

# Tattoos: Charm or Harm?

## Introduction

Every civilization since prehistoric times has practiced tattooing for various purposes. Tattooing means deposition of colour pigments in the skin either accidentally or deliberately. The word tattoo is a derivative of the original Tahitian word "tatau" and was popularized by Captain Cook after his trip to Tahiti and Polynesia, where tattooing had large social significance deeply entrenched in their culture. In olden times, painting the skin with sticks and other pointed objects was art and was a form of scarification. Cutting human skin and applying the wood ash or plant gums or extracts to blacken the wound was a practice by tribes to create unique markings.

Tattooing involves pain, blood and fire. Earlier humans linked tattooing to the release of sacred life forces, and associated it with sacrifice to the almighty, bringing one's soul in alignment with the lord. Humans tattooed various symbols or animal forms to increase virility, fertility, to ensure protection from animal

attacks and to ensure the preservation of the human body after death. Tattoos were also useful to delineate hierarchies and roles within tribes. Early Egyptians spread the art of tattooing throughout the world.

Early tattoos were mostly ornamental, although individual civilizations had their own specific practical applications. The Goths, a tribe of Germanic barbarians and Romans, largely made use of tattoos to brand their slaves and criminals on their foreheads thereby degrading the bearer. Tattoos that were once permanent marks of guilt eventually became a mark of honour among criminals. The Turkish Ottoman Empire's military tattooed all soldiers to recognize them and to prevent them from fleeing their enlistment.

Around the world people tattooed themselves each for signifying a different purpose: for branding, as a funeral art, clan markings, physical health, love charms, good luck, Celtic culture, signifying pilgrimage, promoting sailing and military pro-

fessions, etc. Tattoos play various roles: as a magical talisman (symbol, word, religious image) to protect one against disease and disaster, act against evil spirits, confer benefactions in the nether world, etc., depending on the religion, devotion and faith of the bearer. Full body tattooing became popular especially among people working in circuses during the second half of the nineteenth century until the mid-twentieth century.

In the 1960's tattooing started as a popular art form and from the 1970's became popular as a fashion accessory in the USA & Europe, and slowly spread all over the globe, specifically among members of certain cultural movements. In America & Europe, artists trained in traditional fine arts began tattooing with innovative imagery and drawing techniques making it a mini industry. The advent of electric needle guns and a range of colour pigment provided artists with varied creative and artistic possibilities. With the tattooing practice flourishing, many local operators started adopting equipment and procedures akin to medical clinics.

Tattooing requires an emotional investment (personal value and motivation) and the necessary time (identifying the tattoo artist, meeting and sessions time, healing time), enough financial resources and physical investment (pain). Mainstream society by the late 1980's saw tattoos as a trendy fashion statement erasing the prevalent image of it being an anti-social activity. The next decade onward saw many artists offering cosmetic tattooing specialties like moles, beauty mark, pink cheeks, red lips and permanent kohl.

## Tattooing in India

We can find the prevalence of tat-





tooting in the historical and anthropological accounts of different Indian tribal communities. The available literature state that tattooing was as a part of typical folk and tribal art. The major tribes practicing tattooing are the Bhils & Santhals in central India, the Kanbis & Warlis of Gujarat, the Banjaras of Rajasthan, the wandering Rabaris tribes of Kutch, the Gonds, Pardhans, Kolam, Korku & the nomadic Banjara tribes of Maharashtra, the Apatanis, the Wanchos, the Noctes & the Mijis of Arunachal Pradesh, the Zommi-Chinn tribes & the Meithi clans of the Senapati hills, the Singpho tribe of Assam & Arunachal Pradesh, the Konyak's & Naga tribes of Nagaland and the Malagasy-Nias-Draavidians of the Malabar Coast. The purpose of tattooing for each tribe was different, ranging from an identifying mark, to beautification and curing physical ailments like treatment of rheumatism, to the forcible branding of criminals by the rulers.

A very peculiar characteristic to note about this art in India is its pervasive popularity only within the several tribes and its near total rejection by most of the population (considering it a primitive practice) both in the rural areas and by the elite urban class. In India, even among the traditional tribal population, inscription of tattoos on a person (women and children) was either due to peer-

pressure, or from society, without the individual's primary consent.

Nowadays, although tattoo art is a person's choice, it is still an exercise within the framework of potential rejection a person could experience by the extended family and the society when flaunting a tattooed body. Although tattooists using older methods are still practicing all over India, the modern tattoo studio is also fast emerging, providing access to artistic tattoos. This leads one to think that tattooing is slowly gaining social acceptance as an artistic product in India's growing commercial market economy.

#### **Conventional Tattoos/Temporary Tattoos (Mehndi or Henna)**

The origin of Mehndi is difficult to determine due to centuries of people migration and interaction between cultures. However, all historians agree that the use of henna for both cosmetic and healing purposes is at least 5,000 years old. The 4<sup>th</sup>-5<sup>th</sup>



century images on Bodhisattva deities on the wall paintings at Ajanta caves, and similar cave murals in Sri Lanka provide proof of Mehndi usage in India seven centuries before the Moghuls invaded India, and over hundreds of years before the start of Islam, during the mid-7<sup>th</sup> century AD. However, the English word "Henna" does owe its origin to the Arabic word "Al-Hinna".

Vatsyayana's Kama Sutra, the well-known Indian treatise on love compiled between 100 and 600 BC, advises women to learn the art of tattooing and colouring the teeth, hair, nails and bodies using cosmetics like colouring the eyelids with natural dye, yellowing the face and arms with saffron, and reddening the palms and feet with mehndi.

There are evidences that in the seventh millennium BC, the Neolithic people made use of henna to ornament their hands in honour of their goddess of fertility. Other early civilizations to have used henna include the Assyrians, Babylonians, Canaanites, Semites, Sumerians and Ugartics. Extensive use of henna in southern China is at least three thousand years old having strong association with erotic rituals with early Goddess cultures.

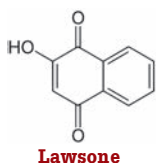
The ancient Indian culture of Mehndi design and tattoos are still



much relevant in modern day India. In Hindu tradition, during the pre-marital ceremony, or a few days before the wedding ceremony, applying intricate designs of the temporary mehndi or henna decorations onto the bride and other females is still a popular ritual.

In conventional or temporary tattoos, the application of the colour pigment is superficial in the stratum corneum. The tattoo disappears naturally with the renewal of the epidermis. A temporary tattoo uses henna, a natural pigment obtained from the plant *Lawsonia Inermis* that stains the skin in orange, reddish, orange-brown or reddish-brown tint and disappears after two or three weeks. Indians have been using these tattoos for centuries as a cosmetic. To procure various shades it is common to mix henna with the other plant leaves and fruits like tea, coffee, lemon, betel, cloves, catechu, turmeric, indigo and natural slaked lime. Adding sugar to the mixture strengthens the colour and prevents the deterioration of tattoos making the design remain on the skin for a longer time.

Henna is the dried, powdered leaf of the "Dwarf Evergreen Shrub", scientifically known as the *Lawsonia Inermis* belonging to the *Lythraceae* family. This four to eight feet high plant grows well in arid hot climates with desert-like conditions like in Iran, Syria, Persia, Morocco, Palestine, Yemen, Egypt, Uganda, Senegal, Kenya, Ethiopia, Eritrea, Tanzania, Afghanistan, Pakistan and India. Saudi Arabia, Egypt and India are the major producers. *Applying henna does not require any piercing and so is not actually a tattoo.*



"Red Henna" commonly in use as "Henna", is a red brownish pasty substance that produces tannins, a natural orange-looking pigment with dyeing properties. Henna paste is a dye that leaves a durable stain on the outer epidermis layer of the skin. Henna contains Lawsone (2-hydroxy-1,4-naphthoquinone) or hennotannic acid as an active, which binds with cells. It is necessary for the henna paste to remain moist and in contact with the skin for a while. When applied, the henna paste is always dark green/blackish, but the resulting pattern with natural henna can vary from light orange to dark brown.

One should apply henna paste mix on to the skin and then allow it to remain from about 30 minutes to about 6 hours. Longer the time the darker the henna tattoo. Final removal of the dried henna paste reveals the orange stained area, which can become darker after a couple of days. After Mehndi removal, smear the skin, with any vegetable oil to fix the stain. The dye however is permanent on fabrics or wood, and often finds use as a hair dye and as a cooling agent during hot weather.

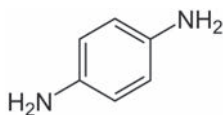
Henna is a natural stain and can-

not be easily rubbed off or removed with soap and water. Henna designs generally last from two weeks up to six weeks or until that layer of skin exfoliates, depending upon the quality of the henna, its reaction with an individual's skin type, care taken to preserve the design, exposure to sunlight, bathing habits, and the area of application. The art form varies from one region to another, each designs having a different meaning related to good health, fertility, wisdom, protection and spiritual enlightenment for members of each subculture.

Red henna dyes are relatively user-friendly. In spite of widespread global usage for ages there are a few cases of contact allergies. It is rare to find anyone having an adverse reaction to natural henna. It is one of the safest cosmetics ever used. Applying henna to the body is neither painful nor poisonous. The skin simply absorbs and reacts with the henna powder, to stain the outer epidermis of human skin. The best part of a Mehndi tattoo is that it naturally disappears in two to six weeks and the user can safely imprint a fresh newer design.

The variety in design is limitless.

Decorating with henna frees one from boundaries of gender, culture, ethnicity, religion or spiritual beliefs. Truly, it is Mother Nature's gift of beauty, touch and trust.



p-Phenylenediamine

### Chemical Mehndi/Henna

There is no product as Black Henna or Mehndi (*Kala Mehndi*) in nature. It is created by adding coal tar p-phenylenediamine (PPD) or its derivatives to red henna. PPD is an organic compound with the formula  $C_6H_4(NH_2)_2$ . This derivative of aniline is a white solid, but darkens on air oxidation.

Law does not permit use of PPD in skin cosmetics as it can cause severe skin irritation, affecting some individuals with reactions that may be harsh outlasting the temporary tattoos themselves. Reported problems include reddish skin, blisters, raised red lesions oozing liquid, loss of pigmentation, increased sensitivity to sunlight, and even permanent scarring.

Black henna with PPD can cause lifelong sensitization to coal tar derivatives, while black henna using paint thinner, benzene and other harmful chemicals can cause leukaemia. A person using black henna tattoo may get an allergic reaction that may be life threatening, requiring hospitalization. PPD users may also have future allergic reactions to fragrances, printer ink, chemical hair dyes, textile dyes, photographic developers, sunscreens and even some medications.

### Modern day Tattooing

In the US, tattooing is one of the fastest growing retail businesses

with the urban middle class men and women, giving recognition to it as an art form, with some persons actually collecting tattoos on their bodies like antiques or works of art. In tune with this scenario, tattoo-related artwork, tattoo designs and related professionals are becoming a subject of museums, art galleries and fashion shows across the US, Canada and Europe.

Nowadays, we see tattoos routinely on rock stars, professional sports champions, celebrities, fashion models, movie stars and other public figures playing a significant role in setting the pace of contemporary culture. In the last 10-15 years, the tattoo business has emerged, either as a "tattoo parlour" advertising urban outlaw culture, with garish exterior signage offering poor sanitary surroundings or as "tattoo art studio" featuring customized fine art designs, and "appointment" services, attracting high-worth clients similar to an antique, jewellery store or fashion boutique. We see a similar trend also in many Indian cities and in places frequented by tourists and the younger generation.

Tattooing consists of introducing a pigment by use of a pin into the dermis of the skin by either an amateur or a professional artist. It is a form of invasive surgery involving bonding of colours through the outer skin to

base layer of the human skin. Once the tattoo heals, a more translucent outer layer of the skin grows over this layer. Amateurs use India ink (plant gum/dye), charcoal or ash powder and a simple common needle, whereas professionally qualified artists use special needles and pigments containing various metal salts such as chromium (green), cobalt (blue), cadmium (yellow), hydrate ferric (ochre), manganese (blue-purple), mercury (red), or organic compounds such as red sandalwood or red *caesalpinia echinata*. Amateur tattoos have poor artistic quality with the risk of infection unlike professional tattoos.

We define tattooing as "the practice of producing an indelible mark or figure on the human body, by insertion of pigments under the skin using needles or other sharp instruments". The America Academy of Dermatology asserts that there are five types of tattooing: (1) Traumatic (natural), (2) Amateur, (3) Professional, (4) Cosmetic, mainly those used for a permanent makeup e.g. eye liners, and (5) Medical tattoos (also called dermatography, for nipple reconstruction, and for camouflaging scars, alopecia, vitiligo and birthmarks). Broadly they fall into three categories, viz., traumatic (natural), cosmetic (amateur, professional) and decorative (medical).



The traumatic tattoos are ones whose main cause is due to accidental penetration of specific materials in the skin after an accident. Cosmetic tattoos or micro pigmented tattoos aim to present a permanent makeup of the eye, lips, eyebrows contour, delimiting the mammary areola in a human breast and for therapeutic purposes to cover disfiguration due to skin diseases like vitiligo, *alopecia areata* or vascular malformations. Tattoos also camouflage post-operative scars and sometimes hide a skin disorder aesthetically.

A decorative tattoo marks the persons with a specific cultural, religious or social orientation (e.g., the purpose of punishing the person: infidelity, bondage, prisoners).

Getting a tattoo inscribed hurts. The most painful areas for men are the stomach, spine and chest and for women the ankle, spine and rib cage. The least painful areas for males are the buttocks, arm and back, and for females the stomach, buttocks, thigh and shoulder.

### Electronic tattoo machines

The art of tattooing saw a revolution in the last decade of the 19th century, thanks to Samuel O'Reilly's invention of the electric tattoo machine, which reduced the time required to complete a tattoo design from several hours to just a few minutes. Ready stock design choices from a wall display at the tattoo parlour or an album replaced the earlier artistic personally conceived handpicked designs



in a barber's tattooing shop. Within some years the establishment of tattoo equipment manufacturers led to vast improvements in the O'Reilly's machines, with the tattoo gun soon becoming a standard norm of the industry today.

### The Tattoo Gun

This modern tattoo making machine has three-parts with the base looking like a gun handle and so the name. The gun-shaped base houses the motor within along with a tube to clasp the ink and needles. The machine pulsates vertically and the needles puncture the first two layers of the skin forcing the ink from the tube through the epidermis.



Using needles of varying numbers or sizes, one can make different lines, building up the tattoo. A group of needles arranged in a circular pattern can create a solid line and needles lined up in vertical or horizontal slots provide shading. The proficiency in using tattoo machines, rotary machines and hand tools determines the skill of the tattoo technician.

Today, tattoo-making equipment and rotary machines are lighter and quieter. Modern hand tools and needles enable tattooists to do fewer touch ups, with clients experiencing lesser pain and bleeding, facilitating quick healing.

### Tattoo Ink

Tattoo ink is not really ink, but a suspension of different Azo dyes and colour pigments. Polycyclic aromatic



hydrocarbons are present in black inks. No one knows what a certain tattoo ink combination contains as manufacturers do not label the ingredients, keeping the recipes a closely guarded secret. However, we do know that most tattoo inks use metal salts in its preparation, and some of them may contain vegetable pigments.

Many of the pigments in tattoo inks are industrial-grade colours suitable only for printer ink or metal painting. Most times even the tattoo artists themselves are unaware of the ingredients, presenting a difficulty to predict an allergic reaction especially in case of sensitive skins that can even take as long as a week to flare and show up.

In case of cosmetic makeup tattooing, common dispersal agents in use are alcohol, propylene glycol, glycerine, witch hazel extract, castor oil, distilled water either alkaline or acidic to keep the colourant in solution. Alcohol, witch hazel and high or low pH inks and dyes can cause severe burning of the eyes and corneal damage. Scientific research show that some colour pigment can migrate from the tattoo site to the body's lymph nodes, the group of fluid-carrying vessels in our body filtering out all organisms causing disease. The consequences of these colour migrations on our health are still unknown.

### Chemical Tattoos – Pigments with metal salts

Chrome, nickel and cobalt salts





are present in tattoo colour pigments, however their roles in causing adverse reactions are difficult to prove. Neither the ink composition nor the additives present in them are standardized. Moreover, the metal salts by themselves can also cause of allergic reactions. Patch tests do not reproduce the pathophysiology of the tattoo correctly and tests with ink or metal salts are difficult to interpret.

Metal salts (cadmium sulphide, crunabar, mercury salt, nickel sulphate, quinacridon, etc.) are the prime suspects in the allergic reactions of tattoos. Tattoo pigments can give rise to various side effects like contact skin dermatitis, and other immunological reactions like acute inflammation, photo induced, lichenoid, granulomatous, pseudolymphomatous reactions and discoid lupus erythematosus.

Acute inflammation generally occurs immediately during tattooing, although it disappears after 2-3 weeks. Topical application of corticosteroids can provide relief from these symptoms. However, sometimes these reactions can manifest weeks or even years after tattooing. In allergic contact dermatitis, there is a clear presence of eczematous lesions in the tattoo area and characteristic histopathological reactions like Acanthosis, spongiosis and perivascular lymphocytic infiltrate.

Tattoos containing cadmium sulphate pigments on exposure to ultraviolet light can bring photo-induced reactions often manifesting to pruritic erythematous nodules. Sarcoid granulomas also occur on the tattoos representing early manifestation of sarcoidosis. Red tattoos, with mercury salts causes lichenoid reactions giving rise to lichen planus presenting itself as violaceous papules and plaques. Histological examinations show a band-like lymphocytic infiltrate located at the dermoepidermal junction, with hydropic degeneration of the basal layer and a “saw-tooth” appearance of the rete ridges.

Insertion of foreign colour pigments having mercury, cobalt or manganese can cause granulomatous reactions appearing on skin as numerous giant cells containing pigment or as an immunological hypersensitivity reaction with few giant cells. Pseudolymphomatous reactions clinically manifests as nodules or erythematous purplish plaque on the tattoo. The upper skin dermis shows vascularity, polymorphic cellular infiltrate and polyclonal lymphocytic infiltration, without monoclonal infiltrate unlike malignant lymphoma.

*Pseudoepitheliomatous hyperplasia* is a rare reaction in the tattoos causing reactive histological changes, irregular acanthosis of the epidermis and follicular infundibulum, with the absence of cellular atypia and rare mitoses. The epidermal barrier breakage during the tattooing also leads to pyogenic infections. It is difficult to distinguish these changes, from cutaneous tumours as squamous cell carcinoma or keratoacanthoma requires skin biopsy for confirmation.

Cutaneous viral infections include warts and *moluscum contagiosum*. Infections can arise and appear on the tattoos between one month and 10 years after tattooing. Cases of

outbreaks of non-tuberculous mycobacterial infections due to use of contaminated tattoo ink, transmission of leprosy, syphilis, tuberculosis, hepatitis B and C, HIV, dermatophytes, sporotrichosis are present in medical literature.

Tattooing consists of injecting pigments into the dermis that will remain throughout one’s life into the tattooed skin exposing it to carcinogenic and toxic risks. Most of these colour products are located in the dermis and with regular exposure to ultraviolet radiation, it leads to an increase of free radicals and risk of cancer. Similarly, magnetic resonance imaging (MRI) could cause swelling or burning sensations in the tattoo.

**Why does one need a tattoo?**

Tattoos, especially cosmetic tattooing, have become popular, as a permanent makeup of the eyelids, eyebrows and lips, for personal convenience, due to an active outdoor lifestyles and demanding work schedules. Avoiding the application of conventional makeup daily, allergies to makeup products, visual impairment, are some other reasons. Permanent makeup make women look younger than their age, save money and 30-60 minutes they have to spend every day applying regular makeup, which very soon smudges, smears and disappears. Some persons probably want to “sleep with a makeup and wake up along with the makeup” and few others always want to look like a movie star. Sometimes tattoos are for camouflaging unsightly scars and vitiligo.

Although cosmetologists, electrologists and aestheticians practice cosmetic tattooing in cosmetic salons, medical practitioners are averse to this practice, stating it as strictly avoidable and unsafe. We should be aware that the training and competence of practitioners in this largely unregulated profession is doubtful.



### Traditional tattooing & cosmetic tattooing

The major difference between traditional and cosmetic tattooing (micro-pigmentation) is the site of the tattoo. Safety precautions when working near the eye for eyeliner is of paramount importance along with controlling pain, swelling and bleeding.

Clients suffering from medical problems like high blood pressure, multiple sclerosis, history of *herpes simplex* (lips), pregnancy and clients taking blood thinner medication should avoid any cosmetic tattooing. Variation in skin thickness, elasticity and colour on the face are also important points to consider.

Pigment mixtures all look good in the bottle, but could result in a bizarre brow and lips. Black tattoo inks on eyebrows can change to grey-blue hues with the passage of time and if streaking or migration of pigments and inks happens later, it could require a laser or surgical removal. Likewise, lip colours may change after sometime and only a thorough understanding of colours can give a desired result in a permanent makeup.

A permanent makeup on the face is much more difficult than other parts of the body as face exposure to the sun and environment is high. One cannot use inks on the face as readily as in other parts of the body. Moreover, pigments do not attach easily into the

skin as readily as inks and after skin healing the overall results may vary widely from the desired one largely depending on individual skin type and body's environment. It is important to understand that one cannot easily remove or camouflage a permanent cosmetic makeup and no controlled scientific studies exist with respect to colour pigments in use.

### Complications of permanent cosmetic makeup

#### Corneal abrasions

Incidence of corneal abrasions is frequent, however, many ~~the~~ tattoo artists fail to recognize its signs and symptoms. These happen either due



to mechanical or chemical factors. Signs of corneal abrasion include a gritty sensation of a "sand particle in the eye", pain, sensitivity to light, or blurred vision. Only a eye specialist can resolve these issues caused by non-medico professionals performing permanent eyeliner procedures.

#### Allergic reactions

Antibiotic ointments, nickel pigments, latex, etc., head the list of allergic reactions. Allergic reactions can be either immediate or delayed. Lip colours can be a problem in permanent cosmetics. Referral to a physician for prompt diagnosis and treatment is the standard of care.

### Post-Operative Care

The moment one-steps out of the tattoo studio, the post-operative care responsibility begins. The tattoo care process for the next few weeks will determine how crisp and clear it looks. Following the tattoo artist's recommendation is important. "Airing" the tattoo by removing the bandage without permission from the tattoo artist is not advisable. Be gentle while removing the bandage, and always wash hands before touching the tattoo or the surrounding areas. Dislodge firmly stuck bandages on tattoo skin by moistening the bandage with some warm water until the moisture loosens it up for careful pulling.

Clean uncovered tattoo with warm soapy water and dry by patting (not rubbing) the area with a soft, clean towel. Avoid soaking the tattoo while in the bath or the shower. After bandage removal, some tattooists will recommend to leave the tattoo open to air for around ten minutes while others will tell to treating the area with ointment immediately with an antibacterial cream. In case of adverse reaction with any kind of ointment, make sure to inform the tattooist immediately and alternatively seek medical advice if the reaction is severe.

### Healing Process

Clean and apply fresh ointment to the new tattoo for the prescribed number of days as recommended by the tattoo artist or until complete healing. Continue to keep the area clean by washing with warm soapy water and keep the tattooed skin soft. After 3-4 days, the new tattoo will start to peel and scab. If there is too much scabbing, it means that the tattoo inking is poor. Do not scratch as it can lead the ink right out of the tattoo during the first few days of healing.

Normally dry tattoos may look ~~at~~ little bleary or cloudy and only looks clear when it is wet for a few days.

This is a natural healing process and well known as "Onion Skin"; keeping, the tattoo clean and well moisturized is the key to help the skin recover its pliability and softness. Trying to hurry the process in any way does not work. It is better to allow our human body's powerful natural healing abilities follow their own course.

Allow the tattoo to heal completely before shaving again and leave it unshaven until there is no scabbing or peeling of skin. While shaving around the tattoo, make sure the shaving foam, cream or hair does not infect the tattoo area. On starting shaving, make sure to moisturize it thoroughly later helping to keep the skin healthy. Do not scratch only pat if the tattoo itches. Do not pick at scabs, rub it or press it. Stay out of the sun as sunlight can discolour the tattoo. Do not apply a sunscreen on the tattoo. Avoid salt water as it can cause a fresh wound to sting and leave it vulnerable to infections and fading.

Sometimes, for one reason or another, a tattoo may require some re-inking and returning to the tattooist for an educated opinion is advisable. Once re-inked, follow the same rules for post-operative care and healing.

### Removing Permanent Tattoo – Pigment Removal

One cannot hide cosmetic tattooing from sight by clothing, unlike body tattoos. Discolouration can occur due to photochemical changes in pigments such as iron oxides and titanium dioxide and result in misplaced or undesirable colour on the face. Use of non-specific chemical exfoliants can result in scarring, unsatisfactory results and prolonged redness. Sometimes, even laser treatment is unable to remove these tattoos easily.

Artists create tattoos by making use of an electrically operated ma-



chine that inject ink into the skin, by penetrating the epidermis, or outer layer, and depositing the ink into the dermis, the inner layer. The cells present in the dermis are comparatively more stable than the epidermis. The ink generally stays in place for a person's lifetime to make tattoos permanent. Removing a permanent tattoo can be expensive, difficult, painful and may take several treatments.

### Laser removal

Specific laser devices can remove permanent tattoos and may take 6 to 10 treatments, depending on its size and colours. A few weeks healing time may be necessary between each procedure. Pulsed lasers, which emit concentrated light energy in short bursts or pulses, have been in use to remove tattoos for more than a decade. However, it is a painstaking process and total removal without any scarring is rather impossible.

Every colour absorbs light at different wavelengths and different types of lasers are required to remove a tattoo. The choice of the laser depends on the wavelength needed to destroy the tattoo pigment. The most common ones



are Nd:YAG, Er:YAG, ruby and alexandrite lasers in Q-switched mode to increase the selectivity for pigmented lesions. When pulses of high intensity laser energy pass through the epidermis, the tattoo pigments in the dermis selectively absorb them, and break into smaller particles making it easy for the macrophages of the skin to remove. These particles either metabolize and excrete out of the body, or are stored in lymph nodes or other tissues.

Multi-coloured tattoos may require the use of multiple lasers. It is difficult to remove lighter colours like yellow, green and red in comparison to dark blue and black. It is pertinent to note that in most cases, despite multiple treatments, complete removal of a permanent tattoo is impossible. The results depend on the depth of the pigment injection into the dermis, the amount and chemical nature of the pigment. Complications like structural changes of the skin, scars, transient or permanent changes in skin pigmentation, dispersing granules of tattoo in allergic patients, localized or generalized allergic reactions, bleeding, redness or soreness are all the side effects of Q-switched laser therapy. Take care to see that a medical dermatologist knowledgeable about laser treatments removes them.

### Surgery

Cutting out the tattooed skin, and then sewing the skin back together is the surgical option. Difficulties in suturing of the skin, risk of delayed



healing, development of hypertrophic scars, keloids or anatomical distortions resulting in scars, less aesthetically acceptable, are the reported complications. “Dermabrasion” – “sanding” away the top layer of skin – may also sometimes remove the tattoo. In both these cases there will be scarring of skin.

### **Ointments and Creams**

Some ointments, creams and do-it-yourself tattoo removal kits are available. However, these products have no formal approval from the authorities and may cause skin rashes, burns, scars or changes in the skin pigmentation.

### **Think & Then Only Ink**

Tattoo artists belong to two different classes: one having a formal training and the other an untrained tattooist. It is difficult for us to identify the class of the tattooist. Purchase and use of dubious equipment and products, and reusing needles can lead to fatal diseases such as hepatitis or AIDS. It is better to trust our instinct and stay away if the artist's works is inappropriate or lacks a pleasant composition.

Strict sterilization of needles and equipment to prevent cross-contamination and spread of disease is of paramount importance. If the tattoo studio does not look clean walk right out of the door. Everything related to applying the tattoo (ink, needles, latex gloves, wooden sterile spreader, etc.) should be disposable or sterile. Ideally, the tattoo artist should have had a vaccination for Hepatitis B, unfortunately, since this is not easy to find out, for safety sake make sure to have a vaccination before receiving a new tattoo.

There are too many unknowns in the tattooing process and one should be aware of this. Unknown includes long-term effects of the pigments and other ingredients, possible contami-

nants in tattoo ink and finally tattoo removal in case the situation so warrants. Despite advances in laser technology for removing an unwanted permanent tattoo, we should remember that it is a painstaking process. We do not know the short-term or long-term consequences of how the colour pigments break down after laser treatment and its subsequent metabolism or storage. It is a fact that complete removal of a permanent tattoo without any scarring is impossible. In spite of this, if one still decides to get a tattoo, it is better to be doubly sure, that the tattoo parlour and artist at least comply with the basic local laws, statutes and regulations governing an establishment.

### **Conclusion**

Tattoo is not just a needle, prick and ink! Think before making a final decision to get a tattoo. Do not settle for any ordinary, dull or shoddy work. It is ultimately a permanent work of art on the body. One way to find a good tattoo artist is to find someone whose tattoo is admirable and ask him or her for recommendation of the tattooist. Make sure to question on the cost of the tattoo as well as the hygienic conditions of the shop. Consider alike the advice from strangers and friends. Industry and cultural magazines are good sources of information, however do not trust them blindly. Inscribe a tattoo only if the tattoo artist is affordable and reliable. It is a priceless beauty treatment, and a cheap tattoo artist can brand one for life with a marking that one might dislike later.

We can find tattoo artists under a tree, on a bridge, in an open ground, near a putrefying garbage pile, a crowded temple, crammed fair, at the gates of a general hospital, in a make shift tent, a congested shop, garishly lit parlour or upmarket studio. It is good to remember that tattooing, a form of invasive surgery, has little

## **Types of Tattoos**

**Permanent Tattoo:** A needle inserts coloured ink into the skin lasting a lifetime.

**Permanent Makeup:** It is a type of permanent tattoo wherein a needle inserts coloured ink into the skin to look like eyeliner, lip liner, eyebrows or other makeup.

**Henna:** A plant dye that stains the skin. This temporary tattoo lasts from 3 days up to a few weeks. Very Safe!

**Black Henna:** This type of tattoo may or may not contain henna. It may contain hair dye or other dyes to make stains darker and longer lasting. Very Dangerous!

**Decal Tattoos:** Some decal tattoos have a backing that we have to remove with water when applying the design directly to the skin, whereas others have a backing that sticks to the skin. Decal tattoos may last for a day, or up to a fortnight.

or no governmental control, laws, statutes or regulations. Anyone can become a tattoo artist and start practice. Tattoo artists are free to buy any equipment, products and follow practice procedures as they deem fit. It is truly a scary situation, full of peril.

The tattooing business has no guarantee for satisfaction. Getting permanent tattoos may turn out to be more harm than charm! Be careful!

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