Yiaco Apollo Medical Center



You must have noticed red cheeks of small kids after they have enjoyed sucking their popsicle. This happens because the fat in their cheeks gets inflamed from the cold popsicle. This observation, that fat is more sensitive to cold temperatures than water based tissues led to the development of cryolipolysis (cryo: cold, lipo: fat, lysis: breakdown).

Cryolipolysis took its clinical roots in 2008 and earned FDA approval in 2010. It is deemed as the non surgical option for lipolysis. It is recommended for reduction of localized fat deposits which are resistant to diet and exercise; commonly the lower abdomen, outer and inner thighs, flanks, upper arms and back.

The procedure of cryolipolysis is very comfortable and safe. A suction cup is applied to the selected area for about 30 - 60 minutes to cool it to the desired temperature which is lower than the body temperature and always above freezing point to protect the water based tissues. The patient feels slight tingling sensation when the cooling begins but as the cooling progresses is comfortable enough to watch television, read a book or even take a nap.

At the end of the procedure, the treated area is red, numb and a little swollen. Swelling and redness are transitory and fade in a few hours. Numbness can persist longer and sometimes some bruising may occur, both of which resolve spontaneously over a few days.



Fig. 1: Cryolipolysis set up

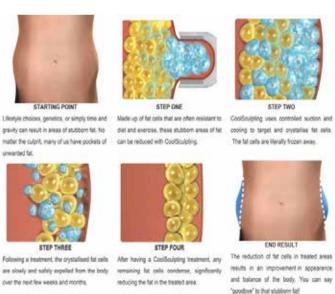


Fig. 2: How Cryolipolysis works

Cooling of the tissue selectively injures the fat as it is more sensitive to cold than water. Thus fat cells are damaged or destroyed. These dead or non functional cells are then removed from the body by specialized cells over a period of few days. To extrapolate this clinically, after the initial redness and swelling subsides, the patient notices a gradual reduction in the fat layer over a few weeks. As much as



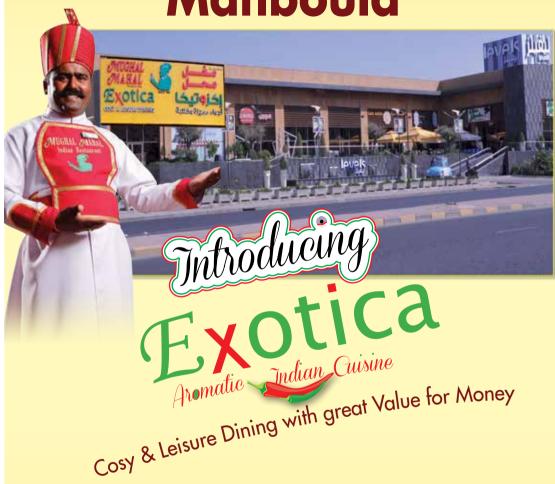
25% fat can be destroyed after a single session. This fat is permanently gone unless the person regains an enormous amount of weight.

Various other non invasive methods to remove fat like cavitation, ultrasound, infrared lasers and radiofrequency are available. All of them have their advantages and limitations. Overall they are more labor intensive and require more sessions. Cryolipolysis is a relatively new technology and so far has grown in popularity due to its user friendly nature and satisfactory results.

Though cryolipolysis works well on localized fat deposits, it is not a tool for weight reduction, cellulite reduction or tightening as it is specific to the fat tissue. It can be used safely for almost everybody provided they have the right indication for treatment.



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#### **KELOIDS AND HYPERTROPHIC SCARS**

**Dr. Yashpal Manchanda,** Dermatologist, Farwaniya Hospital



Keloids and hypertrophic scars are recognized as abnormal responses to injury. These two entities are however, both morphologically and histopathologically distinct. Keloids are considered a benign tumor, but they are mainly a cosmetic nuisance and never become malignant.

**Keloids** are raised, reddish nodules that develop at the site of an injury. Keloids may form on any part of the body, although the upper chest, shoulders and upper back are especially prone to keloid formation. These areas are also subject to elevated levels of muscle and skin tension, which may explain their

association with keloids. It is estimated that keloids occur in about 10% of people. While most people never form keloids, others develop them after minor injuries, even insect bites or pimples. Darkly pigmented people seem to be more prone to forming keloids. Men and women are equally affected.

After a wound has occurred to the skin both skin cells and connective tissue cells (fibroblasts) begin multiplying to repair the damage. A scar is made up of 'connective tissue', gristle-like fibers deposited in the skin by the fibroblasts to hold the wound closed. With keloids, the fibroblasts continue to multiply even after the wound is filled in. Thus keloids grow beyond the



boundaries of the original site of skin injury. Whereas, in normal scars the collagen bundles are arranged parallel to the skin surface. Keloids are very often symptomatic, and the symptoms include pigmentation of the skin, itching, unusual sensations and pain.. Fibroblasts and myofibroblasts are responsible for the deposition of dense extracellular matrix consisting of collagen and glycosaminoglycans.

A hypertrophic scar looks similar to a keloid. The hypertrophic scar is defined as a widened or unsightly scar that does not extend beyond the original boundaries of the wound. They don't get as big as keloids, and may even fade with time. They occur in all racial groups, and do not have familial preponderance. Scanning electron microscopy of the hypertrophic scar reveals flattened collagen bundles that are parallel in orientation. Similar to keloids, a higher percentage of type III collagen is present in these scars than in normal wounds.

#### **Treatment**

Regardless of the treatment given, keloids have a high recurrence rate of more than 50%. Hence, keloids should be prevented by using a pressure dressing, silicone gel pad or paper tape over the injury site. These are left on for 23 of 24 hours each day. This treatment is after healing of the wound or injury, usually within a month. Once they have formed, there is no completely satisfactory treatment for keloids.

The treatment of keloids and hypertrophic scars can be subdivided into surgical, nonsurgical, and combined modality treatment. Operating on a keloid usually stimulates more scar tissue to form, so

people with keloids often are told that there is nothing that can be done to get rid of them.

The best initial treatment is to inject long-acting steroid into the keloid once a month. After several injections with cortisone, the keloid usually becomes less noticeable and flattens in three to six month's time. Hypertrophic scars often respond completely, but keloids and are notoriously difficult to treat, with recurrences commonly seen. People who have a family history of keloids have a higher rate of recurrence after treatment.

#### A) Surgical Modalities

1. Excision: For severe cases, the keloid can be surgically excised and x-ray treatments given to the site immediately afterwards, usually on the same day. Electron beam radiation can be used, which will not go deep enough to affect internal organs. Orthovoltage radiation is more penetrating and slightly more effective. Keloids treated with simple excision have a recurrence rate ranging from 50-80%. The use of Z-plasties or any wound-lengthening technique for excising keloids is strongly discouraged. Complete excision and near-total excision (ie, leaving behind a small remnant of keloid on the peripheral portions of the incision) have both been advocated. The theoretical benefit of the latter is that previously uninjured tissue is not traumatized, decreasing the chances of recurrence; however, whether the residual keloid remnant contributes to further keloid development remains unclear. Wide undermining should be used to make closure of these wounds tension-free. Provided that adjacent tissue is manipulated, wide undermining may or may not increase the risk of keloid recurrence.

The use of cuticular, monofilament, synthetic permanent sutures is advised to decrease tissue reaction. Tissue adhesives may provide a less reactive skin closure, which may decrease the likelihood of keloid formation. Whenever feasible, apply pressure dressings and garments during the immediate postoperative period to wounds.

**2. Cryosurgery:** is an excellent treatment for keloids that are small and occur on lightly pigmented skin. It is often combined with monthly cortisone injections. Treatment may need to be repeated every 20-30 days. Cryotherapy can cause pain and permanent depigmentation in selected patients. Newer methods of application of liquid nitrogen include the insertion of a lumbar puncture needle through the long axis of the keloid, from one side to the other, passing the liquid nitrogen with an intravenous drip set for 2 freeze-thaw cycles of 20-30 seconds each for 5-10 sessions.

#### 3. Lasers

a. Ablative lasers: Carbon dioxide, argon laser, and Nd:YAG laser (1064 nm)

Ablation of keloids and hypertrophic scars using a carbon dioxide laser (10,600 nm) can cut and cauterize the lesion, creating a dry surgical environment with relatively minimal tissue trauma. Has very high recurrence rates when used as a single modality, but when combined with postoperative injected steroids, the recurrence is less common. As with carbon dioxide laser, the argon 488-nm laser can induce collagen shrinkage via generation of excessive localized heat, also Er:YAG laser has been used.



b. Nonablative lasers: Pulsed-dye laser (585 nm): The 585-nm PDL provides photothermolysis, resulting in microvascular thrombosis. The scars became less erythematous, more pliable, and less hypertrophic after treatment with the 585-nm PDL. Because of its efficacy, safety, and relatively low cost, the PDL remains the laser treatment of choice for hypertrophic scars.

#### B) Nonsurgical treatment of keloids

The application of mechanical pressure by compression devices is advocated in the treatment of keloids. Pressure may theoretically break up collagen bundles and soften the keloid mass; however, therapy must be instituted for long periods (>23 h/d for 6 mo) before significant effect can be achieved. Unfortunately, many regions of the head and neck are not amenable to pressure application.

#### Other treatments that has been tried for keloids and hypertrophic scars

Intralesional interferon (IFN); 5-FU; doxorubicin; bleomycin; verapamil; retinoic acid; imiquimod 5% cream; tacrolimus; tamoxifen; botulinum toxin; etanercept; mannose-6-phosphate inhibitors (M6P); onion extract; the combination of hydrocortisone, silicon, and vitamin E have been used with varying degrees of success.

- o Interferon (IFN) therapy is used because of its ability to reduce collagen synthesis in dermal fibroblasts. IFN injected into the suture line of keloid excision sites may be prophylactic for reducing recurrences.
- o 5-FU is effective in the treatment of hypertrophic scars and is somewhat effective in small keloids. Also, 5-FU in combination with other therapies significantly increases the efficacy over single modalities.
- o Doxorubicin (Adriamycin) is a commonly used chemotherapeutic agent has been shown to inhibit collagen alpha-chain assembly. Another mechanism of doxorubicin-induced inhibition of collagen synthesis includes the inhibition of the enzyme prolidase, which is key in the process of collagen resynthesis
- o Bleomycin injections cause necrosis of keratinocytes with a mixed inflammatory infiltrate. Several studies have demonstrated that bleomycin can be used effectively to treat keloids and hypertrophic scars. The combination of bleomycin and intralesional steroids such as triamcinolone has repeatedly shown good results.
- o Verapamil is a calcium channel blocker that blocks the synthesis and secretion of extracellular matrix molecules (eg, collagen, GAGs, fibronectin) and increases fibrinase. Even though the standard first-line treatment is still triamcinolone, verapamil is almost equally effective, with very few adverse effects, and offers a therapeutic option to treat larger and recalcitrant scars.
- o Retinoic acid Retinoids can be used also as a preventive treatment.
- o Botulinum toxin A (BTA) is a neurotoxin that causes a flaccid paralysis of the local musculature and reduces skin tension. This reduction in the skin tensile force during the course of wound healing represents a novel therapeutic target for treating keloids.
- o Hydrogel scaffold is approved for used in Europe for improvement of wound healing and scarring and is available as an injectable porcine gelatin-dextran hydrogel scaffold. It has been approved for injection of incisional sites immediately prior to closure. It is thought to function as a lattice for

fibroblast adherence, leading to more regulated and organized distribution, with improved wound healing outcome.

#### C) Combined modality treatment of keloids

- i. One of the most commonly used combination therapies employs cold-knife excision followed by postoperative injection of intralesional steroid. The injection into the lesion typically occurs 2-3 weeks postoperatively, followed by repeat injection in 3-4 weeks. The mechanism of action of corticosteroids is inhibition of fibroblast growth and promotion of collagen degradation.
- ii. A combination of surgical excision and external beam radiotherapy is implemented in certain centers. Radiation therapy adversely affects fibroblast growth and collagen production. The disadvantages of treating a benign process with radiation include the potential of inducing thyroid or salivary gland neoplasia, which has a latency period of 15-20 years. Shielding techniques are used to safeguard against such occurrences but should not be considered foolproof. In areas where the surrounding normal structures can be adequately shielded (eg, the earlobes), radiation therapy is a reasonable and viable option.

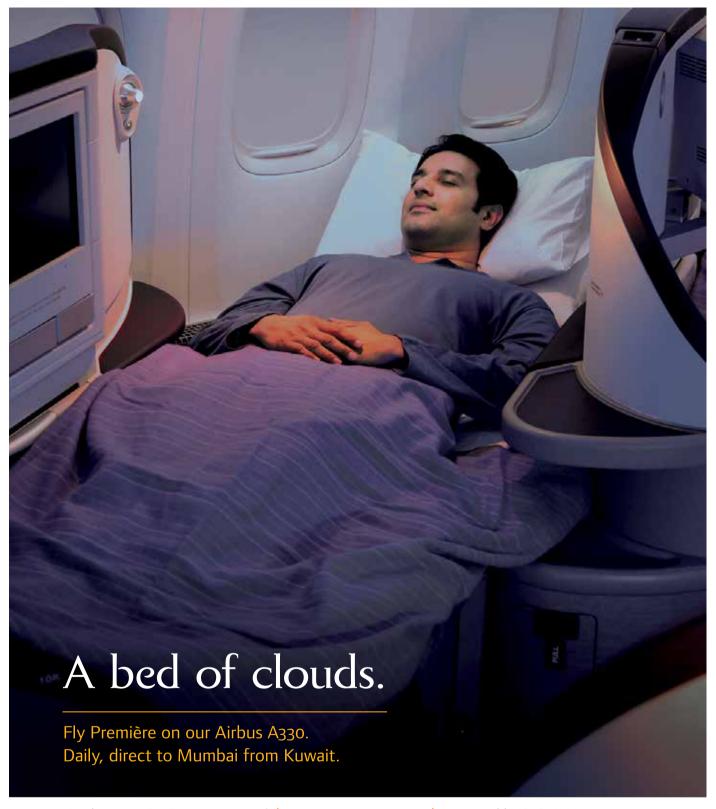
#### **Summary**

The high recurrence rate of keloids has initiated a wide variety of different treatment approaches. Thus far, convincing evidence does not exist to recommend any therapy over surgical excision followed by sequential intralesional steroid injections; Radiation therapy is reserved for keloids recalcitrant to conventional therapy.

The favored treatment regimen for hypertrophic scars is surgical excision. The response is generally more favorable than that with keloids, as long as the initial negative influences on healing are not reproduced. The use of intralesional steroid injections in hypertrophic scarring remains questionable. The risks and benefits must be weighed and clearly explained to the patient.



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#### **Skin Tightening Devices**

Dr. Swati Kapadia

Dermatologist, Yiaco Apollo Medical Center, Salmiya



The increasing demand for facial aesthetic enhancement without downtime has fueled technologic advances that have made non-invasive facial rejuvenation a reality. The newest modalities of technology is directed towards achieving improvements in 3 general categories.

- 1. Skin texture and pigmentation
- 2. Wrinkle removal
- 3. Skin tightening

Skin tightening and rejuvenation includes mainly

- (A) Ablative Skin Rejuvenation
- CO2, Erbium YAG device
- YSGL device (Pearl)
- (B) Semi Ablative Rejuvenation
- Fractional CO2
- Fractional Frbium
- (C) Non Ablative
- Infrared device (Titan)
- Radiofrequency
- HIFU (High Intensity Focused Ultrasound)

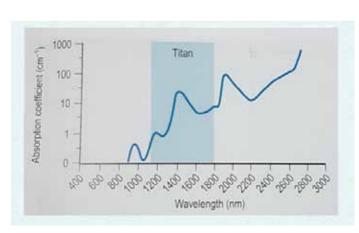
#### **Requirement for Skin Tightening Device**

The approval of Radiofrequency (RF) device for skin tightening by FDA in 2004, non-ablative devices have gained more focus in the present era. The main requirements of a skin tightening device are:

- Sustained volumetric heating
- Heat at the appropriate depth
- Uniform heating to obtain the maximum contraction
- Cooling system to protect the epidermis
  - (A) Infrared Light Device (TITAN)

Wavelength range of device – 1,100 nm -1,800 nm

Target chromophore – water



#### **Mechanism of Action**

- Light emitted from lamp enters the tissue at a depth of 1-2 nm, heating the dermis.
- There is an immediate collagen contraction through sustained volumetric heating leading to denaturation of collagen fibres and ultimately tightening.
- There is a strong water absorption peak in the 1,400 nm 1,500 nm and this wavelength is filtered from the device to further optimize the treatment.
- Localized erythema is a common immediate reaction and resolves with 24-48 hours.

Number of treatments – Average 2 to 4 treatments are required at an interval of 4 weeks.

#### (B) Radiofrequency device (RF)

RF technology targets more selectively to the dermis resulting in skin tightening without epidermal damage.

#### Mechanism of Action

- It uses a high frequency current producing a pure thermal effect on the biological tissue and resulting in ablation, coagulation and heating leading to skin tightening.

It all maysound very destructive but is actually happening microscopically inducing nature's response to cause healing by reremodelling of dermal tissue RF device mainly comprise of three types:

- 1. Monopolar
- 2. Bipolar
- 3. Tripolar

#### 1. Monopolar System

It comprises of

- One active electrode
- Other large ground electrode on body far away from active electrode.

Advantages – deep penetration of heat

- high power density

Disadvantages – painful

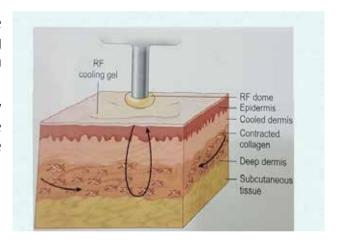
- safety is unpredictable

Eg: Thermage

Visage

#### 2. Bipolar System

It comprises of



- two identical electrodes
- small distance effect

Advantage – controlled distribution of RF current inside the tissue

Disadvantages - lower penetration of heat

- more superficial effect

Eg: Intracel

In aesthetic medicine, bipolar system is usually combine with infrared diode laser and radiofrequency

Eg: Polaris – Infrared diode laser + RF

Accent XL – Unipolar + Bipolar Mode

Refirme ST – Bipolar RF + Infrared diode laser

#### 3. Tripolar System

- 3 electrodes
- Better energy distribution
- Painless

Eg: Regen

With the further progress in technology, the Bipolar RF based aesthetic device is now capable of delivering ablative tunable RF energy to the skin in a non-homogenous fractional manner via array of multi-electrode pins

Eg: Matrix RF

#### Side effects of RF device

Transient erythema, mild edema lasting for one or two days.

#### 4. HIFU (High Intensity Focused Ultrasound)

It is one of the newest, most effective non-invasive technology for skin tightening and lifting effect.

#### **Mechanism of Action**

It delivers tiny deposits of focused ultrasound energy at the right depth below the skin. This causes thermal damage to the tissue resulting in tissue contraction as well as collagen denaturation and neo-collagenesis. It leads to tightening and lifting the skin.

Eg: Ulthera

Ultrashape

**Conclusions** – Skin tightening devices deliver a quiet and effective in-office procedure with relatively no downtime. In middle age and older individuals, it can reverse cutaneous aging and enhance the efficacy of any antiaging treatment.

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#### TREATMENT OF FAT AND CELLULITE

**Dr Vivek Singhal,** Dermatologist, 09 Clinic, Kuwait City



#### What is Cellulite?

Cellulite is a condition in which the skin appears to have areas with underlying fat deposits, giving it a dimpled, lumpy appearance. It is most noticeable on the buttocks and thighs, and usually occurs after puberty.

#### What is Fat?

Subcutaneous fat is a type of oily (adipose) connective tissue that lies in a layer just below the surface of the skin.

#### What is the difference between Fat and Cellulite?

Cellulite is a specific form of subcutaneous fat when the connective tissue that separates enlarged fat cells into compartments has a honeycomb appearance. Cellulite is the bumpy appearance of the skin caused by fat cells protruding from lower subcutaneous (fat) layer of the skin into the supporting layer

(the dermis). The job of the dermis is to cushion the top layer of the skin keeping it firm and taut. When the fat cells push up irregularly into the dermis it causes the surface of the skin to look dimpled. (Fig. 1)

# Firm Skin Dimpled Skin Muscle Connective Tissue Enlarged Cellulite Unhealthy Skin

Fig. 1: Fat in normal skin and cellulite

## Factors causing Cellulite formation (Fig. 2)

Cellulite differs from normal fat because of how it is retained and formed in to its distinctive appearance.

It is not simply an effect of having excess fat. Cellulite can be found in thin, normal, and over weight women, and is a secondary feminine sexual characteristic, appearing only after puberty with the increasing influence of sexual hormones.

The most common factors of cellulite formation are

- » venous and lymphatic inefficiency,
- » sedentary lifestyles, and
- » metabolism problems (Women with cellulite often have a high level of cholesterol).

Other aggravating factors include menopause (due to the slowing down of the metabolism), obesity and pregnancy (due to circulatory deficiencies and habitual poor posture), the contraceptive pill

(stimulation of some women's appetite, and cause water retention) and stress.

Hereditary/Racial characteristics can also play a significant role in cellulite development, but are aggravated by one or more of the above.

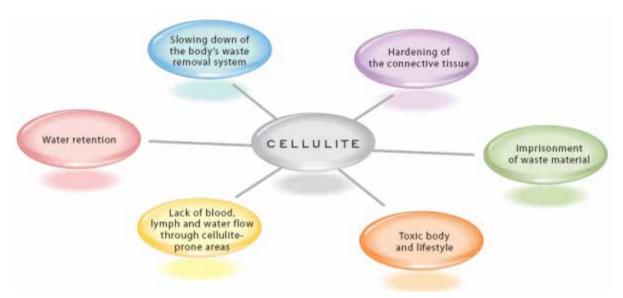


Fig. 2: Factors causing cellulite

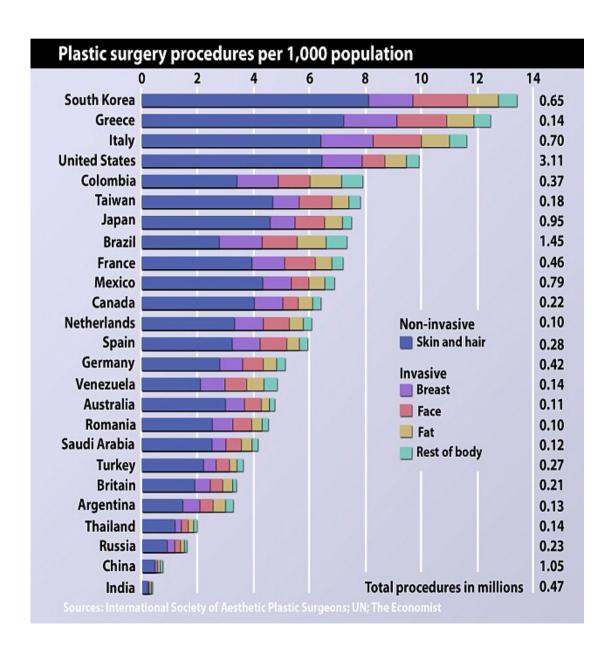
#### **Treatment of Cellulite**

Treatment suggestions available for the treatment of cellulite include:

- **1. Diet and Exercise Regime:** A change in diet is one of the more preferred modes of treatment. A change in diet in addition to regular target exercise routines go a long way in the treatment of cellulite. For the thigh area, exercises include jogging, walking, cycling, and running. The hips could do with squat exercises while a generally good mix of fruits and vegetables does go a long way in helping to eliminate the problem given time.
- **2. Cellulite creams:** are available which are said to help dissolve the fat and help in smoothing the skin. The downside to such creams is that they may contain aminophylline, a prescription drug that is approved for the treatment of asthma and a number of these creams are harmful because they cause narrowing of blood vessels and promote drainage of fluids away from skin. Such effects are especially dangerous when they occur on people with circulatory problems or those prone to allergic reactions.
- **3. Liposuction:** which entails the removal of fat deposits from the skin or body. This is more ideal for areas with deep fat because otherwise, the skins appearance may be worsened when more irregular depressions on the skin are created after removing the fat.
- 4. Miscellaneus other treatments include
- a. laser treatment,
- b. mesotherapy,
- c. heat therapy,
- d. pneumatic massages,

- e. electric stimulation,
- f. massages and spa treatments,
- g. radio waves therapy in addition to massages that stimulate lymphatic flow.

The treatment of fat is relatively easy (without underlying hormonal disturbances) with diet exercises and Lipodissolving techniques or cryolipolysis (cold induced fat cell death) or liposuction depending on the severity.







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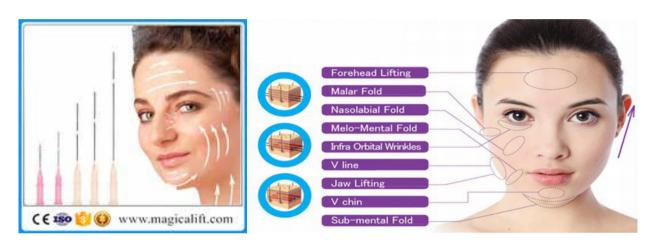
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#### THREADS FIND A PLACE IN FACE LIFT

**Dr. Ruchira Vasudeva,** Dermatologist, Yiaco Apollo Medical center, Salmiya



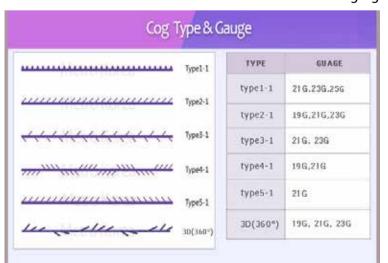
Human genius is in pursuit of excellence. Aesthetic medicine is tirelessly innovating new treatments so as to achieve flawless texture, proportion and contour of human face and body. New tools are being developed to fight ageing and restore youth. A relatively new modality in this armamentarium is the use of threads for lifting and repositioning of tissues.



Threads have been a surgeon's tool since times immemorial. Gold threads were first used by Egyptians for aesthetic treatments .A variety of suture materials like silk, catgut, nylon and prolene have been used for thread lift in the past. Dr Marlen, a Moscow based cosmetic surgeon cut barbs on a nylon thread to increase its tissue holding capability. This technology was patented by Aptos (Antiptosis) to manufacture a variety of cog threads for lifting in 1999. These cog or barbed threads act as a truss to hold tissue to lift it. Barbs can be unidirectional or bidirectional. Bidirectional can in turn be converging

or diverging depending on whether they face towards or away from each other. Newer versions have alternate cogs facing in opposite directions for better tissue grasp.

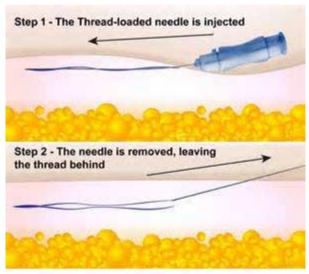
A variety of absorbable and non absorbable threads are now being used for lifting. They can be monofilament or mixed by using two or more materials. Elastic threads are made of a silicone core and polyester cover and are anchored bidirectionally.



They are said to get colonised with connective tissue and form a stable ligament. The absorbable threads, made of a variety of materials like Policapromid (durability 2-2.5Yrs), polylactic acid (1.5-2yrs), polyglycolic acid(1mth) and polydioxanon(1mth), have popularised the use of threads among aestheticians due to their safety and ease of application.

There are mainly two ways to use threads. One is to suspend or anchor the threads in such a way that

the resultant vector lifts the tissue. Anchoring is hidden in scalp or behind the ear. This can lead to skin gathering and is now sometimes combined with minor tissue reduction procedures such as done during face lifts. The other way to use threads is to place the absorbable barbed or cogged threads floating in the hypodermis so that they catch the surrounding tissue and lift it. These threads also stimulate collagen formation and strengthen and revitalise the deeper layers of the skin. This gives a more lasting effect even after the threads have been reabsorbed. The so called mesothreads are plain threads that are neither barbed nor suspended. They are placed in dermis in the form of a mesh to plump and revitalise the tissue due to collagen stimulation. They may help in improving superficial wrinkles and acne scars.



The thread stimulates the body to make new collagen. Some types can also be pulled to generate more lift.

The ideal patient for thread lift is one that has mild to moderate sagging. Thread lift can improve the jaw line, neck sagging, brow ptosis and cheek folds.

They are also used for upper arm, breast and buttock lift. Floating threads are simpler to put and most often require only local anaesthesia. Suspension threads can be done in local anaesthesia as well with additional sedation in some cases. The patient can resume normal activities after the procedure. There is no visible wound though there can be swelling and bruising that fades within a few days without any complications. Results evolve over a period of few weeks. Sometimes there can be dimpling or

puckering of the skin which is technique related. Extrusion of cog threads can occur which can be resolved by simply cutting the extruded portion. Breakage or loss of anchoring may occur. Rarely there can be fibrotic lesions that are not readily treatable. Some of these latter complications have made gold threads unpopular among aestheticians despite rigorous marketing.

Thread lift is a minimally invasive procedure and gives satisfying results with judicious patient and material selection and technique. It holds the promise of filling up the the surgical and non surgical divide in face lift.



#### HAIR RESTORATION: LATEST IN HAIR TRANSPLANTS IN COSMETIC SURGERY

#### Dr. Suraj V. Davis

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#### **Introduction:**

The field of hair restoration is an exciting and dynamic specialty in the field of medicine. The specialty of hair restoration includes both medical and surgical modalities. The technique of surgical modality has refined and evolved over the last 30 years and these advancements in technology and techniques enabled the hair surgeons to achieve more aesthetically pleasing outcome than ever before.

The hair transplant surgeries have evolved through many stages from hair bearing flaps to large grafts to punch grafts and finally to follicular units. By this we can identify two eras of hair transplantations: one before follicular unit and one since follicular unit. Our focus here on this subject is pertained to the more advanced techniques concerning the follicular unit.

Hair restoration surgeries are not only done for male pattern baldness, but also for female pattern baldness, hair loss due to other underlying disorders, trauma, burns, loss of skin over eyebrows, moustache, beard, underarms and pubic areas.

#### **Hair Restoration with Follicular Unit:**

#### 1. Follicular Unit Transplant: (FUT)

In this technique, popularized in the 1990's, a strip of skin with the hair is surgically removed from the back of the head and sectioned into individual follicular grafts and planted into the recipient area.

The disadvantages of this technique are:

- a. Excessive scarring on the donor and the receptor area
- b. Involves suturing of the donor and subsequent scar.
- c. Most painful of all follicular unit surgery
- d. Square grafts sectioned from the donor strip are placed into round holes causing deformed donor and recipient area and unattractive scarring
- e. The hair in the donor area is completely sacrificed making the donor site unable to reuse.
- f. The procedure results in hair retention of 70 to 90% depending on the operating hands and the team.

#### 2. Follicular Unit Extraction (FUE):

This is more a recent technique, where in individual hair

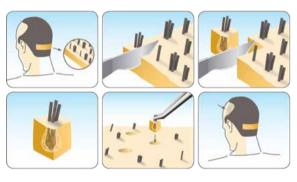


Fig.1: Follicular Unit Transplant (Courtesy: Hair Science Institute)

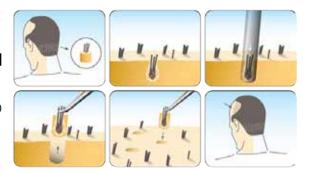


Fig.2: Follicular Unit Extraction (Courtesy: Hair Science Institute)

follicular units are extracted one by one and planted into the recipient area. This results in multiple small round scars in the donor area from where the hair follicles are extracted.

Even though it is superior to follicular unit transplantation, the disadvantages of FUE are:

- a. Multiple small visible round scarring
- b. Painful but less painful than FUT
- c. Hair retention is better up to 96% but depends on the operating hands and the team
- d. The donor site cannot be used for further harvesting of hair follicles as the entire follicle is removed and the donor site replaced by scarred tissue.

Both FUT and FUE does not allow very short hairstyles due to the presence of clearly visible scars both on the donor and recipient site (especially in FUT).

In both FUT and FUE, the donor area hair follicles are completely sacrificed leaving less options for a further transplant later as there is no regrowth on the donor area.

#### 3. The Hair Stem Cell Transplant (HASCI) method:

The Hair Stem Cell Transplant also known as HASCI method utilizes only a portion of the hair follicle

from the donor area and a part of the hair stem cells are left in the donor area to stimulate hair growth in the donor area for future harvesting. Devised, researched and refined by Dr. Coen Gho, this method is very promising and holds a great future. The HASCI method brilliantly utilizes the natural stem cells paired with a specially developed medium that optimize the viability of the grafts and stimulates further growth in the stem cells.

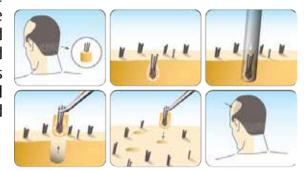


Fig. 3: Hair Stem Cell Transplant (Courtesy: Hair Science Institute)

#### The advantages of HASCI are:

- a. As only a part of the hair follicle and the stem cells are removed, the donor area still holds the remaining part of the hair follicle with its stems cells, which will grow back in a matter of weeks and provide more hair for future sessions of hair transplants.
- b. The new hair in the donor area and the recipient area have the same quality of the original hair.
- c. No scarring
- d. Very less pain or no pain
- e. A better natural hairline can be created with much smaller grafts.

Dr. Coen Gho and his research concluded, that the entire hair follicle is not required for new hair growth, but only a portion of the top part of the hair follicle with its stem cells is enough for generating new hair and the remaining portion in the donor area will create another hair. This means two hairs can be created at two different sites with a single follicle.

It is also possible with this technique, to divide the hair follicle longitudinally along with its stem cells, using highly precise tools as smaller as 0.5 to 0.6mm in diameter and 5 to 6 mm in length, which prevents further loss of tissue at the donor area while harvesting and thereby preventing scarring and resulting in a better aesthetic outcome.



Fig. Pre and Post Hair Transplant by BEST FUE Courtsey Dr. Kavish Chouhan, Dermaclinix, New Delhi

#### **Future of Hair Restoration:**

Another important development in this field is the injection technique instead of the implantation technique currently used. The implantation technique used by HASCI has an implantation distance of 0.2 to 0.3mm. The implantation technique required a prepared tiny hole to implant the hair and its stem cells whereas the injection technique will avoid the prepared tiny holes and instead inject directly into the skin. This produce a further excellent aesthetic outcome as there are virtually NO scars. The implantation distance can be further reduced to 0.1mm, and the hair follicles could be placed closer which could give an intense and natural hair growth. The recovery period is minimal as there are no wounds.

Highly sophisticated procedures like Hair Stem Cell Transplant method (HASCI) calls for a high steady hands, intense focus and excellent hand motor control. This calls for automation of certain aspects of this procedure which could work with high precision and minimizes the labor of the hair surgeon. Research is underway by various teams to achieve this goal.

To further refine the hair multiplication techniques, newer research is conducted on culturing the new hair follicles as grafts. These promising researches but have not yet achieved a consistent growth.

Promising research is also underway to grow hair from human Pleuripotent Stem Cells(hPPSCs).

Scientists have effectively achieved to grow hair from hPPSCs – cells derived from human embryos or human fetal tissue that can become any other cell in the body. Since the cells harvested from dermal papillae quickly lose their ability to form hair follicle in culture, they are unsuitable for hair transplants. These researchers claim that their method provides an unlimited source of cells from the patient for transplantation and isn't limited by the availability of the existing hair follicles.

#### **Conclusion:**

Surgical hair restoration techniques have gone through a dynamic and promising evolution from a crude technique to a highly sophisticated one, promising a great relief to the patient as well as the surgeon. The future is bright as most of the researches show they are just one step away from the best natural outcome with minimal downtime, no scarring, no pain, no hair loss in the donor area and best aesthetic results.



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### CURING PERSISTENT VITILIGO: RECENT ADVANCES IN SURGICAL THERAPY GIVES NEW HOPE

**Dr. Yashpal Manchanda** Dermatologist, Farwaniya Hospital,



Historical Perspective: Vitiligo is an ancient disease with mention in many civilizations and religious scriptures and texts with references to people who lacked pigmentation. Earliest descriptions from Indian subcontinent came between 1700–1100 BC.

History of vitiligo: The term vitiligo perhaps derived from the latin word vitelius used to describe the white flesh of calves. The word vitiligo was attributed to Celsus in his classic Latin book De Medicina in the first Century AD. In 1879, Moritz Kaposi was one of the first to observe lack of pigment granules in skin affected by vitiligo. Around 4000 years elapsed from the time man became aware of vitiligo, until the melanocyte was finally identified as the cell responsible for producing color.

Why is it Important? Throughout the centuries, vitiligo has continued to be one of the most important ailments worldwide provoking discrimination and/or segregation in certain cultures, where affected individuals were unable to find jobs or get married, based upon ancient religious beliefs.

#### What is known about vitiligo?

Vitiligo is a disease characterized by loss of skin color resulting in milky white patches affecting the skin on any part of body, including hair, lips, the inside of the mouth and even the eyes. The exact cause is not known. The pigment producing cells in the skin are destroyed or stop functioning. The extent and rate of color loss from vitiligo is unpredictable. Vitiligo affects 0.5–1% of the population. It is more common in India than elsewhere, with reports of up to 8.8% of the population affected. .

Although, it is not life-threatening or infectious, vitiligo carries a significant social stigma and can have great impact on social and personal life of the affected individual.

#### How is vitiligo classified?

Vitiligo has been classified into various types according to clinical, genetic, pathobiological, epidemiological, and molecular characteristics. The treatment modality chosen for a particular patient depends upon the location, extent, age, presence of associated conditions/contraindications and whether the disease is stable (neither increasing nor decreasing) or rapidly progressing.

#### Different clinical types of vitiligo are

Focal: Only one or few small spots

Mucosal: Affecting lips, genital mucosa

**Acrofacial (Lip tip):** Lips and tips of fingers and toes (sometimes include nose and ears)

Generalized: Affecting many parts or whole of the body over large areas

**Segmental:** Affecting one side of the body confined to a distribution of one or more nerves.

**Progressive:** Means new spots are appearing and/or existing ones are increasing in size and number.

**Stable:** The white spots are neither increasing nor decreasing in size or number (with or without treatment)

**Residual:** These are remaining white areas of the skin that do not show repigmentation despite adequate medical, photo or topical treatment. They are also called recalcitrant or resistant (stubborn) lesions

Treatment options for vitiligo: include medical, surgical, laser and phototherapy.

- I. Medical treatment
- **a. Topical creams:** steroids, immunomodulators, psoralens, placental extracts, tyrosinase enzyme inhibitors, antioxidants, alone or in combination with light.
- **b. Oral medications:** steroids, immunosuppressive agents, psoralens, antioxidants
- **II. Phototherapy (light based):** With or without psoralens, UVA, UVB, sunlight (in the form of phototherapy chambers or individual body area units made of UVA and UVB emitting tubes in chamber or), and lasers
- **III. Surgical treatment** described here for treating vitiligo are usually applied for localized, limited areas of vitiligo that is stable, areas not responding to medical or phototherapy or residual areas of vitiligo after treatment and those affecting non-hairy areas of skin,

Surgical procedures described below are most suitable for the stable, and residual resistant lesions of vitiligo.

The aim of the surgical therapies is to introduce missing melanocytes (melanin pigment producing cells) into the depigmented skin of vitiligo, harvested (obtained) from pigmented area of the same person. Surgical treatment is an excellent option for patients who are unable to achieve cosmetically pleasing results with nonsurgical methods. The three basic surgical methods used in vitiligo can be summed up as Excision, Grafting, and Tattooing

1. Excision: Involves simple excision of the full thickness white area and suturing.

Disdavantages: Only small area can excised, scar formation and Koebnerization:(A peculiar biological phenomenon of depigmentation appearing at the operated site

**2. Tattooing** (micropigmentation). In this technique, a special surgical instrument is used to implant pigment into the white areas of skin. This technique is most effective around the lips, especially in people with darker skin.

Drawbacks include difficulty matching the skin color, the tendency of tattoos to fade and their inability to tan. Also, the skin damage caused by tattooing may trigger another patch of vitiligo.

**3. Skin Grafting:** This is by far the most successful and widely accepted surgical modality. The basic idea is to remove the skin in the white spots (recipient area), and replace with healthy pigment cells (melanocytes) from another part of the body (donor area). After a few months, the transplanted melanocytes start working to make pigment, which deposits in the surrounding skin and the white spots disappear. The problem is that it is very difficult to know when the disease is stable, and dermatologists who perform this procedure usually require that patients should have no new or expanding lesions for 1-2 years with or without treatment. But even then, the procedure is only

effective 40-50% of the time, and it may fail later if the disease becomes active again, which is often unpredictable.

However patients with segmental vitiligo, appear to be excellent candidates for this procedure. These patients have a good outcome 80-95% of the time, and they usually don't require any more treatments.

**Preparation of the recipient area or in other words removal of the white skin:** Prior to any form of grafting, recipient-site preparation is required to allow access to the underlying structures necessary for melanocyte adherence and nutrition. To prepare the recipient site, the epidermis must be separated from the underlying dermis at approximately the dermo-epidermal junction where pinpoint bleeding is first seen.

#### Methods of removing epidermis from the dermis.

- **1. Dermabrasion:** It utilizes rapidly rotating abrasive tools (diamond fraise, wire brush, or serrated wheel) to remove the epidermis and superficial dermis. It commonly involves the use of a high-speed dermabrader fitted with a diamond fraise steel wheel, set to 10,000 rpm, and applied to the vitiliginous site until pinpoint bleeding is achieved. It provides a quick and effective method of recipient-site preparation with minimal risks of scarring.
- Advantage: more accessible and economic method of recipient-site preparation than lasers.
- Disadvantage: It is highly dependent on the skills of the surgeon to achieve precise and uniform deepithelialization.
- **2. Suction blistering:** This preparation method uses a negative pressure apparatus, such as a syringe, to generate a pressure of –300 to –500 mmHg and induce epidermal blister formation. Blister roof made of epidermal layer containing melanocytes is snipped off.



Fig. 1: Showing donor grafts after suction blister formation, ready for harvesting



Fig. 2: Suction blisters

#### Disadvantages

- a. The patients experience notable discomfort during the induction of blister formation
- b. It is a time-consuming task requiring between 15 minutes to > 3 hours for blister induction.
- c. Yields only limited amounts of skin making this technique an inferior method of preparation for large vitiliginous lesions, as compared to other methods.

This technique has the advantage it can also be used to harvest donor as well as prepare receipient area skin.

- **3. Phototoxic blistering:** It involves the application of chemical called psoralen or other phototoxic agents on to the vitiliginous area, followed after 10 minutes by exposure to high dose of UVA for two consecutive days in a PUVA (Psoralen + UVA) full body unit. In patients with large vitiliginous lesions it is a time-efficient method. Moreover, it does not cause scarring of the recipient site because the blisters spare the deeper dermis. However, there is concern for carcinogenesis, particularly in fairer skin types 1 and 2.
- **4. Cryo induced blistering:** Liquid nitrogen (-1950C) spray is used as a method of selective tissue destruction through the rapid formation of intracellular and extracellular ice crystals. Subsequent thawing results in vascular stasis disrupting the microcirculation and creating greater amounts of tissue damage. This selective destruction is utilized in recipient-site preparation to induce blister formation.

Disadvavntages: May be complicated by peripheral hypopigmentation, sometimes hyperpigmentation, and hypertrophic scarring.

**5. Laser resurfacing** by using CO<sub>2</sub> laser or Erbium YAG laser. They both act by selective vaporization of water in superficial cutaneous tissue leading to more effective and precise tissue ablation of the vitiliginous skin.

#### Donor Area harvesting: Tissue grafts, Cellular grafts

- **A. Tissue Grafts:** can be obtained by 3 basic ways, which are as follows:
- **1. Punch Grafts:** In this procedure cylindrical pieces of normal pigmented skin are obtained using 1.2-2 mm manual (Fig. 3)or motorized punches from the donor areas. They are kept in saline in a Petridish and are trimmed if needed.

Similarly the recipient area is prepared by creating sockets (taking out cylindrical pieces of skin by the punches) of sizes 1-2 mm at a distance of 5-10 mm. The harvested (donor) grafts are then placed into these sockets. Generally, the recipient punches (holes) are 0.5 mm smaller than the donor punches for better results (also because the cylinders of skin taken out from donor areas shrinks). The area is then dressed to ensure immobilization of the grafts. (Fig. 4)

These grafts are taken up in 7-10 days, after which phototherapy or topical steroids application is started to ensure even perigraft pigment spread. (Fig. 5-6)

#### Adverse effects

a. Cobblestoned texture, with the grafts raised in comparison to the surrounding skin. The use of silicone gel dressings may prevent graft this.



Figure 3: Showing biopsy punches used for punch grafting



Figure 4: Showing harvesting of donor skin using punch in punch grafting technique



Figure 5: Post punch grafting picture appearance

Fig. 6. Result of Punch Grafting in Localized Vitiligo

- b. A variegated or polka dot appearance of repigmented skin and color mismatch.
- **2. Split thickness skin grating (STSG):** The graft is harvested with the assistance of a dermatome (a knife used to shave off skin) (Fig. 7)

Advantage: Large areas of can be covered in a single session.

Disadvantages: Achromatic fissuring, contracture, tire pattern appearance, and milium formation.

**3. Follicular Unit Transplant (FUT):** It is a surgical technique that relies on melanocyte reservoir in the form of undifferentiated stem cells found in the outer root sheath of the hair follicle (Fig. 8) in the to the vitiliginous area.



Figure 7: Showing harvesting of donor graft in split skin thickness grafting using dermatome which creates a graft of uniform thickness. Grafts are usually harvested from hidden areas of the body, because the donor site may heal with abnormal pigmentation and texture. It is then meshed to prevent collection of serum underneath and to cover a greater surface area, placed over a dermabraded recipient site, and dressed in gauze.

The technique involves extraction of donor hair follicles using 1 mm punch after giving tumescent anesthesia. The donor area used is usually scalp hair near the nape of the neck or at times from behind the ear lobes area.

The extracted hair follicles are stored in petri dish containing cold normal saline. The extracted follicles

are then transplanted as follicular units into the recipient area using Jewelers forceps. Recipient area is first anesthetized and then slits are made using 18 G needle at 5 mm distance. This technique. is limited by the fact that it can only be used to treat small areas on hair bearing skin.

**B. Cellular Grafts:** Are basically of two types non cultured and cultured melanocytes



Figure 8: Showing diagrammatic representation of the donor area and follicular units

1. Autologus Non-Cultured Melanocyte suspension Transplant (AMST): Melanocyte containing skin is harvested from a donor site using punch, split, or blister grafting technique. The donor skin is then immersed in trypsin solution to separate the epidermis from dermis, and afterwards release individual cells into a suspension. This suspension is then transplanted onto de-epithelialized recipient skin. Some techniques transplant both keratinocytes and melanocytes, others just melanocytes.

Advantages It does not require a special laboratory set up or training. It is simple, less costly and less time consuming.

It combines the advantages of the culture technique, while avoiding the disadvantages of the tissue grafting techniques.

Side effects are few: infection, scarring, graft failure, koebnerization and irregular pigmentation.

**2. Autologous Cultured Melanocyte Transplant:** is essentially similar to the non cultured technique, except that the suspension of melanocytes are cultured for 15 30 days by addition of media and growth factors (commercially available mixture/solutions of certain biologically active chemical) (Figure 9). Once sufficient number of melanocytes are reached, they are then detached from the culture plate and transplanted as in case of non-cultured technique. It is used to increase the number of viable cells for transplant using less donor tissue.

Limitations: are the requirement of special lab set up, long time, and specialized training needed.

**3. Autologous Cultured epithelial grafts:** Basically similar to autologous cultured melanocyte technique, except that the media allows co-cultivation of keratinocytes and melanocytes.

#### **Conclusion:**

With the application of these latest surgical techniques alone or in combination with laser and other treatment procedures a new hope can be given to the patients for repigmenting the residual, stubborn localized patches of vitiligo.



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# LASERS IN DERMATOLOGY

# **Dr. Manish Rijhwani** Dermatologist Farwaniya Hospital,



# **Introduction**

The word "LASER" stands for "Light Amplification by Stimulated Emission of Radiation". The first laser invented was Ruby laser and was developed in 1960 by Theodore Maiman. Medical applications soon followed, and their regular use for skin conditions was pioneered by Leon Goldman. The use of early lasers, was complicated by an unacceptable high risk of scarring and disfigurement.

There has been major advances in lasers technology in the last 25 years and this has revolutionized the use of lasers in the treatment birthmarks (both reddish and pigmented) and



Fig. 1

many skin condition like vitiligo and psoriasis, and the removal of tattoos, tumours, scars and wrinkles.

Recently many lasers and light technology have become available for skin resurfacing and rejuvenation.

# **Basics of Lasers**

# Laser light has following properties:

- 1. Monochromatic, i.e., the light is of single wavelength
- 2. Coherent, i.e., the light beam waves are in phase
- 3. Collimated, i.e., the light beams run parallel

Because of these properties the laser light has tremendous energy that can be delivered in a highly focused manner at a precisely determined depth/tissue component and for a particular intended action.

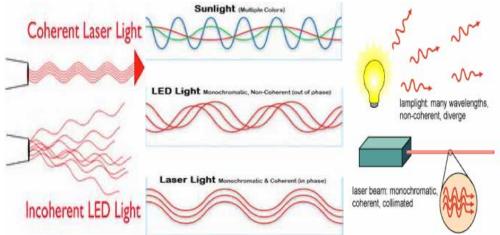


Fig. 2: Properties of laser light

# Such a collimated, monochromatic, coherent laser light beam is produced within an optical cavity/chamber containing a medium, which may be

- 1. Gas (Argon, krypton, carbon dioxide),
- 2. Liquid (dye) or
- 3. Solid (ruby, neodymium:yttrium-aluminium-garnet (ndYAG), alexandrite).

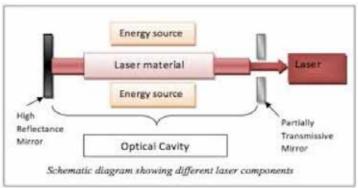


Fig. 3: Schematic diagram of a laser system

Each medium produces a specific wavelength of light, which may be

- 1. Below the visible spectrum (<400nm),
- 2. Within the visible spectrum (violet 400nm to red 700nm) or
- 3. Infrared and far infrared spectrum (more than 700nm).

# **Basic Principle of How Laser Works**

The laser light of particular wavelength when directed on skin produces it's effects by the basic underlying principle known as the "Theory of Selective Photothermolysis (photo - light, thermos - heat, lysis-breakdown). It is possible to target a specific chromophore in the skin by selecting a wavelength that is specifically absorbed by it, with minimal absorption by the other competing chromophores. When laser of specific wavelength effectively matches the maximum absorption spectra of the chromophore, energy is absorbed and heat is produced inside the tissue. This heat destroys it with minimal damage to the surrounding tissue After the destruction, the regenerartion and remodeling of tissue that takes place in the dermis produces the resultant desired microscopic and visible clinical effect.

**Chromophores:** are the atomic groupings (molecules/compounds) on which the color of a sibstance depends. They serve as target for the laser light treatments.

**Absorption wavelength/spectrum:** (the particular wavelength of light specifically absorbed by each specific chromophore) of tissue determines the choice of laser and hence the laser machine/system used by treating doctor for a given condition. Common chromophores present in our skin are hemoglobin, oxyhemoglobin, collagen, beta-carotene, and melanin.

Chromophores that are target of interest in the skin laser systems based on their absorption spectrum are

- **1. Melanin:** The pigment responsible for skin color (target for colored lesions, hair removal laser)
- **2. Hemoglobin (Hb):** The pigment in the red blood cells present in the blood (target for vascular lesions; birth marks, telangiectasias etc)

**3. Water (H\_2O):** Target for destructive/ablative lasers for tumours and collagen remodelling and regeneration.

Vascular skin lesions (made of blood vessels) contain oxygenated haemoglobin (Hb), which selectively absorbs visible light (e.g. Pulse dye laser-585-595nm) whereas pigmented skin lesions contain melanin, which has a broad range of absorption in the visible and infrared wavelengths whereas far infrared lasers are broadly destructive because they are absorbed by water and ablates the tissue. (Skin is made up of up to 70% water!!)

# **Common types of Laser & Indications**

Lasers are named according to the source or the medium contained in the optical cavity of the laser system. They can be either continuous wave (CW) or pulsed, which may be long pulsed (LP) or quality switched (QS) lasers with very short pulses (5-100ns).

The wavelength of the laser light, the pulse duration and which target in the skin tissue absorbs the laser light, determines the clinical applications of the laser types.



Non-ablative lasers: refers to heating up the dermal collagen while avoiding damage to the surface of the skin i.e. epidermis by cooling it. This helps to reduce the side effects as seen by ablative lasers but multiple treatment sessions are required to get good results.

# **Ablative Lasers:**

Table 1: Common Lasers and their Indications

| Laser  | Indications  |
|--|--|
| Excimer -308nm                                     | Vitiligo, Psoriasis  |
| LP & Qs-KTP- 532nm                                 | Tattoos, freckles, telangiectasia  |
| Pulse dye laser (PDL)- 595nm                       | Vascular birth marks, striae, keloids & scars, facial telangiectasia and leg veins |
| Ruby laser- 694nm                                  | Tattoos, freckles, pigmented birthmarks  |
| LP & Qs-Alexandrite -755nm                         | Hair removal, Tattoos, freckles, pigmented birthmarks                              |
| Diode-808nm  | Hair removal   |
| LP & Qs-Nd:YAG -1064                               | Hair removal, Tattoos, freckles, pigmented birthmarks and leg veins                |
| Erbium Glass (1550nm)& erbium doped fiber ((1540nm | Skin Rejuvenation  |
| Erb:YAG- 2940nm                                    | Ablation of various skin lesions, scars, resurfacing & rejuvenation                |
| CO2 laser- 10600nm                                 | Ablation of various skin lesions, scars, resurfacing & rejuvenation                |

Table 2: Skin Conditions and types of lasers used to treat

| Vascular lesions | Pigmented<br>lesions | Tattoo removal | Hair removal   | Resurfacing<br>Ablation |
|------------------|----------------------|----------------|----------------|-------------------------|
| PDL              | QS Ruby              | QS Ruby        | LP Ruby        | CO2                     |
| LP-Nd:YAG        | QS Nd:YAG            | QS Nd:YAG      | LP Nd:YAG      | Er:YAG                  |
| LP KTP           | QS Alexandrite       | QS Alexandrite | LP Alexandrite | Fraxel                  |
| IPL              | IPL                  |                | LP Diode       |                         |
|                  |                      |                | IPL            |                         |

LP- long pulsed, QS- Quality switched, PDL- Pulsed dye laser(585-600nm), Nd:YAG- Neodymium yttrium garnet (1064nm), KTP- Potassium titanyl phosphate(532nm), IPL- Intense pulsed light , CO2-Carbon dioxide(10600nm) ,

# **Laser Safety**

Laser safety is very important for safe and effective use of lasers and depends upon the laser system being used and the settings.

# Laser safety includes-

- 1. Proper training of laser personals: This aspect is of paramount importance as training, experience and knowledge of the treating laser physician determines the final outcomes. Most of the countries have their proper licensing regulations for setting up laser clinics and a required strandards of training and qualifications of the laser doctors. One should be aware of beauty parlours or saloons offering these services by the unqualified persons for economic reasons
- 2. Eye protection of the patient and clinical staff by use of appropriate goggles. Laser beams carry large energy therefore accidental fall on eyes can cause irreversible damage to the eye sight.
- 3. Warning signs and lights outside the operating room. The room where laser procedures are being done has to be prepared meticulously and should have proper specified ventilation, lighting, exhaust and firefighting facilities.
- 4. Use of non-reflective instruments and avoidance of mirrors in the operating room.
- 5. Complete avoidance of any flammable material in OT.





# Adverse effects of Laser

Lasers treatments are basically burns and following side effects may occur-

- 1. Temporary pain, redness, bruising, blistering and/or crusting.
- 2. Infections, including reactivation of herpes simplex.
- 3. Pigmentary changes both hypopigmentation and hyperpigmentation, and
- 4. Scarring

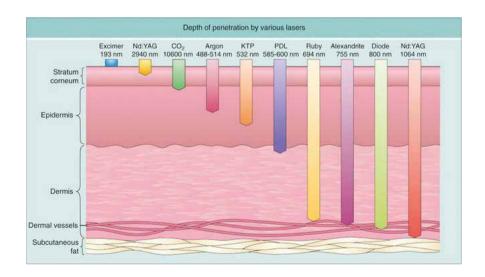
# Currently lasers are used for a wide variety of skin conditions and diseases ranging from

- » facial laser resurfacing for reducing and removing facial wrinkles, (facial rejuvenation)
- » acne scars,
- » improving sun damaged skin,
- » unwanted hair removal,
- » vascular lesions.
- » pigmented lesions,
- » skin growths (tumours), benign and cancerous,
- » strerch marks
- » keloids and hypertrophic scars.

Details of the laser machines and procedures for each of these individual conditions is given in subsequent articles for each category.

# **Conclusion**

So, we can conclude that laser is a perfect armamentarium in our hand, which if used properly with all precautions and training can give perfect results in many different skin conditions, which was not possible before the advent of this technology.



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# LASER ASSISTED HAIR REMOVAL

**Dr. Preethi Simon**Dermatologist
Roudhan Clinic Mydan Hawalli,



The presence of hair on areas such as face, armpits or legs in a female is becoming more and more socially unacceptable these days. Increasing number of men are also seeking laser assisted hair removal over areas such as cheeks to delineate the beard line, neck, chest and back, most of them with an intention to reduce the density of hair in the above mentioned areas. Hence laser assisted hair removal in one of the most popular procedures in cosmetic dermatology.

Laser treatment for hair removal is based on the principle of selective photothermolysis, which means

by choosing the appropriate wavelength, pulse duration, and fluence, thermal injury can be confined to the target chromophore which is melanin in the hair follicle. Each treatment session reduces hair density by approximately 20% and the hairs become less dark and coarse.

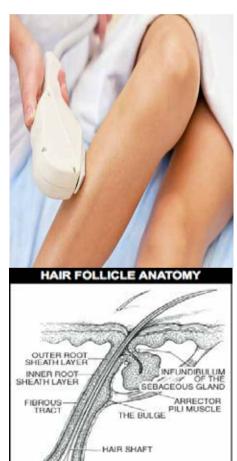
# HAIR GROWTH

Each growth cycle includes an anagen, catagen, and telogen phase. During the anagen phase, the hair grows actively from the follicle. The next phase of the growth cycle is the catagen which is a short transitional period in which the hair stops growing and the hair follicle shrinks in size after breaking away from the dermal papilla, which supplies nutrients to the hair follicle. The dermal papilla then regresses. The last phase of the growth cycle is the telogen, or resting phase. The anagen phase of the hair on the scalp may for last several years, while hair on the body has an active growth phase that may last only a few months.

It is during anagen phase that a hair follicle is most susceptible for laser assisted hair removal.

Factors which determine the outcome of laser assisted hair removal

- Pulse width (or duration) is one of the most important parameters. The length of the heating pulse relates directly to the damage achieved in the follicle. Pulse duration used in laser hair removal ranges from 3 ms to 40 ms. Q switched Nd yag lasers which have a pulse duration in nanosecond range give only temporary reduction of hair and are not ideal lasers for hair removal.
- Spot size, or the width of the laser beam, directly affects the depth of penetration of the light. Larger beam diameters result in deeper deposition of energy and



HAIR BULB

hence can induce higher temperatures in deeper follicles. Hair removal lasers have a spot size ranging from 3-24 mm.

• Fluence is measured in joules per square centimeter  $(J/cm^2)$ . It's important to get treated with fluence high enough to heat up the follicles.

# Laser hair removal machines

Laser hair removal machines are red and infrared lasers which can easily penetrate and damage the melanin located in the bulb and bulge of the hair follicle. The four main lasers used in hair removal are

- Ruby Laser 694 nm
- Alexandrite Laser 755 nm
- Diode Laser 800 nm
- Nd:YAG Laser 1064nm

Three types of epidermal cooling have been used in laser assisted hair removal. They are contact cooling, cryogen spray and air cooling. Epidermal cooling allows higher fluence to be used and reduces the pain and side effects, especially in darker skin.

# TREATMENT GUIDELINES

The type of laser selected for hair removal depends on the skin type of the patient which can range from skin type I to skin type V1.

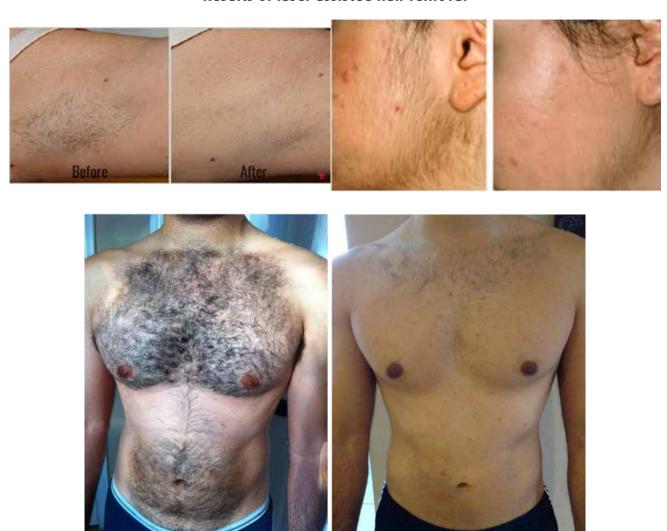
The ideal patient for laser hair removal is light skinned with black coarse hair. Blonde, gray and white hairs do not respond to treatment. Dark skinned individuals, and especially tanned patients are at high risk for pigmentary alterations. Cooling devices, either spray or contact, are helpful for protecting the epidermis, but may not be sufficient to protect tanned or darker skinned patients. Patients with a tan should delay treatment until the tan fades. Darker skinned patients are best treated with long pulsed wavelength lasers such as the diode (800 nm) or the new long pulsed Nd:YAG lasers (1064 nm).

A history should be obtained to search for any underlying medical or preventable cause for excessive hair growth, e.g. hormonal imbalance, tumor or drugs. Individuals with a history of hypertrophic scarring or keloids should be treated with caution. Patients should not pluck hair or wax 3 weeks prior to treatment. A bleaching cream can be applied to the area six weeks before treatment for patients with skin types III and higher to prevent side effects like hyperpigmentation and burns. Topical anesthesia may be used to prevent discomfort. After the procedure, ice packs may be needed to reduce edema and pain. A mild potency topical corticosteroid is usually applied for two to three days post-treatment to reduce perifollicular edema and erythema. Sun avoidance is a must. Patients should be told that they might experience some shedding of the treated hair within the first few weeks of treatment and this should not be confused with hair regrowth. Although herpetic outbreaks are uncommon, patients at the highest risk can be protected with antivirals. Typically the shedding of the treated hairs takes about two to three weeks. Most patients need a minimum of 5 to 7 treatments. Four to 8 week gap between sessions is recommended depending on the area of the body being treated. The number of sessions depends on various parameters, including the area of the body being treated, skin type which can range from 1 to 6 and coarseness of hair. End point of laser hair removal is permanent reduction of hair (approximately 80%) and not the complete absence of hair.

# Side effects and risks

Some normal side effects may occur after laser hair removal treatments including itching, redness and follicular edema. Other side effects are acne and folliculitis, reactivation of herpes, hypo- or hyperpigmentation, laser burns and paradoxical hypertrichosis. This can be avoided by treatment with an appropriate laser used at the appropriate settings for the individual's skin type.

# Results of laser assisted hair removal



**Conclusion.** Laser assisted hair removal is gaining popularity over traditional methods of hair removal which are temporary like threading waxing, etc.. Electrolysis though it causes permanent reduction of hair is time consuming and needs multiple sessions compared to the fewer sessions required with laser assisted hair removal. Popularity for hair removal in increasing among both the genders.



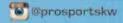
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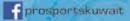


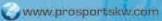
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# LASERS FOR FACE REJUVENATION....SAYING GOOD BYE TO AGING!

**Dr Anuj Taneja** Dermatologist Alsoor Clinic



Face rejuvenation with the use of lasers and light devices have become very popular these days. In the last 15 years due to a better understanding of skin physiology a variety of lasers and light devices have been developed.

These devices help improve a variety of skin changes that occur with aging and sun exposure. These include improvement in skin texture, wrinkles, laxity, pigmentation, pore size reduction etc.

The devices which remove the surface epidermis (ablative) are more effective but are associated with greater down time and prolonged healing time. The gold standard for this is the carbon dioxide laser.

The minimally ablative devices remove or target a portion of the superficial skin (epidermis) and are associated with greater efficacy and minimal downtime. These include the fractionated CO2 and ErbiumYag lasers.

The non-ablative lasers work on altering the tissue below the epidermis. They induce heating of the dermis to cause tightening and toning of the skin. These include the infrared lasers like 1064 nm Q switched ND YAG and 1540 Erb glass lasers.

Other laser used for rejuvenation include IPL and LED (Light emitting diodes) devices

The choice of laser depends on the skin condition, available downtime, doctor's preference and patient expectations and acceptability of the side effects

Here we will briefly highlight the important lasers available in the market and their uses.

# CO, lasers

The CO2 lasers are the gold standard for facial rejuvenation. They provide one of the greatest short and long term improvements in sun damage and wrinkles. They produce their results by collagen shrinkage due to the thermal effect. The only disadvantage is the prolonged downtime of 7 -10 days. They can cause other side effects such as post-operative redness, scarring and pigmentary alterations especially in darkly pigmented skins.

To minimize the side effect and to reduce the down time new fractional CO2 lasers have been developed which have minimal side effect without compromising the efficacy.





Perioral rejuvenation after 1 session of Fractional Co2 laser

# **Erb YAG Lasers**

The erbium Yag lasers are characterized by shorter healing time and lower rate of post procedure side effects compared to the CO2 lasers. Full face resurfacing with this laser results in improvement of pigmentation, wrinkles and skin tone.

The fractional Erb yag laser gives improvement in skin texture, acne scars, open pores and wrinkles in 3 to 5 monthly sessions. The side effects are negligible and consist of only temporary facial redness.

# Infrared Laser- 1064 nm NDYAG (Carbon Peeling)

The Q switched Nd:Yag laser is moderately effective for treatment of wrinkles, sunspots and postacne pigmentation. A carbon coating is put on the face followed by laser. The carbon particles are targeted by the laser resulting in their evaporation. This causes a mild peel and instant rejuvenation. After superficial peel, the deeper collagen tissue is targeted by the laser beam resulting in tightening of the skin. A treatment of 4-6 sessions gives the maximal benefit.



Wrinkle reduction + rejuvenation after 4 sessions of lotus 2 laser

# ERB Glass laser 1540 nm

This laser is mainly used for wrinkle improvement and collagen stimulation. Treatments are relatively comfortable and have minimal downtime. Sessions are usually given monthly. The results are seen after each session and extend even up to 6 month after stopping therapy.

# **IPL Laser (IPL photofacial)**

A photofacial, or "fotofacial," is a 30-minute procedure in which intense pulses of light are used to penetrate deep into the skin. IPL photorejuvenation then causes collagen and blood vessels below the epidermis to constrict, reducing redness and age lines. The procedure involves only minimal discomfort, while the redness and swelling that sometimes occur after treatment disappear shortly. Most benefits of a photofacial/fotofacial



Carbon Peel with Q switched ND Yag laser (Helios 3)

occur gradually in the weeks following treatment.. The results are sustained even after 6 months.

# **Post Laser Precautions**

After each laser treatment, the general treatment includes application of a bland moisturizer or antibiotic cream for 5 -7 days. Sun protection with a broad spectrum sunblock is also necessary. There may be patches of redness which may require topical steroid cream for 2-3 days. Gentle non soap cleanser is also recommended for washing the face.

#### Conclusion

A number of laser devices are available in the market for laser face rejuvenation. These lasers target different tissue structures in the skin resulting in improvement in texture, pigmentation, wrinkles, pores etc. Hence the choice of laser depends on the indication, available downtime, and patient desires and expectation with the treatment. With increasing affordability and popularity of these lasers a new era of antiaging medicine has truly begun.

# **Lasers for Pigmentary Disorders**

**Dr. Manish Rijhwani** Dermatologist Farwaniya Hospital



# **Introduction**

Lasers are increasingly being used for pigmented skin conditions and tattoos, which result from excessive or abnormal deposition of melanin or other pigment in the skin. As tattooing is becoming more common, the popularity of laser tattoo removal continues to grow.

On one hand, lasers are utilized to remove excessive pigmentation, they are also being used to promote pigmentation in skin conditions where the skin has become white (vitiligo) or lighter in color (hypo-pigmented).



# **Pigmented lesions and Tattoos**

Melanin specific, high energy, QS laser systems can successfully lighten or eradicate a variety of pigmented lesions.

Pigmented lesions that are treatable include freckles and pigmented birthmarks including some congenital melanocytic naevi, naevi of Ota/Ito and Becker naevi.

Prior to any laser treatment of pigmented lesions, any lesion with atypical features should be biopsied to rule out any malignancy especially melanoma. In dark skinned people, we should be cautious as permanent hypopigmentation and depigmentation may occur.

The lasers used mainly for treatment of hyper-pigmentation (increased colored or darker compared to surrounding normal color) or tattoos are Qs-KTP (potassium titanyl phosphate), Qs-ruby, Qs-alexandrite and Qs-Nd:YAG (Neodymium-yttrium-garnet) lasers.

| Laser       | Wavelength | Indication                           |
|-------------|------------|--------------------------------------|
| KTP         | 532nm      | Epidermal pigmented lesions          |
| Ruby        | 694nm      | Epidermal & dermal pigmented lesions |
| Alexandrite | 755nm      | Epidermal & dermal pigmented lesions |
| Nd:YAG      | 1065nm     | Epidermal & dermal pigmented lesions |

# Preparation, Anesthesia and Post-operative Care

- 1. Pre and Post laser treatment photographs: are a must for follow-up.
- **2. Signed informed consent:** must be taken from the patient.

- **3. A topical numbing cream** may be applied under occlusion 1 hour before treatment to reduce patient discomfort.
- **4. Test spot:** In all cases it is recommended to do a test spot to see the response and any adverse effects before initiation of full treatment.
- **5. Special Precautions & protection:** Qs lasers are the most dangerous laser systems for causing accidental permanent retinal damage and blindness, so appropriate eye protection with recommended goggles and metal eye shields are must for everyone in the operation room.
- **6. Postoperative care:** consists of intermittent ice compression for few minutes after laser to reduce pain and swelling, normal saline washes, and application of Aloe Vera gel, until all crusts have flaked off which may take up to one week. Pin point bleeding may be noted post laser, then antibiotic ointment and a non- adherent dressing should be applied to the treated areas.
- **7. Post Procedure Care:** Sunscreen and topical bleaching agents should be restarted once healing is complete, usually within 1-2 weeks of laser treatment. Strict sun protection is of paramount importance.

# Pigmented skin conditions for which lasers are used

For the purpose of laser therapy, pigmented lesions are classified according to their depth of pigment in the skin into 3 types:

- Superficial (epidermal): Increased pigmentation (melanin) is present in superficial epidermal layer of the skin. Clinically it appears as brown discoloration
- Deep (dermal): Increased pigmentation (melanin, sometimes hemosiderin, other pigments) is present in deeper (dermal) component of the skin. Clinically it appears as bluish or grayish.
- Mixed (Dermal as well as epidermal): Increased pigment is present in both the epidermis as well as dermis. It has both hues.

Assessment of depth of hyperpigmentation is important as it influences the selection of Laser.

- **A. Common superficial or epidermal pigmented** lesions that can be treated with laser therapy:
  - o Freckles
  - o Lentigines
  - o Pigmented seborrheic keratosis
  - o Cafe au lait macule
  - o Dermatosis papulosa nigra.

One or two sessions are sufficient to clear freckles and lentigens. Treatments are undertaken at every 4-8 weeks interval. Potential side effects may include discoloration, scarring and recurrence of the skin



condition especially freckles if patients are not careful about sun protection.

# B. Mixed epidermal/dermal pigmented conditions

**Melasma:** Pregnancy mask is a common pigmentary condition seen as brown flat patches present on the cheeks (most often), nose, forehead, and chin, affecting most women during or after pregnancy or those taking oral contraceptive pills, but also seen in males, and non-pregnant females. Cause unknown; sunlight, hormones may play a role. Very difficult to clear, tends to recur.

Various lasers systems like the Qs lasers, IPL and fractionated ablative resurfacing lasers likeCO2 and Er:YAG lasers have been evaluated with equivocal results.

Adverse effects include post laser pigmentation or rapid recurrence upon sun exposure.

A regimen of strict sun protection and use of sunscreens and topical bleaching agents may help to improve results and prevent recurrence.

- **o Moles (melanocytic nevi):** Benign flat or raised dark (black) skin lesions (like small bumps 1-10 mm), made of nevus cells. May be present from birth or appear late in life. Can be single or numerous. Can occur anywhere on the body Moles, Pigmented seborrheic keratosis and dermatosis papulosa nigra are slightly raised dark skin lesions which may be removed with ablative lasers like carbon dioxide(CO<sub>2</sub>) and erbium: yttrium-aluminum-garnet (Er:YAG) lasers.
- o Infraorbital pigmentation (dark circles around eyes)
- **o Post-inflammatory hyperpigmentation: pigmented marks/dark spots** left on skin after trauma or any skin disease such as skin infections, acne, eczemas, lichen planus, connective tissue diseases, DLE, Morphea, drug eruptions, etc.





Fig. 2. Melasma (Pregnancy mask), Before and after Laser

- **C. Deep pigmented conditions** which can be treated by lasers include birth marks like
- **a. Nevus of Ota:** A very striking birth mark characterized by grayish blue flat discoloration present on the face around the eyes usually on one side. The results of laser treatment for this condition are excellent and highly satisfactory.
- **b. Drug induced pigmentation:** Certain medicines (e.g. minocycline) when taken for long duration can cause bluish gray dermal pigmentation in some individuals.





Fig. 3. Nevus of Ota: Pre and Post Laser

Deeper pigmented skin conditions like nevus of Ota and drug induced pigmentation can also be treated by QS pigment specific lasers with adequate penetration into dermis, especially Qs Nd:YAG laser which is also safer in dark skin individuals as it penetrates deeper and also does not interfere with the normal skin color.

It is better to start laser therapy early in childhood as it requires fewer sessions and has less side effects. Most common adverse effects of laser therapy included intraoperative pain, dyspigmentation, both hypo and hyperpigmentation and scarring.

It is important to be sure of diagnosis before treatment of pigmented skin conditions with lasers and a skin biopsy must be performed where there is suspicion of skin cancer.

# Laser treatment of Disorders of Hypopigmentation

The main lasers used in cases of Vitiligo and other hypopigmented lesions is Excimer laser.







Hand Held Excimer Lamp

Excimer laser treatments are usually painless with just a sensation of warmth at the laser treatment site.

Ultraviolet protective goggles must be worn by the patient and all the staff in the operating room. Vitiligo on the face, neck, trunk, arms and legs repigments better than vitiligo on the elbows, knees, wrists, ankles and dorsa of the hands and feet.

Results are better if laser treatments are combined with other topical treatment of vitiligo. Similar to vitiligo, Excimer laser treatment can be used for hypopigmented striae and scars.

Laser treatments are followed by mild to moderate redness. High dose of laser light may be followed by sunburn like reaction or even blistering. In such cases patient, should be instructed to use antibiotics or a mild steroid cream and an emollient. Tanning of the normal surrounding skin can occur which is usually temporary.



# **Conclusion**

The development of QS pigment specific lasers have allowed for a safe and efficient treatment of multiple pigmented skin conditions. Additionally, few long pulsed lasers and IPL(Intense pulsed light) sources have also been found to be helpful in some pigmented conditions.

# **ABLATIVE LASERS IN BENIGN SKIN TUMOURS**

**Dr. Sussamma George**Dermatologist
Al Rashid Hospital, Salmiya



# What is ablation:

When intense energy is rapidly delivered to a small tissue volume in a single pulse the tissue is heated to its boiling point in a process called ablation.

A number of ablative lasers are used due to remove benign skin tumors. They obtain good cosmetic results with minimal side effects. Laser allows precise control of ablation depths and it permits the surgeon to vary its depth as needed.

# **Available laser systems**

CO2 Laser is a highly versatile Laser and and is useful for treating a variety of conditions. CO2 Laser emits the invisible infrared rays 10,600nm either in continuous or pulsed/superpulsed/ultra pulsed mode. To achieve maximum vapourization with minimum thermal damage tissue must be vapourized in a single pulse..It achieves bloodless field and with the current energy ,short pulsed, flash scanner monitoring systems excellent cosmetic effect can be achieved with minimal side effects.

Erbium YAG laser. Its emission wave length is 2940nm the main peak of water absorption which is 10-16 times greater than CO2 laser. Absorption takes place in the first 1-2 micro meter of tissue and thus it has shallower penetration compared to 20-30 micro meter for Co2 laser. With its greater selectivity allows more precise ablation with minimal residual thermal damage.

Combined CO2 and Er YAG laser delivers both laser energies simultaneously in a synchronized manner

# **MECHANISM OF ACTION**

The laser output of Erbium YAG is directly absorbed by collagen and dermal protein whereas CO2 laser vapourizes extracellular water in the dermis. Erbium YAG pass generates the same amount of ablation whereas the pulsed CO2 generates a decreased vapourization depth with each pass. CO2Laser is used for its Ablative/ vapourizational or excisonal/cutting mode. Excisional mode employs a small spot size beam of high power to create sufficient intensity to cut soft tissue.

The wound produed by Laser ablation is just like that caused by split thickness skin grafts taken at mid reticular dermis. It is allowed to heal by secondary intention. The re-epithelialization takes place in 7-12 days from the wound margin and from the remnants of epidermal appendages like hair follicles, sebaceous and sweat glands.

#### **PROCEDURE**

The raised lesions are individually ablated repeatedly 3-4 passes till the surface of the lesion is flattened and minimally raised. Larger growths may have to be partially excised (debulking) with cutting mode.

# Contraindications

Active acne, isotretinoin treatment in the past for two years are absolute contra indications. Patients

with decreased adnexal structures, scleroderma, irradiation or burn are poor candidates Benign tumors or growths amenable to removal by laser

- 1. DPN
- 2. Melanocytic nevi (moles)
- 3. Syrnigomas
- 4. Trichoepitheliomas
- 5. Skin tags
- 6. Milia
- 7. Xanthelasma
- 8. Viral warts
- 9. SEbaceus hyperplasia
- 10. Rhinophyma

# **XANTHELASMA PALPEBRUM**

These are yellow plaques that occur most commonly near the inner canthus of upper and lower eyelids often seen in people with high cholesterol or lipid level in blood. Enhanced haemostasis, lack of suturing and speed is the benefit of laser therapy.CO2 and argon laser are used. Scarring and pigmentary lesions can occur.

# **DERMATOSIS PAPULOSA NIGRICANS (DPN)**

DPN is small 1 to 5 millimeter sized smooth firm black or dark brown papules on the face and neck of Africans or dark skinned people. Females are affected more than males. Nd YAG Laser has been reported to achieve excellent results. Treatment is kept superficial to minimize the risk of complications.





Fig. DPN, Pre and Post Treatment

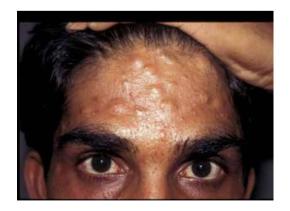




Fig. Melanocytic nevus (Pre and post removal)







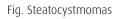




Fig. Benign Appendageal Tumors

# **TRICHOEPITHELIOMA**

Single or multiple benign hair follicle tumors on the face usually appear after puberty. Recurrence of solitary lesions are rare but multiple trichoepithelioma tend to regrow even after laser therapy, sometimes very rapidly. Scarring may result after therapy. Treatment of 1 or 2 lesions showing the patient final result may be helpful before embarking on extensive aggressive therapy.

# **ANGIOFIBROMAS**

It is a dermatologic manifestation of a rare condition called tuberous sclerosis characterized by small flesh coloured papules on the face. Long lasting improvement and good cosmetic results are achieved by laser.



Viral Warts





Better Everyday





FH 1130 YOUNG



To absorb foods

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To absorb foods 1.7 Kgs



Upper heating 200 Watt





Upper heating









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- Upper heating 1400 Watt
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   Automatic stirring process
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   Dishwasher safe





























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# LASERS FOR VASCULAR LESIONS

*Dr. Swati Kapadia*Dermatologist

Yiaco Apollo Medical Center, Salmiya



Laser therapy of vascular lesions was first developed in the mid 1960's. The first working laser was the ruby laser developed by Maiman in 1960. Development of the concept of selective photothermolysis and its successful clinical application in the flash lamp-pumped pulsed dye laser (PDL) opened the doors for advances in laser treatment of vascular lesions.

# **Vascular lesions**

Lasers have been used successfully to treat a variety of vascular lesions including birthmarks like port wine stain and hemangiomas, facial telangiectasia and leg veins.

Lasers that have been used to treat these conditions include KTP, pulsed dye lasers and ND:YAG laser.

The pulsed dye laser is considered the laser of choice for most vascular lesions because of its superior clinical efficacy and low risk profile.

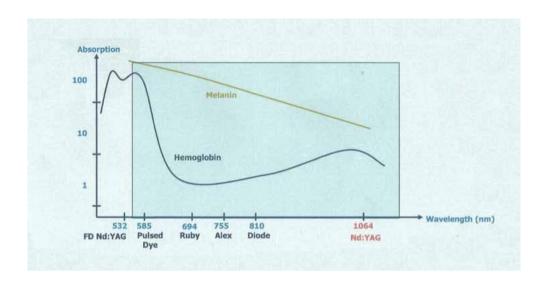
Non laser, intense pulsed light (IPL) devices can also be used for treating vascular lesions.

# **Classification of Vascular Lasers**

| Type of Laser                    | Wavelength                 | Indications                 |
|----------------------------------|----------------------------|-----------------------------|
| • Argon                          | •488 nm CW                 | • Vascular                  |
| •KTP(frequency doubled ND:YAG)   | •514 nm CW<br>•532 nm QS   | Vascular     Telangiectasia |
| • Copper Vapor                   | •511 nm                    | • Blood Vessels             |
|                                  | •578 nm(pseudo continuous) |                             |
| •Tunable Dye(argon laser pumped) | •550 – 585 nm CW           | • Blood Vessels             |
| • Pulsed Dye Laser(PDL)          | •585 nm                    | • Blood Vessels             |

CW - Continuous Wave

QS - Q-Switched



# **Mechanism of Action of Vascular Lasers**

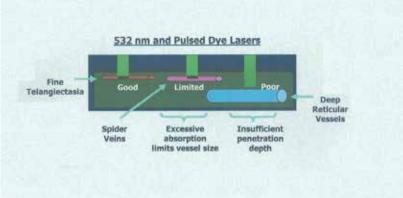
Vascular lesions contain the chromophores hemoglobin and oxyhemoglobin, which become the targets for wavelength specific laser light energy.

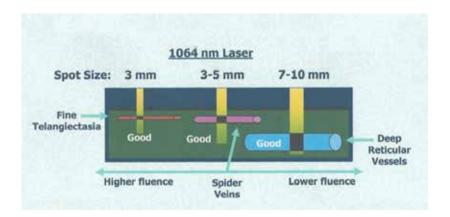
• Small, red and shallow vascular lesions best treated with small spot size, high fluence and shorter pulse duration with short wavelength vascular lasers.

 Large, blue and deep vascular lesions best treated with larger spot size, lower fluence and longer pulse duration with longer

with longer vascular lasers.

wavelength





| (A) | Birthmarks and Vascular Malformation | Hemangiomas (superficial/deep/mixed)                     |
|-----|--------------------------------------|--|
| (p) | Tolongiaetorio                       | Port wine stain  |
| (B) | Telangiectasia                       | Facial telangiectasia                                    |
|     |                                      | Leg telangiectasia                                       |
| (C) | Angiomas                             | Steroid induced telangiectasia                           |
|     |                                      | Cherry angiomas  |
|     |                                      | <ul><li>Spider angiomas</li><li>Angiokeratomas</li></ul> |
| (D) | Rosacea                              | Granuloma pyogenicum                                     |

# Most common types of vascular lesions treated with laser include:

1. Port wine stain (Nevus flammeus) These are vascular malformations usually present at birth that persist through out life and do not resolve spontaneously as in case of hemangiomas. They appear as discrete pink to burgundy red flat patches of skin of varying sizes



Fig. Port Wine Stain (Nevus flammeus): Pre and Post Laser

Choice of laser - Pulsed Dye Laser (PDL)

- Argon (CW) Laser
- Copper vapor Laser



Fig. Infantile hemangiomas, different locations











Fig. Ulcerated Hemangioma







Fig: Hemangioma, large and difficult location

Fig. Hemangioma that may interfere with vision

**2. Hemangiomas:** are benign tumors of capillary endothelium, usually not present at birth, proliferate during the first year of life and then involute. Some lesions may be large and ulcerate. Majority can be left to involute spontaneously. However as spontaneous resolution may take months to years, and can leave behind unsightly residual outpouching of redundant skin. Many a times removal is requested by parents because of social reasons.

**Complicated Hemangiomas:** Those near the eyes (may impair development of normal vision), in the midline of the face, or back, covering the nasal opening (obstructing breathing) or near the mouth (interfering with feeding) can have complications (bleeding, infection, rapid growth, DIC) need to be treated urgently. Currently oral propranolol under supervision is a very useful and effective treatment for many of these patients and should be offered. Oral Steroids are also used sometimes. Lasers also offer a very useful treatment modality and can be combined.

Choice of laser – FPDL (flash-lamp pulsed dye laser)

- Pulsed ND:YAG (1,064 nm) for deeper vascular components

# 3. Telangiectasia

They are visible dilated blood vessels. Can occur any where, but are common on face and lower limbs. Can arise without reason, or associated with overweight, and dilated varicose veins esp those on the legs. Prolonged use of topical steroids is a common cause. Sometimes they are caused or are associated with underlying skin conditions such as rosacea, excessive sun exposure/photodamage, SLE, etc.





Fig. Telangiectasia (Pre and Post Laser)

Choice of laser - PDL

- Pulsed ND:YAG(532 nm)

Deep Reticular Veins

Choice of laser - Pulsed ND:YAG laser(532 nm)

# 4. Cherry Angiomas

They are discrete, small, bright, red papules about 1-3 mm located mainly on upper trunk. Most people develop them with age. Face and trunk common sites. Uncommonly associated with liver disease and rarely with other systemic conditions

Choice of laser – PDL

- Pulsed ND:YAG(532 nm)







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- » Cardiology & Internal Medicine
- » Urology
- » ENT & Audiology
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# **Laser treatment of Tattoos**

# **Dr. Manish Rijhwani**Dermatologist Farwaniya Hospital



# **Introduction**

Tahitian word "tatau" refers to both the deliberate as well as accidental introduction of permanent colors into the skin through punctures. It is different from temporary coloration of skin by applying henna, or other color solutions/stickers during social occasions for which the appropriate term is painting. Tattooing is prevalent worldwide and is becoming more common, as a result of a common fad, peer influence, or as a cultural phenomenon. The popularity and demand of laser removal of tattoos also has continued to grow simultaneously. Removal of tatttos is sought for mainly cosmetic reasons but many a times also to become eligible for certain professions such as armed forces, medical professions etc. in some countries. Lasers provide a very effective, safe and easy method of removing most of the tattoos.

The lasers used mainly for treatment of pigmentation or tattoos are Qs-KTP (potassium titanyl phosphate), Qs-ruby, Qs-alexandrite and Qs-Nd:YAG (Neodymium-yttrium-garnet) lasers.

Recently, more effective picoseconds lasers have been introduced which have been found to have excellent results.

# Types of tattoos

Tattoos are classified as decorative, cosmetic, traumatic, medical and iatrogenic i.e. produced by any treatment.

a. Decorative tattoos: are the most common and further divided into amateur i.e. tattoos done road side or at home and professional i.e. done at a professional studio. An electric motorized machine having pins is used to introduce different pigment inks into the skin. A wide variety of color pigments are used for producing different mono or multicolor tattoos. Modern tattooing inks

are carbon-based pigments. The traditional pigments used are carmine, indigo, vermilion, India ink, chrome green, cobalt blue, cinnabar (red) and cadmium sulphide (yellow). Ferrous oxide is used to pigment the eyebrow area. As the tattoo injecting needles pierce the skin and come in contact with blood, there is a chance of transmitting infections if proper aseptic conditions are not followed while tattoing (as in case of amateur roadside tattooing). Other skin reactions may also follow tattooing.



Fig. 1. Professional

VS

Amateur Tattoo





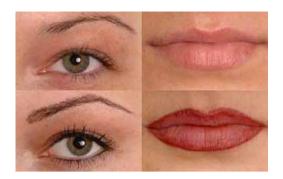


Fig. 3: Cosmetic Tattoo

- b. Cosmetic tattoos also known as permanent make up are done for cosmetic purpose like enhance the eyebrows, border of lips or creation of areola following surgery of breast cancer.
- c. Traumatic tattoos result from implantation of foreign material into skin following traffic accidents, from pencil stabs, bullets or explosions.



Fig. 4. Traumatic tattoo



Fig. 5: Pre and Post Laser picture

d. Medical tattoos are usually performed to mark radiation sites during radiotherapy in cancers.

# Patient selection and Pretreatment Care

- » The ideal candidate for tattoo removal is a white individual, without sun tan and with a blue-black tattoo present for at least a year.
- » Patients should also be informed that a blurred outline approximating the shape of the original tattoo may sometimes remain following a successful laser removal.
- » Laser treatment of large tattoos may require the application of topical anesthesia, although removal of the smaller ones is usually well tolerated by patients.
- » Pre-treatment photographic documentation of the tattoo is recommended. Since tattoos are treated with pigment-specific Q-switched lasers, eye protection is critical to prevent retinal damage.
- » If eyeliner tattoo is treated, metal shields are required to protect the patient's eyes.

# **Laser Treatment**

Q-switched lasers and now the picosecond lasers are the current treatment of choice for all types of tattoos.

The choice of laser treatment for tattoos depend on the colour, depth and chemical nature of the tattoo ink.

- Black tattoos can be removed by QS Ruby, alexandrite or Nd:YAG lasers,
- Blue and green tattoos are amenable to QS ruby and alexandrite lasers
- Red tattoos show improvement with Qs KTP laser.
- Yellow tattoos are the most difficult to eradicate.

Compared to the amateur ones, professional decorative tattoos may have deeper placement of larger amounts of ink and multiple pigments with various compositions and additives. Thus, amateur tattoos frequently clear after 4-6 treatments, whereas the professional ones may require significantly more sessions, typically 6-10, but occasionally as many as 20 or more .

Pinpoint bleeding is frequently noted following laser therapy.





Fig. 6. Pre and Post Laser Removal of Tattoos

#### Post laser care

An antibiotic ointment and a non-adherent dressing should be applied upon completion.

Most importantly, patients should be instructed in the proper local care of their wounds, which may take up to 1 week to heal.

Additional treatment sessions improve the final outcome and should be undertaken at least 6 to 8 weeks apart.

#### Side effects

Common side effects include post laser bleeding, blistering, infections, hypo-and hyperpigmentation and textural changes in skin. Scarring is not common but may become keloidal or hypertrophic.

Allergic and photoallergic reactions to various tattoo pigments are well documented. Mercury-containing red ink is the most common cause of allergic tattoo reactions and cadmium in the yellow ink is known to elicit photoallergic response .

Pigment darkening can occur in decorative tattoos, but is even more common in cosmetic tattoos. White, red, tan, and flesh-toned tattoos are typically implicated may change dramatically following Q-switched laser exposure. Thus, test spots in the most inconspicuous portions are recommended for all cosmetic or other types of tattoos that contain such colors.

#### Conclusion

Recently introduced picoseconds lasers are expected to have even better clearing of tattoo in fewer sessions with fewer side effects. Another important development is the new laser susceptible tattoo inks, which may greatly simplify the removal of tattoos with the currently available laser machines.

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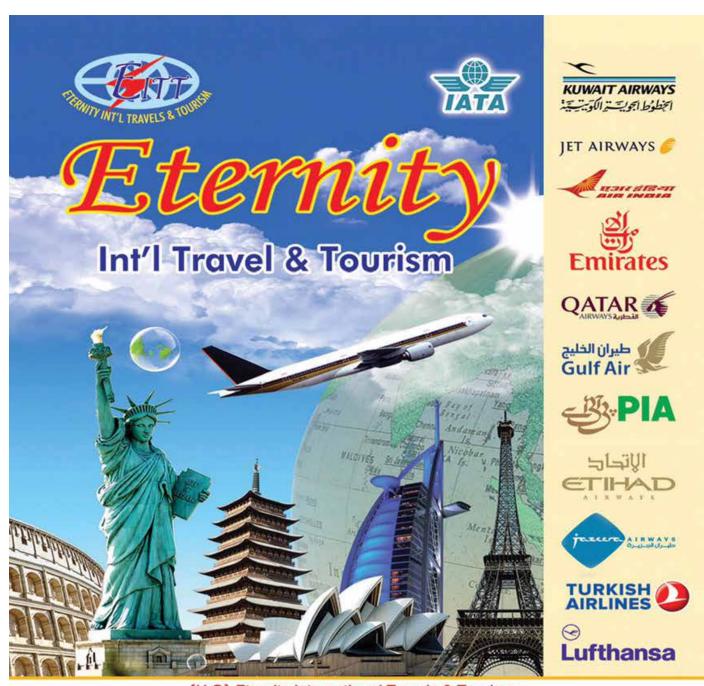


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#### ANESTHESIA FOR AESTHETIC SURGICAL PROCEDURES

*Dr. Samuel Prakash Kunder, Anesthesiologist,*Farwania Hospital

## *Dr. Abhay Patwari, Anesthesiologist,*and Jaber Al-Ahmed Armed Forces Hospital





Aesthetic (Cosmetic) surgeries or plastic reconstructive surgeries are procedures done to correct anatomic asymmetry, to enhance beauty, after injury or for just getting back into shape. Patients do not come to the hospital for anesthesia services but it is a necessary technique if you want to undergo a surgical procedure. So before deciding to undergo an aesthetic surgical procedure please keep the risks associated with anesthesia in mind. Although the risk of serious complications due to anesthesia is currently estimated to be as low as 1:200,000 for a healthy patient undergoing superficial surgery and can vary from simple nausea and vomiting to severe disability and even death, it is still not zero. Surgery can be classified as major or minor but every anesthesia is a major procedure and carries the same risk. This is not to frighten patients seeking help but to let them make an informed decision regarding their choice.

Aesthetic surgery is a specialised field of surgery where gifted surgeons use precise incisions to contour and enhance the external appearance of individuals. This branch of surgery is often accompanied by anesthetists who complement these skilled surgeries with safe and pain free anesthesia.

Some of the common procedures where anesthetic services are required are liposuction, breast implant surgery, cosmetic or post cancer reconstruction, body contouring after weight loss surgery, etc. The common types of anaesthesia applied for such surgeries are tumescent, general and epidural anaesthesia. Local anesthesia or ring-blocks are employed for certain minimally invasive skin procedures such as punch grafting, split skin thickness grafting, simple excissions, botox injections, dermabrasion etc.

#### Problems associated with liposuction

Tumescent anesthesia: It is technique that is popular among surgeons. A large volume of dilute local anesthetic called tumescent fluid is injected in to the fat layer. This is done to make the fat layer turgid and swell up to facilitate the procedure, offer pain relief later and decrease the blood loss during the procedure.

Depending on how much fat is aspirated (removed), the procedure can be divided in two types: High volume, (> 4 litres) and Low volume (< 4 litres).

» High volume aspiration liposuction: requires general anesthesia where as low volume is done with sedation and local anesthesia alone. Though liposuction may seem simple, there are complications during the procedure like fluid shift in the body causing a condition called pulmonary edema (wet lungs: collection of fluids in lungs causing respiratory difficulty) and local anesthetic toxicity. Patients who come for liposuction more often than not have unhealthy lifestyles and obesity which predispose them to a host of other anesthetic challenges, like difficulty in oxygenation and sleep apnea to name a few. Anesthetists usually take a careful patient history and examine them before the procedure. A careful planning to restrict the amount of fluid given intravenously and vigilance to handle most complications makes this one of the most popular procedure in the world.

» **Low volume liposuctions** are office based procedures where the procedure is offered in clinics rather than large hospitals.

People generally undergo bariatric surgery (such as sleeve gastrectomy) to lose weight after all other measures have failed. This leads to massive weight loss. The weight loss usually takes around 18 months to stabilize. The skin and subcutaneous tissue or the previous shell of the obese individual remains intact. This results in excess skin and fat sagging around face, neck, upper arms, breasts, abdomen, buttocks and thigh. Failure to address this issue results in painful chaffing, rashes and infections of the sagging skin. Patients should be strong willed to deal with this problem as it requires multiple sittings to trim the entire body. They are done in multiple sittings to avoid blood transfusion and multiple sites of pain after surgery. The surgeries offered are liposuction, abdominoplasty (Tummy tuck), breast augmentation or reduction, upper arm lift and thigh lift.

The anesthetic required for these major surgeries is usually a general anesthetic but post-operative pain management options include intravenous analgesics given as boluses or using patient controlled analgesia. The device is primarily a syringe or a chamber filled with the pain relief medication and the patient is given a hand held pneumatic activated switch. When the switch is pressed, the device delivers the pain medication. This is called 'Patient controlled analgesia (PCA). Patients are in full control of their pain management and can rarely overdose themselves because they usually fall asleep.

Epidural analgesia is offered for abdominoplasty and lower limb surgery. It is done prior to general anesthesia. This procedure is done under local anesthesia and involves a fine sterile catheter being inserted in the epidural space around the spinal cord. This long indwelling catheter is then connected to a volumetric

drug delivery pump containing local anesthetic and/or an opioid. The local anesthetic is prepared as a dilute solution offerina only relief without sideeffects like numbness of the legs. Patients can walk around with the pump since it has a battery backup and is thus called a Epidural'. 'Walking

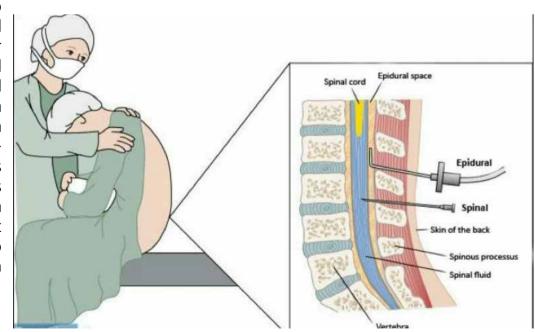
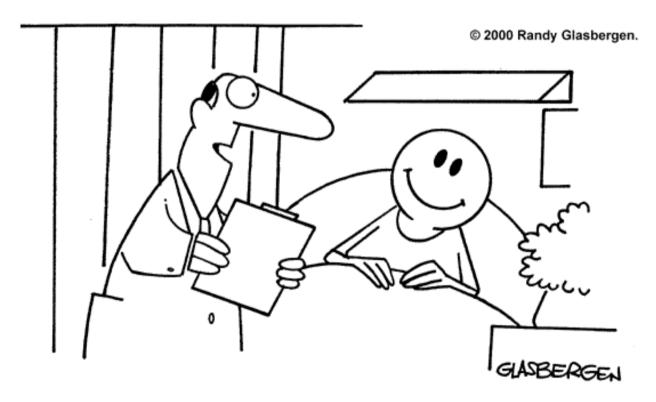


Figure 1: Epidural Analgesia

Newer adjuvant therapies in breast cancer have offered good hope, increased survival and we are seeing a growing number of breast cancer survivors coming for reconstructive surgery after mastectomy. The mastectomy scar and bed can be pretty taut offering little or no pocket for a successful reconstruction. Hence a surgery called abdominal flap advancement is done. As the name suggests, it involves shifting a part of the skin and underlying fat, with or without muscle, from the tummy and creating a breast or a pocket for subsequent breast implants. The anesthetic is usually a general anesthetic and the post surgery pain relief is pain medication as boluses or a PCA. It is an emotional and joyous experience for patients who wake up pain free after breast reconstruction. It is a well-rewarded victory after a tough battle with cancer. Anesthetists who play such an important role in your safety and comfort are seldom thanked for their services but a happy, pain-free patient is all we hope for at the end of each day.

It is suggested that patients try all non-invasive methods to improve their body structure and image before submitting themselves to the risks of anesthesia and surgery. Please remember that results cannot be guaranteed.



"Your plastic surgery was a great success, Mrs. Jones.

The lines and wrinkles are completely gone!"































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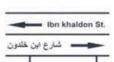












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### ABDOMINOPLASTY ('TUMMY TUCK') AND ABDOMINAL WALL LIPOSUCTION

#### Dr.Syed Farooqh Hussain Belgrami

Surgeon Al-Jahra Hospital Kuwait



Abdominoplasty also known as "Tummy Tuck" removes excess fat and skin and, in most cases, restores weakened or separated muscles creating an abdominal profile that is smoother and firmer.

Even individuals of otherwise normal body weight and proportion can develop an abdomen that protrudes or is loose and sagging. The most common causes of this include aging, heredity, repeated pregnancies and prior surgery .Most people who have lost significant weight following weight reducing procedures like Sleeve Gastrectomy or Gastric Bypass are left with an excess of loose skin over the abdominal wall and require an Abdominoplasty. Individuals who are planning substantial weight loss or women who may be considering future pregnancies would be advised to postpone a tummy tuck.

In general, you may be a good tummy tuck candidate if you are healthy and have a stable weight, you have realistic expectations and you are bothered by the appearance of your abdomen.

#### THE PROCEDURE

Under general anesthesia, an incision is made just above the groin and the abdominal wall skin and fat are lifted off the muscles till the rib margins. The skin flap is pulled down and excess skin is removed generally all that is below the navel. The abdominal muscles are made taught and the stretched skin is sutured back at the groin. Old umbilicus (navel) may be left in place or a 'neo-umbilicus' created.

Generally the operation lasts an hour or two. The patient can start eating a few hours after surgery. Drains (plastic tubes) are kept under the skin to evacuate residual blood, that takes a few days

after which these are removed and patient discharged home.

Most of the times there are no complications .However bleeding, wound infection, anesthesia related chest problems can happen and may delay discharge

It should be noted that Abdominplasty is not a weight reducing procedure, but only modifies the contour of the abdomen.



BEFORE AFTER

#### ABDOMINAL WALL LIPOSUCTION

Liposuction slims and reshapes specific areas of the body by removing excess fat deposits and improving your body contours and proportion. Abdominal wall liposuction is performed by introducing suction tubes through small incisions. The fat is broken down mechanically by the metallic suction tube or a solution that aids in its extraction or an ultrasound or a laser device that dissolves fat, before it is sucked out by suction tubes. .It can be combined with Abdominoplasty. Although it is commonly done under general anesthesia when combined with Abdominoplasty, Liposuction alone can be performed under local anesthesia with the patient being awake. In places where domestic nursing is available it can be done as a day case and patient can be discharged after the procedure and observed at home. However it is not without risks of side effects and must not be taken lightly. Complications include dropping of hemoglobin due to blood loss, fat embolism etc. After liposuction the skin of abdominal wall may become loose due to loss of fat and may need to be excised. Again it should be noted that liposuction is not a procedure for weight loss.



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#### **BREAST RECONSTRUCTION (MAMMOPLASTY)**

#### Dr. Sankara Narayan G.

Surgeon Armed forces hospital, Kuwait



MAMMOPLASTY refers to a group of surgical procedures, the goal of which is to reshape or otherwise modify the appearance of the breast.

#### **TYPES**

There are 2 types of mammoplasty.

- Augmentation mammoplasty
- Reduction mammoplasty

#### **AUGMENTATION MAMMOPLASTY**

This is used to increase the size, change the shape, and alter the texture of the breasts of woman.

#### WHAT ARE THE INDICATIONS

- Following removal of cancerous breasts
- Congenital defects of breasts, chest wall.
- Cosmetic procedure for small breasts.

#### **MFTHODS**

There are two types of Augmentation mammoplasty:

- Surgical augmentation
- Non implant breast augmentation

Surgical breast augmentation involves either placement of breast implant devices or Flap reconstruction.

#### Breast implants

2 commonly used breast implant devices are :



Breast augmentation: saline-solution filled breast implant devices, a spherical model (left) and a hemispheric model (right).



- Saline implants filled with sterile saline solution
   Silicono implants filled with viscous cilicono and
- Silicone implants filled with viscous silicone gel

Breast augmentation: Late-generation models of silicone-gel breast implant devices, a spherical model (left), and a hemispheric model (right).

Prior to this, tissue expander (a temporary breast-implant device) is emplaced and used to prepare (shape and enlarge) the recipient site (implant-pocket) to receive and accommodate the breast implant prosthesis. The surgeon inserts the inflatable expander beneath the skin and periodically, over weeks or months, injects a saline solution to slowly stretch the overlying skin. Topically applied tissue expansion devices also exist.

However, breast implant procedure are not without complications. The possible complications are:

Those related to surgery- hematoma (post-operative bleeding), seroma (fluid accumulation), incision-site breakdown (wound infection).

Complications specific to breast augmentation include breast pain, altered sensation, impeded breast-feeding function, visible wrinkling, asymmetry, thinning of the breast tissue, and symmastia, the "bread loafing" of the bust that interrupts the natural plane between the breasts.

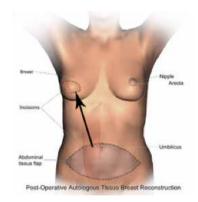
Complications of indwelling breast implants – capsular contracture, capsular rupture and platinum toxicity

MRI examinations of implant bearing breast, beginning at the 3-year-mark post-implantation, and then every two years, thereafter is recommended to screen for silent ruptures of implants.

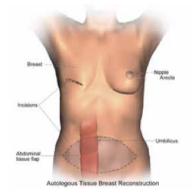
If implant is found to be ruptured, then surgical removal is recommended.

Flap reconstruction The second most common procedure uses tissue from other parts of the patient's body, such as the back, buttocks, thigh or abdomen. This procedure may be performed by leaving the donor tissue connected to the original site to retain its blood supply (the vessels are tunnelled beneath the skin surface to the new site) or it may be cut off and new blood supply may be connected.

Examples: Latissimus dorsi flap(from back muscle)



**Non** Post-operative state after Transverse Rectus Abdominis Myocutaneous flap(TRAM).



Transverse Rectus Abdominis Myocutaneous flap (TRAM). implant breast augmentation involves injection of fat grafts

harvested from the thighs, buttocks, or abdominal wall of the same individual in to the breast (Autologous fat grafts). Pre-procedure, every patient used external vacuum expansion of the recipient-site tissues to create a breast-tissue matrix to be injected with autologous fat grafts of fat tissue, refined via low G-force centrifugation. Pre- and post-procedure, the breast volumes are measured; the patients undergo pre-procedure and 6-month post-procedure MRI and 3-D volumetric imaging examinations.

At 6-months post-procedure, there is a significant increase in breast volume, ranging 60–200 per cent. The size, form, and feel of the breasts is natural. Moreover, given the sensitive, biologic nature of breast tissue, periodic MRI and 3-D volumetric imaging examinations are required to monitor the breast-tissue viability and the maintenance of the large volume (+300 cc) fat grafts .

Complications related to the procedure includes fat necrosis, calcification, and sclerotic nodules (thickened nodules).

Disadvantage is that the physical fullness-of-breast achieved with injected fat-grafts does not visually translate into the type of buxom fullness achieved with breast implants; hence, patients who had plentiful fat-tissue to harvest attained a maximum breast augmentation of one brassi re cup-size in one session of fat grafting to the breast.

#### **BREAST REDUCTION**

Reduction mammoplasty (also breast reduction and reduction mammaplasty) is the plastic surgery procedure for reducing the size of large breasts.

The indications for breast reduction surgery are

- Physical(restoration of breast size)
- Aesthetic(self image)
- Psychological reasons(mental health)

The abnormal enlargement of the breast tissues to a volume in excess of the normal bust-to-body proportions(macromastia) can be caused either by the overdevelopment of the milk glands or of the adipose tissue, or by a combination of both occurrences of hypertrophy. The resultant breast-volume increases can range from the mild (<300 gm) to the moderate (ca. 300–800 gm) to the severe (>800 gm). Macromastia can be manifested either as a unilateral condition or as a bilateral condition (single-breasted enlargement or double-breasted enlargement) that can occur in combination with sagging, (breast ptosis) that is determined by the degree to which the nipple has descended below the inframammary fold (IMF). Gigantomastia is increase in breast volume more than 1000 gms.

#### METHODS OF BREAST REDUCTION MEDICAL

- Weight reduction regimen for overweight woman can alleviate some of the excessive size and volume of enlarged breast, but is not useful in macromastia, gigantomastia.
- Physical therapy for neck, back and shoulder pain from the heavy sagging breasts.
- Skin care will diminish breast crease inflammation and lessen the symptoms caused by moisture, such as irritation, chafing, infection, and bleeding.

#### **SURGICAL**

The specific reduction mammoplasty procedure is determined by the volume of breast tissues (glandular, adipose, skin) to be resected (cut and removed) from each breast, and the degree of breast ptosis present. There are 2 procedures.

 Reduction mammoplasty -After cutting and removing the requisite quantities of tissue (glandular, adipose, skin), the nipple-areola complex is transposed higher upon the breast hemisphere; thereby achieving an elevated breasts

Breast reduction surgery cannot be performed if the woman is lactating, or has recently ceased lactating; if her breasts contain unevaluated tissue masses, or unidentified microcalcifications; if she is suffering a

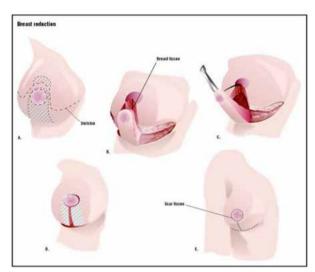
systemic illness; if she is unable to understand the technical limitations of the plastic surgery; and her inability to accept the possible medical complications of the procedure.

The post-operative complications include seroma (fluid collection, wound dehiscence, hematoma(blood collection); whereas partial NAC(nipple areolar complex) necrosis occurred in 10 per cent of the reduced breasts.

#### Lipectomy

The reduction of oversized breasts by liposuction only (lipectomy) is indicated in

- when a minor-to-moderate volume-reduction is required, and there is no breast ptosis to correct.
- the woman who requires a large-volume reduction, and wants un-scarred, sensate breasts, yet will accept a degree of ptosis;
- the woman who requires a secondary mammoplasty to correct an asymmetric breast, by up to one (1) brassière cup-size
- the girl afflicted with virginal breast hypertrophy, as a temporary procedure performed before the conclusion of her thelarche (the pubertal breast-growth phase), given the hypertrophy's high rate of recurrence.



**REDUCTION MAMMOPLASTY** 

#### Lipectomy is not done in:

- woman whose mammogram indicates that the oversized breast is principally composed of hypertrophied milk glands.
- woman whose mammograms indicate the presence of unevaluated tumors.
- the presence of a great degree of breast ptosis.
- · inelastic skin envelope.

Early complications include infection and hematoma (blood outside the vascular system)

late complications include an unsatisfactory breast-volume reduction that might require either surgical or liposuction revision.

Reduction mammoplasty: The liposuction-only technique affords a medium-volume reduction, and leaves small incision scars.



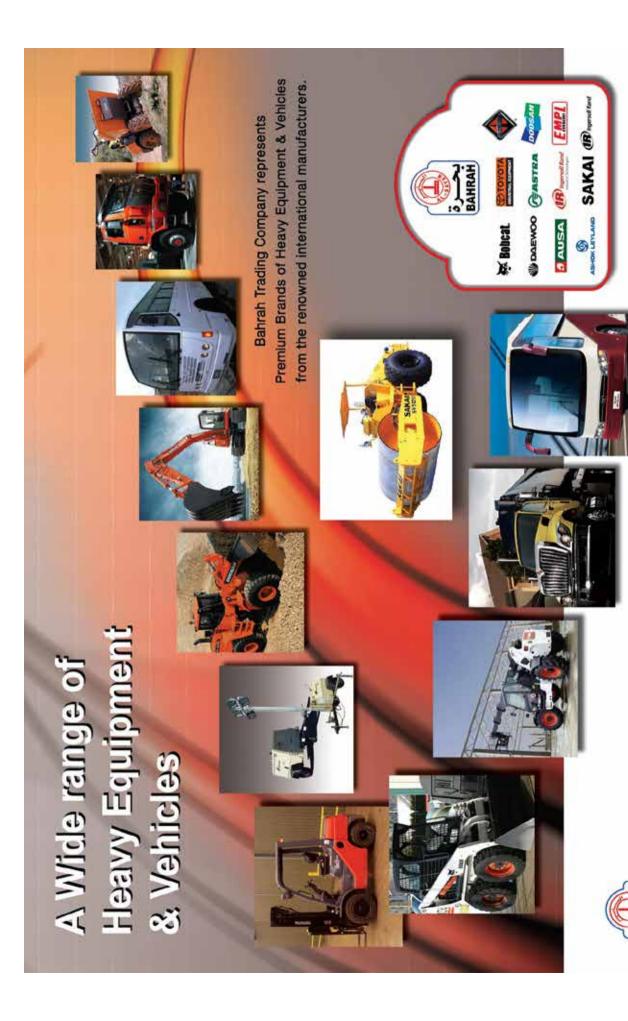
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#### **Breast Reconstruction following Mastectomy for Cancer**

*Dr. Mustafa Shakir, General Surgeon*Farwaniya Hospital, Kuwait



Breast cancer is the most common cancer in India constituting 25%-30% of all cancers in women, more commonly in urban areas. These are likely a result of life style changes which are more suited for western countries. Even when the incidence of breast cancer is rising, women opting for breast reconstruction following surgery are uncommon. In the only survey done in India, out of 1000 participants who were asked to fill a questionnaire about breast cancer, only 226 knew about reconstructive options after cancer breast surgery, due to lack of awareness. Most of the women don't enquire about reconstructive options. Moreover, breast cancer in India is usually diagnosed in advanced stages. Since it is essentially a plastic surgery, cost is high. In addition, there is common myth that reconstruction will bring back the cancer; this leads them to live their life without a part of their body.

Breast reconstruction doesn't in any way increase the chances of cancer recurrence and this has been proven with numerous scientific studies.

Breast is symbol of feminism and removal for cancer can have a devastating effect on a woman's morale, leaving her with feelings of incompleteness and low self-esteem. It would also cause awkwardness in dressing up.

We believe that every breast cancer patient who has removal of whole breast as a part of treatment should be given an option for restoring back her lost breast. With present advances in the field of reconstructive plastic surgery, most patients can opt for it, either immediately or sometimes afterwards. The choices are many, and complex, but rewarding. This information is by no means comprehensive and has to be supplemented with detailed discussions with team of specialists (Multidisciplinary team) consisting of primary care physician, General surgeon (Breast surgeon), plastic surgeon and oncologist.

"Do not just be cancer survivor, be a cancer conqueror."

#### Timing of breast reconstruction:

"Immediate reconstruction" is when it is done at the same time as mastectomy (removal of breast), it has advantage of combining two surgeries, and hence the woman does not have to go through a period without breast. This has become standard of care for most patients.

"Delayed reconstruction" is when it is done later once the cancer treatment has been completed. However, for those who never get a chance at the time of mastectomy or who were not deemed suitable for immediate reconstruction due to clinical reasons, delayed surgery can give equally satisfying results.

#### **Techniques for breast reconstruction:**

Implant: using a silicone implant can sometimes be a good simple option for immediate reconstruction. Newer expandable implants have improved the aesthetic results remarkably as they can be volume adjusted post-surgery and desired size achieved. Implants are usually offered to patients who are either not medically suitable for bigger operations or do not wish scars elsewhere in the body. Patients

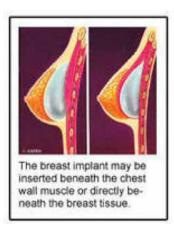
who need radiotherapy either before or after mastectomy may not be good candidates for implants, as the may interfere with the dose delivery of radiation.

#### **Autologous Reconstruction:**

"Using your own tissues" is usually an excellent option and may or may not be combined with an implant.

#### Common techniques are:

A) Latissimus Dorsi flap: (flap of tissues from your back with or without an implant) the back scar be normally under clothes. This technique can be ideal for women with small to medium sized breasts.

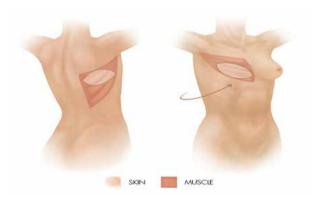


B) Abdominal TRAM flap or its modifications (Flaps taken from the tummy): Most women have excess

apron of skin and fat in the lower tummy and would be extremely happy to get a trim tummy. These are complex and long surgeries but yield excellent results in the hands of skilled surgeons. The biggest advantage is that the tissues used are all natural, the shape and appearance is stable and permanent.

#### **Nipple Reconstruction:**

This is usually done at a later stage to give time to the newly made breast to assume a normal shape. The nipple cone is reconstructed using the local skin over the new breast with crafty technique resembling the art of origami. The dark colored areola circle can either

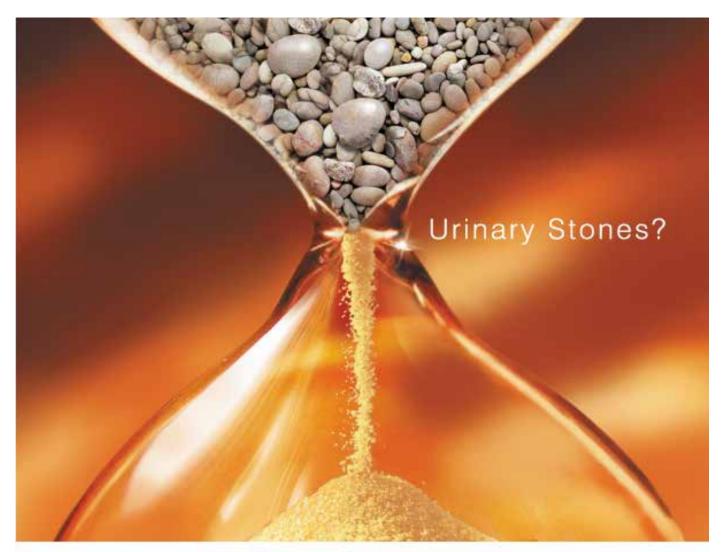


be reconstructed with skin grafts or by tattooing in a plastic surgery clinic. Nipple reconstruction truly is like an icing on the cake and thus reconstructed breasts after this look almost like normal breasts.

#### **Common Concerns:**

- 1) Scars: All surgeries result in scars, but most scars are located conveniently in areas hidden by clothes.
- 2) Sensations: Reconstructed breasts also do not have a sensation of a normal breasts but in most patients they start feeling very natural after a few months
- 3) Complications: All surgeries have some risks and although uncommon, such as but not limited to bleeding, infection, wound healing problems, fluid collection, loss of skin and clotting in legs. Due to a variety of safety measures being used these risks are minimal.
- 4) Surgery Preparations: Please stop Smoking for as long as possible.
- 5) Cost of Surgery: it does add to cost but the benefit achieved can easily justify the extra expenses.
- 6) Cost: Once cancer is cured, quality of life surely is the most important determinant of your happiness, it has been proven by large scientific studies that breast reconstruction improves the quality of life immensely and is highly satisfying endeavor.

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#### FAT GRAFTING: A POTENTIAL TOOL IN THE ART OF HEALING

**Dr. James Roy Kanjoor**,

Formerly Plastic Surgeon

Al Babtain Plastic Surgery Center, Sabah Hospital



Fat grafting is probably one of the best additions to the art and science of tissue healing that happened in the last two decades.

Fat grafting is widely accepted as an ideal means of soft-tissue filling, as fat grafts are biocompatible, nonallergenic, nontoxic, easy to obtain, and synergistic with natural skin.

It has enjoyed a rich history from Neuber in 1893, who first reported the technique (He described using lipoma specimens from the forearm to fill facial contour defects caused by tuberculosis.); to Illouz, who pioneered liposuction in the 1980s; to the modern day, where Coleman demonstrated techniques for long-term fat graft stability. New technologies are being introduced that support clinical fat grafting efforts.

The rationale for fat grafting hinges on the fact that transplanted fat requires contact with living tissue. These grafts survive by diffusion until the process of neovascularization occurs. This tenuous process leads to one of the main drawbacks to this technique, which is an unpredictable long-term survival rate. This problem has led to research and investigation into methods and techniques to increase fat viability and longevity. It evades the usual research methods only to depend on the surgeon's hands.

Adipose tissue is an ideal autologous tissue mainly used for volume replacement. Over a period of time its potential as a tissue rejuvenator turned the attention to the adipose-derived stem cells (ASC)which have been shown to be multipotent cells that can be harvested through liposuction without altering their viability. The origin of adipose-derived stem cells has not been clearly defined. Probably pericytes are the precursors of stem cells.

The potential benefits of adipose-derived stem cells are promising, as they have several advantages over bone or fat grafting alone.

- 1. Ability to continue proliferating after transplantation.
- 2.Differentiation of adipose-derived stem cells into endothelial cells and possible neovascularization.
- 3. Multipotent differentiation capacity.
- 4. Release of angiogenic growth factors.

The cell-assisted lipotransfer survived better than non–cell-assisted lipotransfer and microvasculature was detected more prominently in cell-assisted lipotransfer. Although the studies point to the potential use of cell-assisted lipotransfer fat, no randomized, prospective clinical trials have been performed to demonstrate efficacy.

The results of fat harvesting from different donor sites encourage clinicians to harvest fat from the most abundant donor source and limits possible donor-site morbidity in instances where there is a paucity of fat in a given anatomical location.

The data, considered together, suggest that infiltrative anesthetic at the donor site may cause temporary perturbations in adipocyte biology but otherwise should have no substantial consequences on long-

term graft viability.

The major step in survival of transferred fat is the time after extraction. Lipotransfer should be performed as quickly as possible after harvesting. Surgeons should be especially aware of this when working with large volumes of fat or during long procedures.

Fat grafting has been deemed a safe and effective tool for:

- 1. Breast reconstruction and breast augmentation
- 2. Facial rejuvenation. other indications keep adding
- 3. Hand rejuvenation,
- 4. Non healing wounds
- 5. Scar management

As described by Sydney Coleman, the technique of structural fat grafting involves:

- 1. Harvesting
- 2. Refinement and Transfer
- 3. Placement

There is evidence to suggest that no difference exists in cell viability between syringe aspiration and liposuction pump aspiration.

The techniques of refinement are many - centrifugation to simple decantment, enrichment with growth factors, platelet fraction or stem cell. There is no substantial proof to show any one method improves the survival.

Another crucial step is placement. Adipocyte viability was significantly greater with 2.5mm diameter injection cannulas compared with smaller diameter cannulas (1.6 or 2 mm). Blunt cannulas not only allowed for more dispersion of the grafted tissue in small aliquots but also reduced the chance of intravascular injection.

The placement of fat cells is in the form of micro ribbons in tunnels in different planes which helped good vascularization. The less you transplant the more the take. Again this concept also was challenged by some group who overfill.

Still there is no final statement about the technique of harvesting, preparation and placement.

#### Nanofat:

Any article about fat graft is not complete without mentioning Nanofat, popularized by Dr. Patrick Tonnard. It can be called an in vivo stem cell procedure. The goal of the procedure is not volume replacement. It is rejuvenation. Technically once the macrofat is harvested, it is emulsified and injected intradermally with a 26 gauge needle. The latent period for the supposedly pluripotent stem cells to work and improve the milieu is about 4-6 months

Fortunately, the complication rate with fat grafting is extremely low compared with the rate associated with most open surgical techniques, and the incidence of problems decreases dramatically with the surgeon's



Fig. 1 Macro and Nano fat.

experience. Most common complications are due to over fill and cavitation and they are:

- 1. Fat oil cyst
- 2. Fat necrosis and calcification

The practical difficulty is inability to predict the absorption rate. So most of the time it needs two to three stages of repeat fat graft. This stages may be reduced by preoperative preparation by noninvasive external expansion system called BRAVA which is a cumbersome process for the patient to use.

#### Applications of fat graft clinically:

**Breast Indications** 

- Micromastia(Small breasts)
- Postaugmentation deformity, with and without removal of implant
- Tuberous breasts
- Poland's syndrome
- Postlumpectomy deformity(removal of lump)
- Post mastectomy(removal of breast) deformity
- Deficits caused by conservative treatment or reconstruction with implants and/or flaps (latissimus dorsi or transverse rectus abdominis muscle)
- Damaged tissue resulting from radiotherapy
- Nipple reconstruction

#### Other Indications:

- Gluteal augmentation and repair of contour deformities.
- Facial augmentation and correction of defects
- Hand rejuvenation



Fig.2 Hand before fat graft

Hand after fat graft

- Lip augmentation
- Penile enlargement

#### Conclusion:

Fat graft is certainly a useful adjuvant in the scope of cosmetic surgery with less invasive repetitive procedures. The outcome is still unpredictable due to the uncertain fat absorption rate.



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## Dr. Abdussamad K. Abdullah Consultant Opthalmologist MBBS, DOMS, MS (Oph), DNB (Oph)



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- Laser treatment for Diabetic Retinopathy and other retinal problems
- Evaluation and management of all eye related problems in children Refractive errors, Squint, and other visual disabilities







#### **ARM REJUVENATION & ARM LIFT:**

#### Dr. James Roy Kanjoor ,

Plastic Surgeon

Al Babtain Plastic Surgery Center, Sabah Hospital



#### Introduction:

Excessive fat deposit or skin laxity are always the two factors that decide the classification, plan and outcome in any body contouring procedure.

Lipodystrophy has made it difficult for proper fitting garments especially the visible areas around elbow and sometimes the junction of torso and arm. The common area of concern is the upper arm.

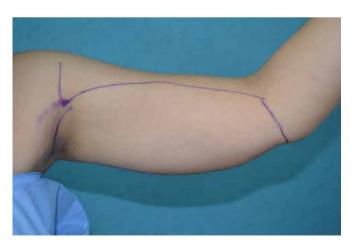
Arm rejuvenation has attracted more attention following the increase in the post bariatric population. Young obese individuals with good elastic skin needs only a liposuction followed by a compressive garment for 3-6 weeks. The deflated inelastic skin needs excisional contouring. The skin laxity along the lateral chest sometime demands the extended brachioplasty where the upper lateral chest is also addressed.

#### **Procedure:**

An algorithm is helpful to plan the management. The algorithm is a compilation of techniques that can be used for upper extremity contouring that, when properly selected, can give the most aesthetic outcome. The three parameters are:

- 1.Fat content
- 2.Skin laxity
- 3.Location of these deformities

A simple fat deposit needs only a liposuction by small stab wounds as a day care procedure.



1a. Arm before liposuction



1b. Arm after liposuction

Skin excess, laxity and advancing age needs an excisional procedure. The final placement of scar gets the utmost importance due to its visibility. A medially placed or brachioradial scar gives a good result. The upper lateral chest also need to be addressed in few patients thereby a harmonious result can be achieved.





2a. Arm before arm lift

2b. Arm after arm lift

The common complications following the brachioplasty are seroma, delayed wound healing and visible hypertrophic scars.

The postoperative management needs good compressive garments for 6 weeks, massage and scar management.

Consultant Plastic Surgeon

Roy's Cosmetic Surgery Centre www.drroyplasticsurgery.com No 20, Globe building, MTP Road, Coimbatore-641043 Tamilnadu, India.

#### **THIGH LIFT**

**Dr. James Roy Kanjoor**,

Plastic Surgeon

Al Babtain Plastic Surgery Center, Sabah Hospital



#### **Introduction:**

Surgical rejuvenation of the medial thigh has historically been fraught with frustration and complication. Early techniques were associated with such morbidities as inferior wound migration, scar widening, lymphatic disruption, and the dreaded labial traction deformity. Because of such complications, the procedure was less than revered and often abandoned. Probably the most dreaded complication after thigh lift was recurrent lymphatic cyst and fistula formation. Improper planning resulted in widening of scars, and lateral traction deformities of vulva.

As a result, the medial thigh remains a troublesome region for body contouring both in the aging patient with skin laxity and lipodystrophy and in the massive weight loss patient who has significant medial thigh skin laxity. Although suction-assisted lipectomy is effective for contouring the medial thigh in the patient with lipodystrophy, this technique often fails to remodel and tighten the inner thigh, where the skin is thin and inelastic. As a result, rejuvenation of the medial thigh requires both the removal of fat deposits and the excision and redraping of the medial thigh skin.

The demand for medial thigh lift seems to have increased following the post weight loss procedures scenario.

#### **Procedure:**

The continuing effort to improve the healing have helped us combine liposuction and minimal excision thereby eliminating the complications of major excision. The liposuction removes the fat load but the same time preserves the veins, lymphatics and nerves thereby avoiding the complications and reducing the length of scar.

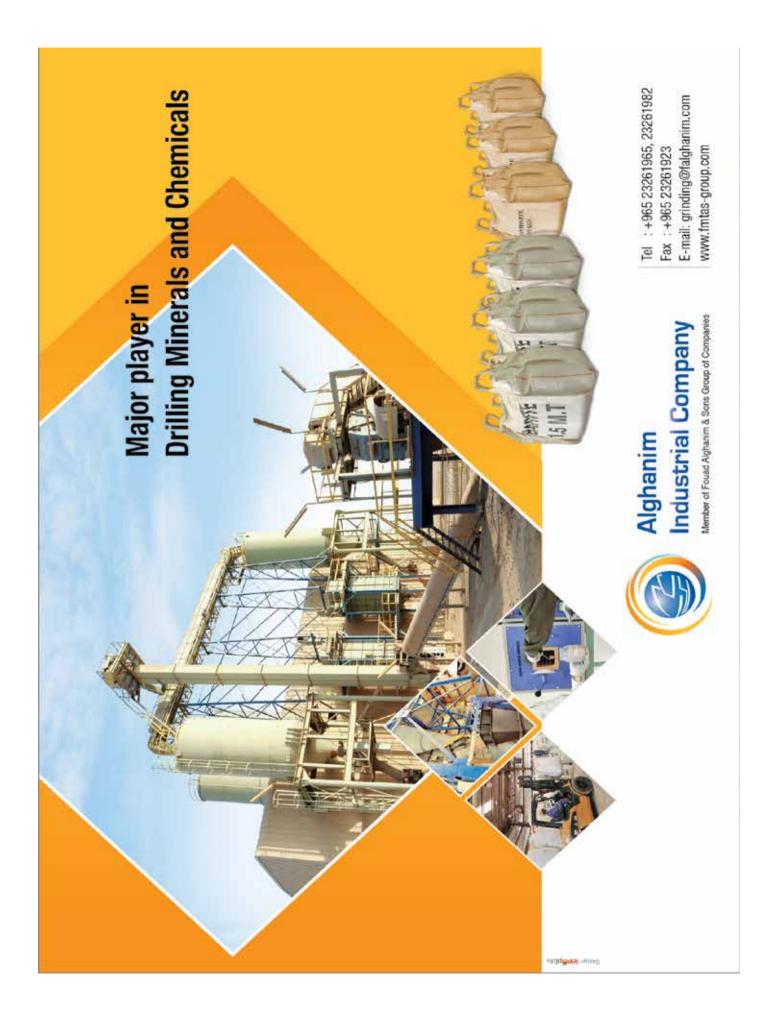
The excisional patterns depend on the anatomical distribution of skin laxity.

- 1. Horizontal: When upper inner thigh is redundant and lipodystrophic
- 2. Vertical
- 3. L shaped with upper medial extension.

The most recent addition to the methods is the 'Avulsion thighplasty' whereby after an aggressive liposuction, only the skin alone is avulsed thereby preventing any disturbance to the lymphatics, veins and nerves. A simple closure achieves a primary wound healing without any seroma or lymph cyst. There should not be any flap elevation.

With these evolving precise surgical techniques, thigh lift has become a safe procedure. Roy's Cosmetic Surgery Centre.

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#### **CLEFT LIP AND PALATE**

**Dr. Sunil Yadav,** Pediatric Surgeon, Ibn Sina Hospital



#### Introduction:

Cleft lip and cleft palate are birth defects that occur when a baby's lip or mouth do not form properly during pregnancy. Cleft lip is due to a physical split or separation of the two sides of the upper lip and appears as a narrow opening or gap in the skin of the upper lip. This separation often extends beyond the base of the nose and includes the bones of the upper jaw and/or upper gum. A cleft lip can be on one or both sides of the lip or in the middle of the lip, which occurs very rarely. In cleft palate there is a split or opening in the roof of the mouth. A cleft palate can involve the hard palate (the bony front portion of the roof of the mouth), and/or the soft palate (the soft back portion of the roof of the mouth). Because the lip and the palate develop separately, it is possible to have a cleft lip without a cleft palate (Fig. 1), a cleft palate without a cleft lip (Fig. 2), or both together (Fig. 3).



Fig. 1: Baby with cleft lip



Fig. 2: Baby with cleft palate



Fig. 3: Baby with cleft lip and palate

#### How common is the problem?

Worldwide one out of every 600 new born babies is born with this condition. Highest rate of these defects have been reported in Native Americans and Asians while African population has lowest incidence of these anomalies. Compared with girls, twice as many boys have a cleft lip, both with and without a cleft palate. However, compared with boys, twice as many girls have cleft palate without a cleft lip.

#### Why does it happen?

There have been many speculations to the causes of cleft lip and palate throughout human history with many traditional explanations. An early Chinese belief was that eating rabbit during pregnancy could lead to a "hare lip," and others believed that bad karma, curse of God were the cause. In modern day Filipinos, a common belief is that force to the fetal face when fingers are in the mouth is the cause of clefts. Many other cultures believed that clefts were familial or in the blood. Most of the early thoughts on the causes of cleft have been disproved of course but the belief that there was familial component

still stands today.

Cleft lip and cleft palate occur when tissues in the baby's face and mouth don't fuse properly. Normally, the tissues that make up the lip and palate fuse together in the second and third months of pregnancy. But in babies with cleft lip and cleft palate, the fusion never takes place or occurs only part way, leaving an opening (cleft).

#### Risk factors for having a baby with cleft lip and palate:

Doctors don't always know why a baby develops cleft lip or cleft palate, but many clefts are thought to be a combination of genetic (inherited) and environmental factors.). Both mothers and fathers can pass on a gene or genes that cause cleft palate or cleft lip. If one parent has cleft lip and palate there is 3-6% chances of having a baby with this defect. Mothers who are deficient in folic acid are more likely to give birth to baby with birth defects including cleft lip and palate. Babies born to a diabetic mothers have higher chances of cleft defects. Recent researchers have shown that smoking, drinking and intake of antiepileptic medicines during pregnancy are known risk factors.

#### **How Are Cleft Lip and Cleft Palate Diagnosed?**

Because clefting causes very obvious physical changes, a cleft lip or cleft palate is easy to diagnose. Prenatal ultrasound can sometimes determine if a cleft exists in an unborn child. If the clefting has not been detected in an ultrasound prior to the baby's birth, a physical exam of the mouth, nose, and palate confirms the presence of cleft lip or cleft palate after a child's birth. Sometimes diagnostic testing may be conducted to determine or rule out the presence of other abnormalities.

#### Why to treat:

It may not be the end of life but for children with cleft problem, the problem goes beyond the obvious disfigurement of face and extends to eating problems, repeated infections, social stigma, and mental impairment that affect the speech, hearing, and teeth formation. These children suffer with emotional "burn out" in adolescence. Therefore, it has been suggested that these patients should be included in national policies for integration of handicapped people, in agreement with programs of human rights, establishing a collaborative action between state and society. This would assure their inclusion in the socioeconomic and cultural context and equal opportunities in society, without privileges or paternalism.

#### Who Treats Children With Cleft Lip and/or Palate?

Due to the number of oral health and medical problems associated with a cleft lip or cleft palate, a team of doctors and other specialists is usually involved in the care of these children. Members of a cleft lip and palate team typically include: plastic or pediatric surgeon, ENT surgeon, dentist, prosthodontist, speech therapist, nurse, social worker and geneticist. Treatment usually begins in infancy and often continues through early adulthood.

#### **Surgical Treatment**

Cleft deformities are a challenge to the surgeons since very long period. A cleft lip is usually surgically repaired in the hospital using general anesthesia when a child is 3 to 6 months old. If the cleft lip is wide, special procedures like lip adhesion or a molding plate device might help bring the parts of the lip closer together before the lip is fully repaired. Cleft lip repair usually leaves a small scar on the lip under the nose.

At 9-12 months of age, a cleft palate usually can be repaired. Plastic surgeons connect the muscles of the soft palate and rearrange the tissues to close the cleft. This surgery requires general anesthesia and

a short hospital stay for recovery. The goal of surgery is to create a palate that works well for speech. Some kids, however, will continue to sound nasal after cleft palate repair, and some may develop a nasal voice later on. More surgeries may be needed as children grow older and their facial structure changes — this can include surgeries like pharyngoplasty, which helps improve speech, or alveolar bone grafts, which help provide stability for permanent teeth. A bone graft closes gaps in the bone or gums near the front teeth and is usually done when kids are between 6 and 10 years old. As children become teens, they will likely want to (and should) be more involved in their care. They may want to have their scars made less noticeable, improve the appearance of their nose and upper lip, or improve their bite with orthognathic surgery. These operations may improve speech and breathing, overbites/ underbites, and appearance.

#### What Is the Outlook for Children With Cleft Lip and/or Cleft Palate?

Although treatment for a cleft lip and/or cleft palate may extend over several years and require several surgeries depending upon the involvement, most children affected by this condition can achieve normal appearance, speech, and eating (Fig. 4).



Fig. 4: Baby with bilateral cleft lip and palate before and after surgery

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#### RHINOPLASTY

*Dr Imtiyaz Nawaz, ENT Surgeon,*Farwaniya Hospital



#### **Definition**

The term Rhinoplasty means "nose moulding" or "nose forming." It refers to a procedure in ENT and plastic surgery in which the structure of the nose is changed. The change can be made by adding or removing bone or cartilage, grafting tissue from another part of the body, or implanting synthetic material to alter the shape of the nose.

Rhinoplasty is the most frequently performed cosmetic surgical procedure. According to the American Society of Plastic Surgeons (ASPS), 356,554 Rhinoplasties were performed in the United States in 2003, compared to 254,140 breast augmentations and 128,667 facelifts.

#### **Purpose & Precautions**

The best candidates for rhinoplasty are those with relatively minor deformities. Nasal anatomy and proportions are quite varied and the final look of any rhinoplasty operation is the result of the patient's anatomy, as well as of the surgeon's skill.

The quality of the skin plays a major role in the outcome of rhinoplasty. Patients with extremely thick skin may not see a definite change in the underlying bone structure after surgery. On the other hand, thin skin provides almost no cushion to hide the most minor of bone irregularities or imperfections.

A cosmetic change in the shape of the nose will change a person's appearance, but it will not change self-image. A person who expects a different lifestyle after rhinoplasty is likely to be disappointed.

Rhinoplasty should not be performed until the pubertal growth spurt is complete, between ages 14-15 for girls and older for boys.

The cost of rhinoplasty depends on the difficulty of the work required and on the specialist chosen. Rhinoplasty is most often performed for cosmetic reasons. A nose that is too large, crooked, misshapen, malformed atbirth, or deformed by an injury orcancer, rhinoplasty surgery can give a more pleasing appearance. If breathing is impaired due to the form of the nose or to an injury, it can often be improved with rhinoplasty.

Rhinoplasty is not usually covered by insurance.

#### **Description**

The external nose is composed of a series of interrelated parts which include the skin, the bony pyramid, cartilage, and the tip of the nose, which is both cartilage and skin. The strip of skin separating the nostrils is called the columella.

Surgical approaches to nasal reconstruction are varied. Internal rhinoplasty involves making all incisions inside the nasal cavity. The external or "open" technique involves a skin incision across the base of the nasal columella. An external incision allows the surgeon to expose the bone and cartilage more fully

and is most often used for complicated procedures. During surgery, the surgeon will separate the skin from the bone .The framework of the nose is then reshaped in the desired form. Shape can be altered by removing bone, cartilage, or skin. The remaining skin is then replaced over the new framework. If the procedure requires addition to the structure of the nose, the donated bone, cartilage, or skin can come from the patient or from a synthetic source.

When the operation is over, the surgeon will apply a splint to help the bones maintain their new shape. The nose may also be packed or stuffed with dressing to stabilise the septum.

When a local anesthetic is used, light sedation is usually given first, after which the operative area is numbed. It will remain insensitive to pain for the length of the surgery. A general anaesthetic is used for lengthy or complex procedures or if the doctor and patient agree that it is the best option.

Simple rhinoplasty is usually performed in an outpatient surgery centre or in the surgeon's office. Most procedures take only an hour or two, and patients may return home right away. Complex procedures may be done in the hospital and require a short stay.

#### **Preparation**

During the initial consultation, the patient and surgeon will determine what changes can be made in the shape of the nose. Most doctors take photographs at the same time. The surgeon will also explain the techniques and anaesthesia options available to the patient.

For legal reasons, many plastic surgeons now screen patients for psychological stability as well as general physical fitness for surgery.

When a person consults an ENT surgeon or plastic surgeon for Rhinoplasty, he spends some time with the patient to know the motive behind the operation

The following are considered psychological warning signs:

- The patient is considering surgery to please someone else, most often a spouse or partner.
- The patient expects facial surgery to guarantee career advancement.
- The patient has a history of multiple cosmetic procedures and/or complaints about previous surgeons.
- The patient thinks that the surgery will solve all his or her life problems.
- The patient has an unrealistic notion of what he or she will look like after surgery.
- The patient seems otherwise emotionally unstable.

The patient and surgeon should also discuss guidelines for eating,

drinking, smoking, taking or avoiding certain medications, and washing of the face.

#### **Aftercare**

Patients usually feel fine immediately after surgery; however, most surgery centres do not allow patients to drive themselves home after an operation.

The first day after surgery there will be some swelling of the face. Patient should stay in bed with their heads elevated for at least a day. The nose may hurt and a headache is not uncommon. The surgeon will prescribe medication to relieve these conditions. Swelling and bruising around the eyes will increase for a few days, but will begin to diminish after about the third day. Slight bleeding and

stuffiness are normal, and vary according to the extensiveness of the surgery performed. Most people are up in two days, and back to school or work in a week. No strenuous activities are allowed for two to three weeks.

Patients are given a list of postoperative instructions, which include requirements for hygiene, exercise, eating, and follow-up visits to the doctor. Patients should not blow their noses for the first week to avoid disruption of healing. It is extremely important to keep the surgical dressing dry. Dressings, splints, and stitches are removed in one to two weeks. Patients should avoid sunburn.

Patients should remember that it may take as long as a year for the nose to assume its final shape; the tip of the nose in particular may be mildly swollen for several months.

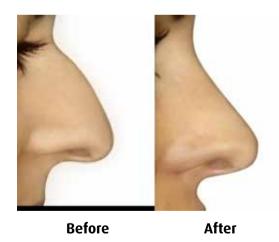
#### **Risks**

Any type of surgery carries a degree of risk. There is always the possibility of unexpected events, such as an infection or a reaction to the anaesthesia. Some patients may have a so-called foreign body reaction to a nasal implant made from synthetic materials. In these cases the surgeon can replace the implant with a piece of cartilage from the patient's ownbody.

Some risks of rhinoplasty are social or psychological. The ASPS patient brochure about rhinoplasty mentions the possibility of criticism or rejection by friends or family if they feel threatened by the patient's new look. This type of reaction sometimes occurs with rhinoplasty if the friends or relatives consider the shape of the nose an important family or ethnic trait. When the nose is reshaped or repaired from inside, the scars are not visible, but if the surgeon needs to make the incision on the outside of the nose, there will be some slight scarring. In addition, tiny blood vessels may burst, leaving small red spots on the skin. These spots are barely visible but may be permanent.

About 10% of patients require a second procedure; however, the corrections required are usually minor.







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#### **OTOPLASTY**

*Dr Imtiyaz Nawaz,* ENT Surgeon, Farwaniya Hospital



#### **Introduction:**

Otoplasty refers to a group of plastic surgery procedures done to correct deformities of or disfiguring injuries to the external ear. Otoplasty is also known as ear reshaping or ear pinning. It is the only type of plastic surgery that is performed more often in cision-children than adults.

Otoplasty Surgery can change your ears to a more natural pleasing shape. There is nothing wrong with large ears, protruding ears, etc. However, if your ears bother you and distract you, otoplasty may be an option for you. Otoplasty procedures can ameliorate both the pain of taunting as well as the self-consciousness of protruding ears.







Sutures used to fold ear cartilage back

#### What is Otoplasty Surgery?

Otoplasty is a cosmetic surgery procedure to correct protruding ears. Otoplasty is usually performed to set ears closer to the head or to reduce the size of big ears. The majority of patients that have this straightforward treatment are children in need of ear reshaping or attention to protruding ears.

Otoplasty is a relatively simple procedure that can bring immense relief to people who are conscious of their ear size. There are a variety of other problems that can also be helped with surgery:

- Lop Ear: when the tip seems to fold down and forward
- Cupped Ear: very small Ear
- Shell Ear: when the curve in the outer rim, as well as the natural folds and creases, are missing
- Large or stretched earlobes
- Lobes with large creases and wrinkle
- People who lost the ears through injury or were born without them



Your surgeon will have a set of criteria to assess your suitability for otoplasty surgery. Even though complications in otoplasty surgery are rare they do happen. If you have any health problem then



this may increase the risk of something going wrong. If you are suffering from the following health problems you may not be a suitable candidate for otoplasty surgery;

- If you have had major surgery before
- Diabetic patient
- Heart Patient
- Lung Patient
- Smoker
- Alcoholic

#### At what Age can Otoplasty be Performed?

Otoplasty can be performed as early as age four and is often performed on children between the age of five and fourteen. This surgery is often recommended in younger patients as the cartilage is more pliable and the surgery can help spare children the teasing that may accompany large or protruding ears.

#### What are the various Otoplasty Techniques available?

Like other plastic or cosmetic surgery, otoplasty also utilizes several techniques in getting ear surgery done. To decide which is best procedure for you or your child, you will need to talk to your doctor, who will refer you to a surgeon who specialises in Otoplasty. The methods use in otoplasty surgery can be split into two major groups. These are;

- Cartilage Cutting: Cartilage cutting technique utilizes incisions in the cartilage in order to remove, reposition or add some tissues. Using this type of technique would create more scarring but the scars will be less visible.
- Cartilage Sparing: Cartilage Sparing Techniques: such as the Mustarde method, use stitches and sutures
  to manipulate the shape and position of the ear. Minimally invasive, a cartilage sparing otoplasty
  surgery often results in smoother, more natural curvatures.

#### Where is the Otoplasty Surgery Performed?

Otoplasty can be performed in your doctor's office or in a hospital. Adults and children can go home the evening after the surgery, although you may prefer to stay overnight in the hospital with a child until all the effects of general anaesthesia wear off. Often adults may return to work in roughly 5 days while children may return to school in roughly 7 days

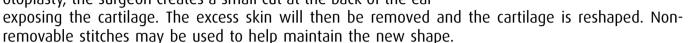
#### What are the Preparations for Otoplasty Surgery?

Weeks of preparation for otoplasty are often required to achieve the best results. Your plastic surgeon will fully explain the steps you should take to prepare for your otoplasty. The surgeon will thoroughly examine the patient's ears and discuss various ways of correcting the problem. It is important that you follow their advice so that the results of the surgery are according to your wish. Your surgeon might ask you to;

- Stop smoking up to two weeks before the surgery
- Stop or start taking herbal supplements
- · Eat certain foods
- Inform about any illnesses you have before the surgery date

#### What is the Procedure for Otoplasty Surgery?

The goal of an otoplasty procedure is to set back the shape of the ear in such a way that its contours appear natural and soft. For otoplasty, incisions are made behind the ears. In performing otoplasty, the surgeon creates a small cut at the back of the ear



Occasionally, the surgeon will remove a larger piece of cartilage to provide a more natural-looking fold when the surgery is complete. Because the incisions for otoplasty are well-hidden behind the ears, the resulting scars are well concealed. Patients may experience some aching or throbbing of the ears for the first few days after otoplasty, though pain medication can be prescribed to control any discomfort that you experience.

Otoplasty is usually performed under local anaesthetic for adults and general anaesthetic for children. Otoplasty surgery usually takes about two to three hours, although complicated procedures may take longer. The operative technique will vary depending on your physical features and your surgeon's methods.

#### What are the Benefits of Otoplasty?

Otoplasty can dramatically change a person's appearance simply by making protruding ears look more proportional to the head and face. Ear surgery can benefit people of all ages, but it can be especially beneficial for children with protruding ears. Following are some of the

beneficial for children with protruding ears. Following are some of the benefits of otoplasty surgery in India;

- Repositions the ears closer to the head
- A safe, simple & commonly performed procedure
- Short recovery period
- Out-patient surgery facility
- Correct ear abnormalities from trauma & injuries
- Helps children from teasing
- Improves self-esteem

#### What are the Risks of Otoplasty Surgery?

When a qualified, skilled plastic surgery specialist does otoplasty, complications are rare and usually minor. However, as with any surgery, complications may occur and othoplasty surgery is no exception. Following are some of the risks associated with otoplasty surgery;



- Infection of cartilage
- Scarring
- Minor Blood clot
- Artificial-looking ears
- Mismatched ears
- Recurrence of the protrusion
- Requiring a second surgery



#### How is the Recovery after Otoplasty Surgery?

Recovery from Otoplasty surgery is generally considered to be a fairly easy process. You will be required to wear a head band-style dressing around the ears for the first two weeks to help your ears to heal into their new position. Most normal activities can be resumed within a few weeks, but you will need to be very careful to protect your ears for at least six weeks, or possibly even longer. Patients should follow the surgeon's instructions about washing their hair, and avoid holding hot-air blow dryers too close to the ear.

To lessen the possibility of the risks and side effects, it is important to follow post operative care instructions from the surgeon regarding how to treat the wound and what to do in case of an emergency. There is typically little discomfort and not too much downtime associated with otoplasty.



#### PLASTIC SURGERY OF EYELIDS

*Dr Prakash C. Parakh Ophthalmologist*Al Bahar Eye Center, Kuwait



#### **Blepharoplasty**

Blepharoplasty means plastic surgery of the eyelids. It is mostly done for the age related changes in the eyelids like double eye lids in common language or it is called dermatochalasis in medical term, in which the skin of the upper lids becomes redundant or loose and forms an extra fold, feeling heaviness of the lids (Fig. 1).



Fig. 1 Fig.2

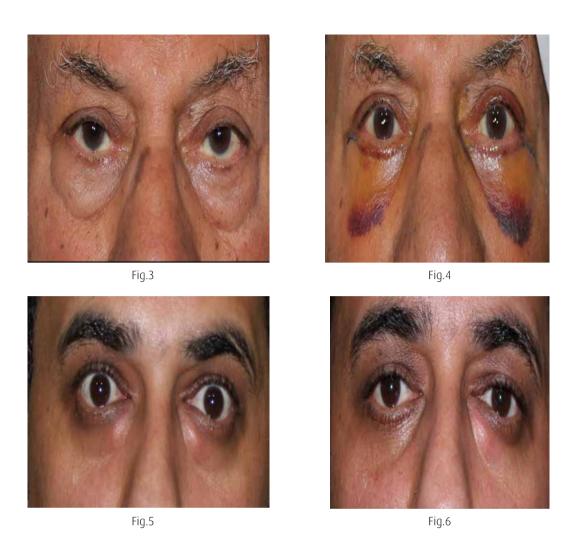
In extreme cases it interferes with visual fields in the upper part. It is also associated with the bulging of the fat giving bumpy look at the upper lid near nose. Sometimes patient complains that they appear sleepy all the times. The treatment is simple removal of an excess skin and the fat under local anesthesia Surgical results are guarded as the outcome depends on many factors such as severity of congestion, elasticity of skin, facial bony features and the high expectation of patients.

As any surgical procedures, it always carries the risk of under correction necessitating the repetition of the procedure, or overcorrection causing eye to remain open during sleep leading to dryness of the cornea causing corneal ulceration which needs bigger surgical procedures like releasing of the skin or skin graft.

It can be associated with infection or bleeding around the eye which in extreme and rare cases cause blindness due to bleeding behind the eyeball and thus interfering blood supply of the eye. This needs urgent interference surgically to decompress the orbit.

The lower lid puffiness is also called "baggy eyelids" making the person appear older. This condition is one of the commonest cause of surgical eyelid repair (Fig. 4, 5, 6 & 7):

1. Only fat removal from the inner side of the lid through the conjunctiva. Thus avoiding the skin scar.



- 2. Skin and fat removal through the skin.
- 3. Horizontal lid tightening.

The lower eye lid surgery is more challenging and may be associated with the same complications as described before.

Blepharochalasis is a rare familial condition occurring in young individual causing skin thinning and wrinkled appearance due to loss of elasticity.

Eye brow drooping is caused by the loss of elasticity of the forehead skin, it needs lifting of the eye brow surgically.

Eye lid drooping (ptosis) is mostly by birth due to poor development of the muscle responsible to lift the lids. It can be age related due to dehiscence of the muscle or it can be mechanical due to tumors or lack of support of the lids as in shrinking globe due to disease or trauma. The eye lid can be lifted with quarded prognosis.

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#### **SQUINT or STRABISMUS**

## *Dr Devendra K. Yadava Ophthalmologist*Al Bahar Eye Centre Kuwait



#### **Introduction**

strabismus) is a condition where the eyes deviate or move in different directions.

The term is from the Greek strabismós meaning "to squint". Other terms for the condition include "squint", "wall-eye", and "cast of the eye".

Squints are common and affect around one in 20 children in united states. They usually develop before five years of age, but can appear later.

Signs and symptoms of a squint

One of your child's eyes may turn or move inwards, outwards, upwards or downwards, while the other eye looks forward. Squints may not be constant, and a minor squint is not always noticeable.

Four types of squints:

- The eye turns inwards Esotropia (less common)
- The eye turns outwards Exotropia (less common)
- The eye turns upwards Hypertropia
- The eye turns downwards Hypotropia





A squint can cause blurred or double vision, but children may not realise there's a problem. If squint is Left untreated for a long duration in early childhood, child may develop lazy eye or amblyopia. This is when the brain starts to ignore signals coming from the eye with the squint.

A lazy eye (amblyopia) is a childhood condition where the vision in one eye doesn't develop properly. This usually means that the child can see less clearly out of the affected eye and relies more on the "good" eye. Lazy eye can sometimes affect both eyes, A lazy eye occurs when the brain connections responsible for vision aren't developed properly.

How do you know if your child has a lazy eye?

A lazy eye doesn't usually cause symptoms. Younger children are often unaware that there's anything wrong with their vision. They're usually unable to explain what's wrong.

Older children may complain that they can't see as well through one eye and have problems with reading, writing and drawing. It's difficult to treat lazy eye after the age of 4.5, so it's a good idea for children to have an eye test between the age of 3.5 and 4.5 years.

Other conditions that could lead to a lazy eye, such as:

- a squint where the weaker eye looks inwards, outwards, upwards or downwards, while the other eye looks forwards
- refractive errors Where a person is either short-sighted (myopia) or long-sighted (hyperopia) or astigmatism
- childhood cataracts Cloudy patches that develop in the lens, which is located behind the clear layer of tissue at the front of the eye (cornea)
- Treatment of lazy eye include first glasses correction for refractive error and eye patch to cover the stronger eye, or eye drops to temporarily impair the vision in the stronger eye. Ask child to use the affected eye to improve vision.

#### When to see a doctor

It's quite normal for the eyes of newborn babies to "cross" occasionally, particularly when they're tired. However, speak to your ophthalmologist if you notice this happening to your child after three or usually first 6 months of age in an otherwise normal child.

If your child looks at you with one eye closed or with their head turned to one side, it may mean they're experiencing double vision and could be a sign they have a squint. If this happens repeatedly, take your child to see your ophthalmologist as soon as possible.

They may refer you to a specialist called an orthoptist or optometrist for tests. Many squints are detected during routine eye check-ups carried out at certain stages in your child's development.

Why do squints happen?

The exact cause of a squint isn't always known. Some babies are born with a squint (congenital squint) and some develop it later (acquired squint) .The extraocular muscles control the position of the eyes. Thus, a problem with the muscles or the nerves controlling them can cause paralytic strabismus. The extraocular muscles are controlled by cranial nerves III, IV, and VI.

Acquired squints are often caused by the eye attempting to overcome a vision problem – known as refractive errors. Types of refractive errors include:

- short-sightedness (myopia) the ability to see distant objects is reduced
- long-sightedness (hyperopia) the ability to see close-up objects is reduced
- astigmatism where the cornea at the front of the eye is unevenly curved, which causes blurred vision
- Accommodative esotropia (inwards deviation) is a form of strabismus caused by refractive error in one or both eyes. Due to the near triad, when a patient engages accommodation to focus on a near object, an increase in the signal sent by cranial nerve III to the medial rectus muscles results, drawing the eyes inward; this is called the accommodation reflex. If the accommodation needed is more than

the usual amount, such as with people with significant hyperopia, the extra convergence can cause the eyes to cross.

In rare cases, a squint may be the result of:

- · childhood illnesses such as measles
- some genetic conditions such as Down's syndrome or cerebral palsy
- hydrocephalus caused by a build-up of fluid in the brain
- other eye problems affecting the muscles or the retina (the layer of light-sensitive nerve cells at the back of the eye)

A child's risk of having a squint is increased if there's a family history of eye problems, if they're born prematurely or with a low birth weight.

How are squints treated?

To be most successful and avoid long-term problems, most squints should be treated as soon as possible. Treatment is most effective in very young children.

Several types of treatment are available for squints, including:

- Glasses worn constantly to correct vision problems (refractive errors). Children are usually given plastic lenses instead of glass.
- Eye exercises in some cases, special eye exercises may help the eyes to work together.
- Squint surgery- if other treatment fails This involves moving the muscles that control the movement of the eye to improve their alignment and help the eyes work together.
- Botulinum toxin(botox) injections into one of the eye muscles the injection weakens the muscle, allowing the eyes to realign for around three months. The eyes may stay in position or may need further treatment. Children will usually be given a sedative before the injection.

Botulinum toxin injections can cause temporary side effects, such as:

- a droopy eyelid (ptosis)
- the eye "drifting" slightly, so it appears as if one eye is looking up
- double vision
- some bleeding over the white part of the eye

If your child has a lazy eye, they may need to wear a patch over their "good" eye to encourage the eye with the squint to work harder (occlusion).

Risks from surgery are rare, although sometimes more than one operation will be needed.

Recovering from surgery

It can take several weeks to fully recover from corrective squint surgery.

The eye may feel painful or itchy for a short time afterwards, and you may have temporary double vision.

Occasionally, squints corrected during childhood reappear in adulthood. You should visit your ophthalmologist as soon as possible if you develop a new squint.



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(1) Kantarjian H et al. N Engl J Med. 2010;362(24):2260-2270. (2) SPRYCEL® Prescribing Information, October 2011.



#### REFRACTIVE SURGERY: GET RID OF GLASSES FOR BETTER LOOKS

*DR. B. Vasantha Reddy Ophthalmologist*Dar Al Shifa Hospiatl Hawally



Traditionally Refractive errors are corrected by means of Glasses or Contact lens. Refractive surgery might be a good option for you if you want to decrease your dependence on glasses or contact lenses.



## Refractive Errors explained in Brief: Myopia:

Nearsightedness, or myopia, is the most common refractive error of the eye, and it has become more prevalent in recent years. If you are nearsighted, you typically will have difficulty reading road signs and seeing distant objects clearly, but will be able to see well for close-up tasks such as reading and computer use. Myopia occurs if the eyeball is too long or the cornea (the clear front cover of the eye) is too curved. As a result, the light entering the eye isn't focused correctly, and distant objects look blurred.

#### Нурегоріа:

Farsightedness, or hyperopia, as it is medically termed, is a vision condition in which distant objects can be seen clearly, but close ones do not come into proper focus. Farsightedness occurs if your eyeball is too short or the cornea has too little curvature. In these cases, your eye can't correctly focus the light that enters it.

#### **Astigmatism:**

Astigmatism is a common vision condition that causes blurred vision. It occurs when the cornea (the clear front cover of the eye) is irregularly shaped or sometimes because of the curvature of the lens inside the eye.

An irregularly shaped cornea or lens prevents light from focusing properly on the retina, the light-sensitive surface at the back of the eye. As a result, vision becomes blurred at any distance. This can lead to eye discomfort and headaches.

#### What is Refractive surgery?

So if you have a refractive error, such as nearsightedness (myopia), farsightedness (hyperopia), astigmatism or presbyopia, refractive surgery is a method for correcting or improving your vision. There are various surgical procedures for correcting or adjusting your eye's focusing ability by reshaping the cornea, or clear, round dome at the front of your eye. Other procedures involve implanting a lens inside your eye. The most widely performed type of refractive surgery is LASIK (laser-assisted in situ keratomileusis), where a laser is used to reshape the cornea.

#### Who can undergo Refractive surgery?

Appropriate Age

Usually over the age of 18 yr, and power of glasses is stable at least for 2 years

- Appropriate refractive errors.
- · Are free of eye disorders.
- Accept the inherent risks and potential side effects of the procedure.
- Understand that you could still need glasses or contacts after the procedure to achieve your best vision.

There is no universally-accepted, best method for correcting refractive errors. The best option for you should be decided after a thorough examination and discussion with your ophthalmologist. If you are considering refractive surgery, you and your Eye M.D. can discuss your lifestyle and vision needs to determine the most appropriate procedure for you. Before choosing to have LASIK, it's important to do your homework to ensure you are a good candidate, understand the potential risks and benefits, and have realistic expectations about what your vision will be like after surgery and for years to come

#### LASIK — Laser Eye Surgery

LASIK/ Femto LASIK (laser-assisted in situ keratomileusis) is an outpatient refractive surgery procedure used to treat nearsightedness, farsightedness and astigmatism. A laser is used to reshape the cornea — the clear, round dome at the front of the eye — to improve the way the eye focuses light rays onto the retina at the back of the eye.

For people who are nearsighted, LASIK is used to flatten a cornea that is too steep. Farsighted people will have LASIK to achieve a steeper cornea. LASIK can also correct astigmatism by shaping an irregular cornea into a more normal shape.

It is important that anyone considering LASIK have realistic expectations. LASIK allows people to perform most of their everyday tasks without corrective lenses. More than 90 percent of people who have LASIK achieve somewhere between 20/20 and 20/40 vision without glasses or contact lenses.





#### **How the LASIK procedure works**

LASIK is performed while the patient reclines under a surgical device called an excimer laser in an outpatient surgical suite.

First, the eye is numbed with a few drops of topical anesthetic. An eyelid holder is placed between the eyelids to keep them open and prevent the patient from blinking. The patient may feel pressure from the eyelid holder and suction ring, similar to a finger pressed firmly on the eyelid.

Then surgeon prepares thin corneal flap with help of Laser or microsurgical device with blade. This corneal flap is lifted and folded back. Then the excimer laser preprogrammed with the patient's unique eye measurements is centered above the eye.

The surgeon checks that the laser is positioned correctly. The patient looks at a special pinpoint light, called a fixation or target light, while the excimer laser sculpts the corneal tissue. Then the surgeon places the flap back into position and smoothes the edges. The corneal flap sticks to the underlying corneal tissue within two to five minutes, and stitches are not needed.

The patient should plan to have someone drive him or her home after the procedure and then take a nap or just relax. The surgeon will provide eyedrops to help the eye heal and relieve dryness.

Maximum improvement in vision is achieved in first week and It may take three to six months after

LASIK surgery for the improvements in a person's vision to fully stabilize and any side effects to go away.

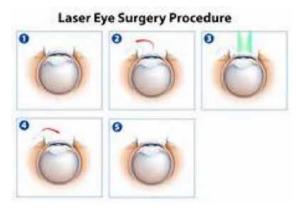
LASIK risks and side effects

LASIK, like any surgery, can be with side effects and risks involved.

Common ones are

- Dry eye which can be managed with lubricant eye drops.
- Light sensitivity and Glare issues especially while driving at night which come down over a period of 1 month

Sometimes a second surgery, called a retreatment or



enhancement, may be needed to achieve the desired vision correction. Rare complications like corneal flap related issues and infections shall be addressed too.

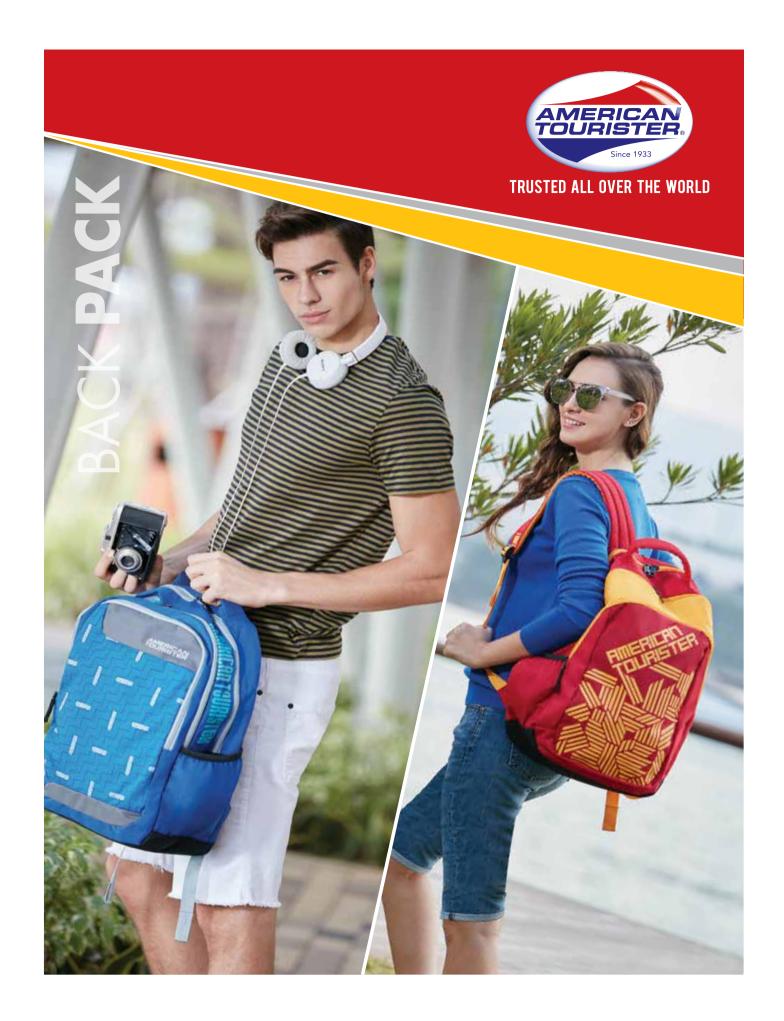
#### **Questions to Ask**

- 1. Is my age appropriate for this procedure.
- 2. Are my eyes suitable to get such a procedure done
- 3. What are the potential side effects and complications that may come up.
- 4. Long term issues related to age. (What can I expect?)

Please note that other options like Femto SMILE and ICL are available which can be discussed with your refractive surgeon for higher refractive errors.



## **AESTHETIC DENTAL PROCEDURES**



#### **COSMETIC DENTISTRY: CREATING BEAUTIFUL SMILES**

**DR. DOLLY CHOPRA,**Prosthodontist

FARWANIYA HOSPITAI



"Dr., can you create a Hollywood smile for me? I want a sparkling set of pearly white teeth just like the X, Y, Z, celebrity."

This seems to be the most common demand of patients visiting their dentist nowadays. The number of dental practices offering a quick fix "HOLLYWOOD SMILE" has seen a steep rise in recent years.

So, the big question, what's this elusive HOLLYWOOD SMILE and what does it take to get one!

Hollywood always leads beauty trends and has made whiter-than-white and straight teeth a popular norm. Having witnessed many a celebrity transformation (thanks to their acquired pearly white perfect smile), we know the dazzling difference they make (Figure 1). From an aesthetic perspective, who doesn't love a beautiful smile?

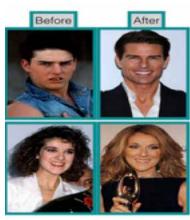


Fig. 1

However, with an abundance of discounted deals and different products in the market all promising a beautiful smile, it can be hard to tell which treatment or product to go for?

Also, it is imperative to make the right decision in choosing your dentist as any "less than ideal" cosmetic treatment can vastly damage the teeth and enamel.

#### WHAT IS COSMETIC DENTISTRY?

Simply put, cosmetic dentistry is dental treatment aimed at improving the appearance of a pa-tient's teeth rather than for therapeutic purposes. Treatments include orthodontic work such as 'Invisalign' braces (invisible braces to realign the teeth), teeth whitening through bleaching, ve-neers, crowns, tooth colored fillings etc.

Here is an overview of the most common cosmetic dentistry procedures to guide the reader in making an informed choice before venturing for a smile makeover.

#### **BLEACHING OR TOOTH WHITENING**

Teeth can become discolored with time due to tea, coffee, red wine, smoking and some foods. Even with the best hygiene care and home regime, teeth naturally darken as we age. This often can lead to unsightly smiles. Luckily, teeth can be whitened to correct these problems (Figure 2: Home bleaching kit).

Teeth Whitening is a process that uses a chemical called hydrogen peroxide or carbamide peroxide to brighten and whiten the outer surfaces of the teeth.



Fig. 2

- HOME BLEACHING: Many patients enjoy bleaching at home because it is more convenient. Initially the dentist must construct a custom tray ,which is filled with the correct type of gel and applied to the teeth for about 30-45 minutes. Typically, whitening at home takes two to four weeks, depending on the desired shade.
- WHITENING IN THE DENTAL OFFICE: It may require one or more visits to the dentist's office followed up with a home bleaching system. The dentist might use LASERS OR ZOOM WHITENING SYSTEMS for even quicker results.

#### Side effects of bleaching:

The most commonly observed side effects with these peroxide-based bleaching agents are tooth sensitivity and occasional irritation of gums. However, both these issues are usually temporary and stop after the treatment, if the bleaching procedure was done properly under expert supervi-sion

#### **Precautions:**

- It is strongly recommended that bleaching should only be done after consultation with a den-tist. This is especially important for patients with many fillings, crowns, and extremely dark stains. A thorough oral examination, performed by a licensed dentist, is essential to determine if bleaching is an appropriate course of treatment.
- Bleaching should always be done after thorough cleaning of plaque and calculus from the teeth and gums.
- Please be aware of illegal tooth whitening being carried out by beauticians, shopping centre kiosks and other non-dental professionals.
- Whitening toothpastes (dentifrices) contain polishing or chemical agents that are designed to improve tooth appearance by removing surface stains. They do this through gentle polishing and are quite safe.

#### **DIRECT COMPOSITE BONDING (TOOTH COLORED FILLINGS)**

Direct Composite Bonding refers to the repair of decayed, chipped or broken teeth using material that resembles the color of tooth enamel. The dentist drills out the tooth decay and applies the composite onto the tooth's surface, then "sculpts" it into the right shape before curing it with a high-intensity light. This effectively covers the damage to the tooth and gives the appearance of a healthy tooth in

its place. Bonding is one of the least expensive cosmetic dentistry procedures available to patients and can help recreate the old smile with an easy additive process (Figure 3).

Bonding is also a popular treatment option to fill in gaps between the teeth and reshape or recol-or the smile. Requiring a single office visit, bonding lasts several years. However, it is more sus ceptible to staining or chipping than any other form of restoration.

Before After

Fig. 3

VENEERS: Veneers are a quick way to a beautiful smile.

This treatment is perfect for people that have stained, chipped teeth or have gaps between their teeth. Veneers are also helpful to cor-rect small misalignments and straighten the smile.

WHAT ARE VENEERS: Veneers are thin pieces of porcelain or plastic placed over the front teeth to change the color or shape of the teeth. They are custom made to the contour of the teeth and are bonded to the tooth's original enamel during a series of in-office procedures.

Veneers are a less intrusive option than crowns or braces (Fig. 4).

#### There are two types of veneers:

- Porcelain (indirect) veneers: Which must first be created to fit the teeth in a dental laboratory and require two visits to the dentist. Porcelain veneers cost more, but are difficult to stain and last from 10 to 15 years or more.
- Composite (direct) veneers: In which composite resin material is bonded to

the tooth in a single visit. Composite veneers cost significantly less, but are easily stained and only last five to seven years.





Fig. 4

#### Possible risks and side effects:

- Porcelain veneers are irreversible: The placing of porcelain veneers requires the removal of a thin layer of enamel in order to bond the veneer to the tooth's surface. Once enamel is removed, it will not repair itself and is gone forever. This makes the porcelain veneer procedure irreversible. Once you have veneers, they must be maintained or replaced to avoid tooth decay since the protective enamel is no longer covering the tooth.
- Porcelain veneers may wear down or break off, requiring replacement: Though porcelain veneers
  are designed to last a long time, they may not last a lifetime and may require replacement at some
  point. Porcelain veneers can wear down over time, break, chip, or fall off. Once a veneer is damaged,
  it must be replaced to protect the tooth from decay.
- Increased tooth sensitivity and possible trauma: Some patients experience increased tooth sensitivity following porcelain veneer placement. Sensitivity often subsides after about a week following treatment.

#### **Aftercare of Porcelain Veneers**

Properly caring for your porcelain veneers can help prolong their life and reduce the likelihood of experiencing the aforementioned risks and side effects. Here are some helpful tips on caring for your porcelain veneers:

- Regular brushing and flossing: Teeth with porcelain veneers can still get cavities. It is vital that you maintain the health of your teeth by brushing at least twice a day and flossing at least once a day.
- Regular dental visits: Your dentist will perform a thorough cleaning and make sure your veneers are not chipped or fractured.
- Use a non-abrasive toothpaste: Try to use a non-abrasive toothpaste once you have ve-neers. Abrasive toothpastes can scratch the veneers and make them look dull.
- Do not bite or chew on hard items: Avoid chewing on hard objects like pens or nails. Hard objects can crack, wear down, and damage your veneers.

Signs That Veneers May Not Be the Right Choice:

- Patients must have healthy teeth and gums to qualify for dental veneers. Patients with conditions such as tooth decay, gum disease, and root canal infection do not qualify for veneers. However, after a dentist successfully treats these issues, patients are usually cleared for cosmetic enhancement.
- Some patients who habitually grind their teeth and clench their jaws may be disqualified from receiving veneers. Although dental porcelain is quite strong and durable, the forces of bruxism can put incredible strain on veneers, causing them to break or come out.

#### **PORCELAIN CROWNS**

Crowns, also known as caps, cover a tooth to restore it to its normal shape and appearance. Due to their high cost, they are used in cases where other procedures will not be effective. Crowns have the longest life expectancy of all cosmetic restorations, but are the most time consuming.

Usually a crown is placed when the tooth has been broken or severely damaged by decay. As a result, a filling can't replace enough of the tooth or make the tooth strong enough. Crowns can be used to improve appearance as well. They may be placed to cover mis-shaped or badly discolored teeth.

The great benefit of porcelain crowns is that, they don't only replicate the original tooth in function, but can even be designed to look like the original or even better (Fig. 5).

#### Disadvantages of a crown:

- Porcelain crowns do require some laboratory time to be created.
- Their fabrication requires considerable reduction of the tooth structure to create space for the crown.
- Some patients may experience sensitivity to hot and cold temperatures after porcelain crowns are attached.
- While porcelain crowns are very durable, they do not have the flexibility of natural teeth, so avoiding certain foods may be necessary.
- Chronic tooth-grinders and jaw-clenchers will need to be fitted with a night time mouth guard to protect the porcelain from unnecessary and excessive pressure and use.



Fig. 5

#### Maintenance of a Porcelain Crown

Maintaining porcelain crowns is actually quite simple. Much like the original teeth, they require routine brushing with non-abrasive fluoride toothpaste and regular flossing.

If the crown seems loose while chewing, or if you feel an unusual odor around the tooth, it should be immediately reported to the dentist. It usually happens because of misfit or caries and decay under the crown.

#### **Conclusion:**

Today, cosmetic dentistry is more popular than ever and dentists have a wide array of tools and techniques at their disposal for improving the look of your smile.

Before deciding to undergo any cosmetic procedure, it's important to know the benefits and risks. Make sure you are clear about what it will cost, how much experience your dentist has with the procedure, and whether any special maintenance will be needed afterward?

Ask your dentist about your best options for creating a beautiful smile that you can be proud of.

#### ORTHODONTICS -EMBRACE THE SUPERSMILE

**DR. Javed W. Parker,**Orthodontist,
New Mowasat Hospital



We live in an era where the pursuit of "good looks" has become a major goal in everyday life, as "looks" seem to be one of the most important and significant assets for success.

Everyone wants an alluring smile and enhancing their appearance of their "pearly whites" encourages them to appear and feel pleasant. Having teeth that are crooked or out of place (malaligned) affects the way a person chews, talks and how their smile looks.

These problems can be corrected by Orthodontic Treatment (or Braces as it's commonly known).

Orthodontics is the oldest speciality in dentistry and this science deals with the diagnosis, prevention and treatment of problems in the alignment of the teeth and jaws, and problems related to the jaw bone and the chewing muscles.

Orthodontic treatment works by exerting a gentle pressure over a period of time to straighten teeth that are growing or have already grown out of place. The word Orthodontics is derived from the Greek words; Orthos meaning "straight" and Dons meaning "tooth".

Dental experts estimate that more than two-thirds of the population need braces to correct problems that includes teeth that protrude or are crooked, teeth that overlap or crowd each other, and teeth that have gaps between them. Whatever the condition, individuals recognize that Orthodontics will enhance their appearance in the long term and are making an investment in their health and facial appearance.

#### A. NEED FOR ORTHODONTIC TREATMENT:

Properly aligned teeth help an individual to effectively bite, chew and speak. Straight teeth contribute to healthy teeth and gums. Teeth that work better also tend to look better. An attractive smile is a pleasant "side effect" of orthodontic treatment.

You may be surprised to learn that straight teeth are less prone to decay, gum disease and injury. Straight teeth collect less plaque, a colorless, sticky film composed of bacteria, food and saliva. Decay results when the bacteria in plaque feed on carbohydrates (sugar and starch) we eat or drink to produce acids that can cause cavities. Plaque can also increase the risk for periodontal (gum) disease. When teeth are properly aligned, and less plaque collects, these risks decline. And when teeth are properly aligned it is easier to keep teeth clean. As for injuries to teeth, protruding upper teeth are more likely to be broken in an accident. When repositioned and aligned with other teeth, these teeth are most probably going to be at a decreased risk for fracture. (Fig. No. 1)



Untreated orthodontic problems may become worse. They may lead to tooth decay, gum disease (Fig. No. 2), destruction of the bone that holds teeth in place, and chewing and digestive difficulties. Fig. No.2



Fig. No.1

Fig. No.2

An attractive smile is a wonderful asset. It contributes to selfesteem, self-confidence and self-image—important qualities at every age. A pleasing appearance is a vital component of self-confidence. A person's self-esteem often improves as orthodontic treatment brings teeth, lips and face into proportion.

Finally, the importance of an attractive smile should not be underestimated in this new era which emphasizes on the best looks and designer clothing, then why not have a "Designer Smile"!

#### B. WHEN SHOULD THE TREATMENT REGIN?

The American Association of Orthodontists recommends that children receive their first Orthodontic examination as early as seven years, especially for children who have an imbalanced facial profile, difficulty in chewing ,pain or noise in the jaw joint, a speech problem and a digit sucking habit that persists after the age of four years.

An examination and detection of prospective problems at a young age allows treatment to begin early enough to take advantage of the primary growth period and is technically called as "Interceptive Orthodontics". Interceptive therapies correct problems before they have established themselves and hence produce more stable results. It may also help avoid permanent tooth extraction and achieve results that are not possible to attain once the face and jaw have finished growing.

The biological process involved in tooth movement is the same in both adults and children. The oral health of individual's teeth, gums and supporting bone is most important in determining the prospects for improving an adults smile and dental health. But certain corrections cannot be accomplished with braces alone as adults facial bones are no longer growing. Nevertheless very dramatic and exciting results can be achieved nowadays with latest technology combining Surgery with Orthodontics. This treatment is called "Orthognathic Surgery".

#### C. HOW LONG THIS TREATMENT TAKES?

Movement of teeth is a slow process, active treatment time on an average is, 18 - 20 months and ranges from 1 - 3 years depending upon the severity, type of problem and patient's age. The patient's cooperation is indeed a pre-requisite for a successful treatment. After the braces are removed a patient may have to wear "Retainers" which are custom made for each individual. They are worn as much as needed to maintain the teeth in their new position.

An ideal orthodontic treatment requires a combined effort of the Orthodontist and the patient. Those patients, who brush thoroughly, avoid sticky and hard food; wear their elastics and headgears as instructed and keep their appointments, usually finish treatment on time with achieving the treatment goals – a healthy mouth and a beautiful smile.

Successful orthodontic treatment is like a two-way street that requires a consistent, co-operative effort by both the orthodontist and the patient. To keep teeth and gums healthy regular visits to the family Dentist must continue during the orthodontic treatment.

#### **D. TYPES OF BRACES:**

Braces have come a long way from the train track look of yesteryears when it was a taboo. Everyday new and improved techniques are being introduced in Orthodontics that makes wearing braces more comfortable and attractive. Braces are much less noticeable than they used to be.

Metal brackets can be silver or golden (Fig No. 4). Metal brackets tend to be less expensive than other types of brackets. In addition, you can make them colorful with ligatures that come on a



Fig. No.3



Fig. No.4

rainbow of colors. They are also designed in various shapes like Flowers, Hearts, Stars, Soccer balls and

Football brackets etc., also known as Wild Smiles Brackets (Fig. No. 3), to choose from and suit their fashion statement.

Ceramic or Clear brackets (Fig No.5) are translucent or the same color as one's teeth and they are much less noticeable than metal brackets. Adults like to choose ceramic brackets because they "blend in" with the teeth and are less noticeable than metal.



Fig. No.5

Lingual or Invisible Braces which are fixed behind patients teeth. It is suitable for those who still have the stigma of wearing braces, a blessing for them.

indeed it's

The Damon System (Fig. No. 6) is not just about revolutionary braces and wires; it's a whole new way of treating patients. Traditional treatment often requires removal of healthy teeth and/or the use of palatal expanders to make space. This approach is often uncomfortable, takes longer, and can leave a narrower arch and a flat profile. Damon smiles are full, natural 10-tooth smiles achieved with light biologically-sensible forces, and are specifically designed to improve the overall facial result of each patient.

This system delivers a faster treatment time, fewer appointments, improved comfort, less extractions and freedom from Headgear and expansion screws.

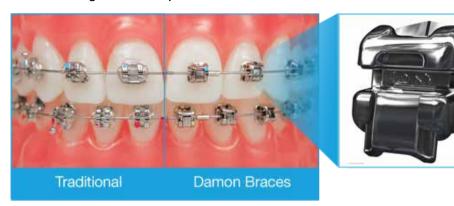


Fig. No.6

If the thought of wearing braces is holding you back from the smile you've always wanted, this is good news. Invisalign, (Fig. No. 7) a state-of-the-art alternative to braces that is wvirtually undetectable to other people. Invisalign straightens your teeth, not with brackets and wires, but with a series of clear, customized, removable appliances called aligners. Each aligner is worn for about

2 weeks, and a series of aligners are used until the teeth are straightened. The aligners are worn full-time, and taken out only for eating and brushing.

The wires that are used in braces today are also better than they used to be. Newer corrective wires made of Heat Activated Nickel Titanium (HANT), apply optimal forces over a prolonged duration and minimize the number of visits to the Orthodontist's office.



Fig. No.7

Orthodontics in the new millennium is also capable of providing patients with a window to the future, courtesy of new computer software that generates a "virtual face" which can display the outcome.

Your smile is the first impression people get of you. When you consider the lifelong personal and professional benefits of a healthy, confident and attractive smile, Orthodontics is the best investment you'll ever make. A new smile can increase your self confidence, improve your appearance and promote better dental health. As the saying goes "A smile is a curve that sets everything straight"...... (But of course by your Orthodontist!)

The stigma of braces has disappeared over the years. The new generation opts for orthodontic treatment witnessing its benefits in the society and amongst friends. Thus, whether 16 or 60, the appearance and health of one's teeth is an important aspect of one's life.

This was your introduction in a nutshell to Orthodontics.

#### **Restoring Missing Teeth: Dental Implants**

**DR. DOLLY CHOPRA,**Prosthodontist

FARWANIYA HOSPITAI



The absence of teeth in the anterior (front) region often results in various negative consequences compromising the appearance and self esteem of the patient.

Dental implants have increasingly become a viable treatment option for achieving natural looking restorations.

Implants can successfully replace single or multiple teeth without damaging remaining healthy teeth.

#### What are dental implants

Dental implants are the closest artificial replacement for natural tooth roots. (Figure 1). They are made up of Titanium and have a screw shape which allows them to be placed into the jaw bone at the time of surgery. Over the next few months, the bone of the jaw forms an intimate bond with the implant which secures the implant in place. Once integrated , the implant can then form a stable and long-lasting foundation for the restoration of missing teeth. (Figure 2)



#### **Advantages of Dental Implants**

Implants avoid the preparation and damage to adjacent teeth that is needed for conventional crowns or bridges.

#### 1. Bone Maintenance

When teeth are removed there is a tendency for the bone at that site in the jaw to recede. A dental implant reloads the bone with chewing forces and continues to maintain the bone in a similar way to the natural tooth root.

#### 2. Increased Confidence

Many patients who have lost front teeth, lose confidence with the day to day activities like eating with friends, smiling, talking etc. It might be a result of discomfort when chewing in the absence of teeth or because of embarrassing experiences with false teeth.

Dental implants address these problems by providing a replacement for missing teeth which is stable or completely fixed like natural teeth.

#### 3. Improved Aesthetics and Facial Contour

Tooth and bone loss leads to changes in support for the lips and face causing premature aging. Dental implants can provide a foundation for new crowns, bridges or prosthesis that can restore the balance of the lips and face and reverse this premature aging.

#### 4. Long term success

Dental implants have long term success rate of over 95%. They should (if cared for correctly) last as long as natural teeth.

#### What can Dental Implants do?

#### **Single Tooth Replacement**

Some patients may have lost only a single tooth. A single dental implant and crown can replace these teeth without the need to cut into adjacent healthy teeth to prepare conventional crowns or bridges.

#### **Multiple Tooth Replacement**

For larger gaps in the dental arch, a number of implants are placed and these are linked together by means of a fixed dental bridge. Each missing tooth doesn't need to be replaced with an implant.

#### **Full Arch Restoration**

Some patients who may have lost all or nearly all of their natural teeth, can also treated with implants.

#### **Immediate Replacement**

As its name suggests, this involves placing the implant in a tooth socket at the same time as the natural tooth is removed.

#### **Orthodontic Implants**

Some patients receiving orthodontics need to use devices called headgear which can be very uncomfortable. Dental implants can provide a quicker and less cumbersome option for these patients.

#### **General Considerations**

#### Am I suitable for dental implants?

There are few absolute reasons why patients would be unsuitable for dental implants and there are no higher age limitations on placement of implants.

- 1. In the young adult implant placement is avoided until growth has stopped because the ankylosed implant would not follow the growth progression.
- 2. Few medical conditions that would make a patient unsuitable for dental implants include :
  - Uncontrolled Diabetes
  - Heavy smoking
  - Patients taking bisphosphonates (a drug used to treat osteoporosis, multiple myelomas and breast cancer)
  - Immunosuppressant Therapy

- Head and neck radiotherapy
- Bleeding Disorders
- 3. Deficient bone volume, active gum disease or dental infection would compromise the long-term success of implant treatment. These conditions need to be corrected before the implant related treatment can begin.

#### How long will my treatment take?

On an average , simple implant treatment for a single tooth replacement might take just 4-6 weeks . However, complicated multiple implants with additional procedures such as bone grafting might take up to six months to finish.

#### What does the surgery involve?

The surgery involves making an incision in the gum. The bone is prepared by slowly drilling a hole to accept the titanium implant. The implant(s) are then gently screwed into place.

The gum is stitched back in place with dissolving sutures.

#### Will it hurt?

Implants surgery can be performed under a variety of anesthetic procedures to ensure you are comfortable during the surgery. This may be local anesthetic, sedation or general anesthetic. After your surgery the area may be slightly painful and swollen depending on what treatment you have had. You will normally be prescribed both antibiotics and simple painkillers after your surgery to relieve the symptoms. You will also be advised on routine aftercare to keep your mouth healthy whilst your implants heal.

#### What is a bone graft and why would I need one?

Sometimes patients may have insufficient bone to ensure implants are placed successfully and with the best aesthetic results. The bone may be deficient either in a vertical or horizontal direction and this means that bone has to be bought in to make up this deficiency. This is called a bone graft.

#### What happens after my implant surgery?

The next stage after implant placement is the restorative phase. This is when the restorative dentist takes impressions in the mouth to allow crowns, bridges or new style dentures to be constructed accurately to fit your new dental implants.

### Will I have to go without my denture or bridge before I have my new teeth?

Usually this is not necessary and the dentist can provide you with either a temporary bridge or denture to wear whilst your implants are healing.

#### **After Care**

#### What do I need to do to maintain my implants?

Implants require the same care to maintain them as healthy natural teeth. It involves a simple everyday tooth brushing and cleaning routine. If dental implants are not cared for correctly, deposits of plaque and calculus can develop around the implants which can produce inflammation and infection and can lead to loss of the implants.





Fig. 3



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#### ROADMAP

#### PHASE - I BY APRIL 2017

- A building of 2,00,000 Sq ft built-up cold shell has been taken for 30 years lease and rent.
- This is a 350 bed Multi specialty hospital focusing initially on key departments like Oncology, Gl and Hepatobiliary services, Orthopaedic and Neuro sciences, obstetrics and Gynaecology, Paediatrics, Urology, Nephrology and other departments.
- The Hospital is expected to function from May 2017.

PHASE - II BY 2018

- Multiple
   Out Patient Centres
   Across South India.
- Multiple Secondary Care Centers

PHASE - III BY 2022

Cancer Village: This will be a comprehensive Cancer Care Center with a 500 bed hospital, Hospitality, Rehabilitation cente Allied Medical facility like Ayurveda, Homeopathy; Yoga, Research Center etc, all under one roof.



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\*Huynh D.T.T., Estorninos E., Capeding R.Z., Oliver J.S., Low Y.L. & Rosales F.J. (2015) Longitudinal growth and health outcomes in nutritionally at risk children who received long-term nutritional intervention. J Hum Nutr Diet. doi:10.1111/jhn.12306. ‡48-week clinical study in children at nutritional risk, when given in conjunction with dietary counseling.

1. Fisberg M, Maulen-Radovan IE, Tomo R, et al. Effect of oral nutritional supplementation with or without synbiotics on sickness and catch-up growth in preschool children. Int. Pediatr. 2002;17: 216-222. † Studied in children at risk of malnutrition.

#### BEHAVIOURAL DISORDERS AFFECTING BODY IMAGE

**Dr. Namrata J. Charles,** Psychiatrist



Eating disorders are a group of psychiatric conditions related to abnormal eating habits. The demands of today's society drives individuals to attain the perfect body image as a way to express themselves. On one hand, sculpted looks by cosmetic surgery is becoming more common and affordable but on the other hand, it has brought a lot of peer pressure on those admiring them. Those with negative body image usually have underlying issues like eating disorders, body dysmorphic disorders, low self esteem etc.

#### Anorexia nervosa

Anorexia nervosa is a condition where those affected think they are fat or have a fear of becoming fat despite being extremely thin. They eat minimal amount of food in order to lose weight. It often begins in the teens or young adulthood and is more common in women. There is excessive restriction of food intake or purging in the form of vomiting or the use of laxatives. There is a higher incidence and prevalence of anorexia nervosa in sports, media and entertainment where an emphasis on aesthetics, low body fat or a sport in which low body weight is desirous to stay competitive.

#### **Bulimia** nervosa

Bulimia nervosa is an eating disorder where there are frequent episodes of eating large amounts of food in a short period of time, commonly referred to as binge eating. There can be a high calorie intake during the binge episode. This is usually followed by guilt and purging behaviours like self induced vomiting or misuse of laxatives/diuretics. However the body weight remains normal or above normal and this is what makes it different from anorexia nervosa. This condition too is more common in women.

The exact cause is currently unknown. But multiple factors contribute to the development of these eating disorders, some of which are genetic, environmental, psychological and cultural influences.

It is also important to look for stressful life changes, history of abuse, negative body image, depression or simply a demand from professions that focus on appearance or performance.

#### How to recognise eating disorders

Those with anorexia nervosa follow a very severe, restricted diet and have strange and secretive food rituals e.g. cutting food into small portions, chewing and spitting out food etc. They often conceal their low body weight by wearing baggy, extra large clothes and some follow a punishing exercise regimen. Individuals with bulimia nervosa keep switching between periods of overeating and fasting, causing constant weight fluctuations. Oral trauma, such as bruises in the lining of the mouth or throat from frequent vomiting are common. They are prone to acid reflux after eating, peptic ulcers, chronic dehydration and electrolyte imbalances due to the erratic eating and purging.

#### **Treatment**

People with these disorders often don't seek help because they're afraid or don't realise they have a problem. They are often prompted by others to seek help. Psychological treatments like family therapy and behaviour therapy are commonly used. The importance of a healthy diet with a flexible calorie exchange plan is stressed upon usually in consultation with a dietician. They are taught to recognize and change irrational beliefs about weight and body shape. In some cases, medications like antidepressants are prescribed. But these medications are used in conjunction with the psychological treatment never alone. Patients are encouraged to join an eating disorder support group that offers an anonymous online blog discussion. This has been found to have a huge positive impact in addressing issues which are not openly disclosed to the doctor.

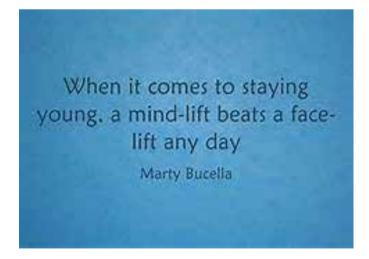
#### **Body dysmorphic disorder**

Everyone has some imperfection in their appearance but it does not affect their daily lives, except in those with body dysmorphic disorder. They spend hours each day thinking and worrying about their real or perceived physical flaws until they are reassured by someone. It affects their routine functioning like missing college or work and avoiding social events. Some even undergo unnecessary plastic surgeries to correct perceived imperfections and never finding satisfaction with the results. Unlike the above mentioned eating disorders, both men and women are equally affected. There are no specific causes but genetic implications have been shown in some. The environment also plays a key role especially life experiences and culture. It is important to look into any history of childhood neglect or abuse and co-existing psychiatric disorders.

Those affected by this disorder have strong belief that they are being mocked by others because of their physical appearance. They often attempt to hide their so called 'flaws' with make up or styling and seek frequent cosmetic procedures with little satisfaction. They may engage in behaviours like constantly checking the mirror to look for flaws or grooming frequently. The most common obsessions are related to skin color, face (nose, complexion and wrinkles), hair (thinning or baldness), size of breast, genitalia and muscle bulk.

#### **Treatment**

Treatment often includes a combination of cognitive behavioral therapy and medications.



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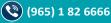
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