Self-Graffiti:

Is it all about Self-Image or Self-Destruction?

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We are faced with clinical questions daily from our patients, but no questions are more difficult than issues pertaining to our own families, especially our children. The question of tattoos and body piercing is a case in point. The following article will attempt to give you an understanding of the history of body art, and the potent infectious complications of this very trendy practice.

Case

You are a family physician, with three children of your own. Your oldest daughter, now 15, wants to get a tattoo and a belly button ring. Your daughter's favorite character has always been Kermit the Frog, and she wants this image permanently tattooed on her groin, just below the bikini line. This body art, coupled with a gold stud in her navel is all she wants in life, and she swears that all her friends' parents are letting them tattoo and pierce themselves.

Your wife has seen a recent talk show about a prison convict who is HIV-positive, and the host attributed it to all the tattoos and body piercing. As a result, your wife absolutely forbids your daughter to go ahead, but defers to your medical judgment.

What would you decide?

BODY ART AND ADOLESCENCE

The peak age for any type of body art, aside from ear piercing, is between 14 and 22. In fact, statistics show that if you have a tattoo, you are also more likely to have body piercing, and more than five sexual partners!

Adolescents view body art as part of their self-image, while many parents view it as deviant behavior. Adolescents are 40% less likely to be employed if the art is visible.

As with anything else, if an adolescent really wants something, they will do it, regardless of rules, regulations and potential risks. In fact, over one-third of adolescents without tattoos consider getting one done. In 1983, 9% of males had tattoos, and only 1% of females. Now the incidence has quadrupled, with more than 100,000 people per year getting a new tattoo.

Self-Graffitti

In a survey of college students, 235 students were studied. If already tattooed, they rated themselves as more adventurous, creative, artistic, and individualistic. Males rated themselves as more attractive, as having more sexual partners, and more likely to have been arrested. Females also rated themselves as more attractive, but also more likely to use drugs and alcohol, and have a history of shoplifting.

Given the increasing popularity of body art, it is wise to be adequately informed of the risks, and what steps need to be taken to minimize those risks.

THE PROCESS OF TATTOOING

Tattoos are done by inserting pigment into the dermis, by incising, burning or rubbing dye into a wound. Most tattoos are done with modern electric tattoo machines with a rotating motor that holds from one to 14 solid bore needles. The needles move up and down several hundred times per minute, and insert the dye into the dermis.

The process starts with selecting a design that is stenciled onto the skin. The skin should be prepared as for any type of surgery. If hairy, the skin is shaved, ideally with a disposable razor, and then disinfected. The needles are dipped into the ink, and the gun is run over the skin, rapidly puncturing and inserting pigment through the epidermis to the dermis. Swelling will be present for a few hours with some inflammation (similar to a sunburn), and healing is complete within two weeks.

WHAT PROPER TECHNIQUES NEED TO BE ENFORCED?

Aseptic precautions are essential.
Any preparation of the skin should be as stringent as in any minor surgery. Disposable, individual razors need to be used if hair is to be removed, and the skin should be cleaned and disinfected.

The needles used should be disposable needles, unless there are adequate facilities to autoclave and sterilize these needles. It is highly unlikely that sterilization facilities exist in tattoo parlors, and even if they do have an autoclave, it is unlikely they do quality control checks on their autoclaves. Therefore, insist the needles are new for each client.

The guns themselves should also be sterilized, either with steam or dry heat. It is not reasonable that they use a new gun for each person, but most tattoo parlors do little else than clean the guns.

The artist must be wearing gloves, and all sponges and tissues used to wipe away the blood must be adequately disposed of. Proper wound care after the tattoo is also important to minimize wound infections.

INFECTIOUS COMPLICATIONS

Local infections are most common, due to Group A hemolytic strep or Staphylococcus aureus.

Bacteremia

- Three reports of hematogenous osteomyelitis, and one report of sepsis and meningitis in a two-week-old child;
- Endocarditis associated with ventricular septal defect and nose piercing; and,
- Toxic shock syndrome.

Chondritis

- Pseudomonas aeruginosa infection of ear cartilage can lead to necrosis and subsequent tissue resection.

Tetanus

- Especially in the Third World.

Hepatitis B

- Proven transmission, even when controlled for other risk factors. Reports of severe hepatic necrosis and death.

Hepatitis C and HIV

- Possible but not absolutely proven.

New ink for each client is essential but not always enforced.

It is fine to use new needles, but if these new needles are dipped into inkwells that have been previously used for another client, the infectious particles may be in the ink. Most commonly, the tattoo parlors use a large container of ink, and dispense the ink into individual containers. This is likely adequate, but ideally new ink should be used altogether to minimize the risk.

WHAT NON-INFECTIOUS PROBLEMS ARE SEEN WITH TATTOOS?

- Allergic reactions.
- Basal cell and squamous cell carcinoma, as well as malignant melanoma. (However, it is not known whether the tattoos themselves are predisposed to the neoplastic changes, or that lesions go unrecognized because of the overlying tattoo. It is more likely the latter.)

WHAT INFECTIOUS PROBLEMS MAY ARISE AS A RESULT OF TATTOOS?

- Most common are the local bacterial infections (pyoderma, impetigo, furunculosi) due to Group A hemolytic streptococcus and Staphylococcus aureus.
- Syphilis has also been reported in the past. There were nine case series between 1853 and 1941 where the tattooist had oral lesions, and held the needles in their mouth, or used saliva on the stencil design to stick it to the skin. Primary syphilitic lesions present 13 to 87 days later.
- Tuberculosis (TB) has also been documented. Six cases were reported between 1895 and 1918. Again if the tattooist has pulmonary TB, and keeps the needles in his/her mouth, or licks the stencil, this can lead to cutaneous TB.
- Leprosy was reported in eight cases. The mode of transmission of the mycobacterium leprae is unclear.
- Warts due to papillomavirus or molluscum are also possible. The virus infects the ink or the needles, and the warts can appear anywhere from one month to one year later.
- 246 cases of Hepatitis B have been described between 1950 to 1980.

NON-INFECTIOUS COMPLICATIONS OF PIERCING

- Metal allergic dermatitis
- Keloid formation
- Jewelry embedded in tissue
- Lymphandenopathy
- Torn tissue

Tongue piercing
- Airway obstruction from edema following tongue piercing.
- Aspiration of loose jewelry
- Chipped or cracked dentition
- Interference with mastication
- Speech impediment, nerve damage

Eyelid
- Corneal abrasion, eye infection

Eyebrow
- Loss of sensation and movement of area of forehead

Nipple
- Torn
- Cyst, abscess, impair future nursing

Genital
- Urethral rupture
- Tissue destruction of sexual partners

- Hepatitis C is transmitted like Hepatitis B, but the causal relationship between tattoos and Hepatitis C has been difficult to prove.

WHAT ABOUT HIV?

There have been a few case reports linking tattoos and HIV. It is certainly reasonable, given that multiple needle sticks transmit sufficient quantities of blood to transmit the human immunodeficiency virus (HIV). The ink itself, if infected, can retain infectivity for up to 15 days in aqueous solution at room temperature. However, in the Centres for Disease Control's (CDC) registry of non-characteristic cases of HIV only 7% of cases have a history of a tattoo and, in all patients, the tattoos were acquired before 1978 (*i.e.*, before the HIV epidemic).

BODY PIERCING

Throughout history, body piercing has been used, either as a rite of passage to indicate marriageability, or as an indication of social standing. Roman Centurions pierced their nipples to hold their capes in place. Prince Albert, Queen Victoria's consort, pierced his penis to attach it to his thigh so that the fashionable tight trousers would fit better. To this day, male genital piercing is called Prince Albert piercing.

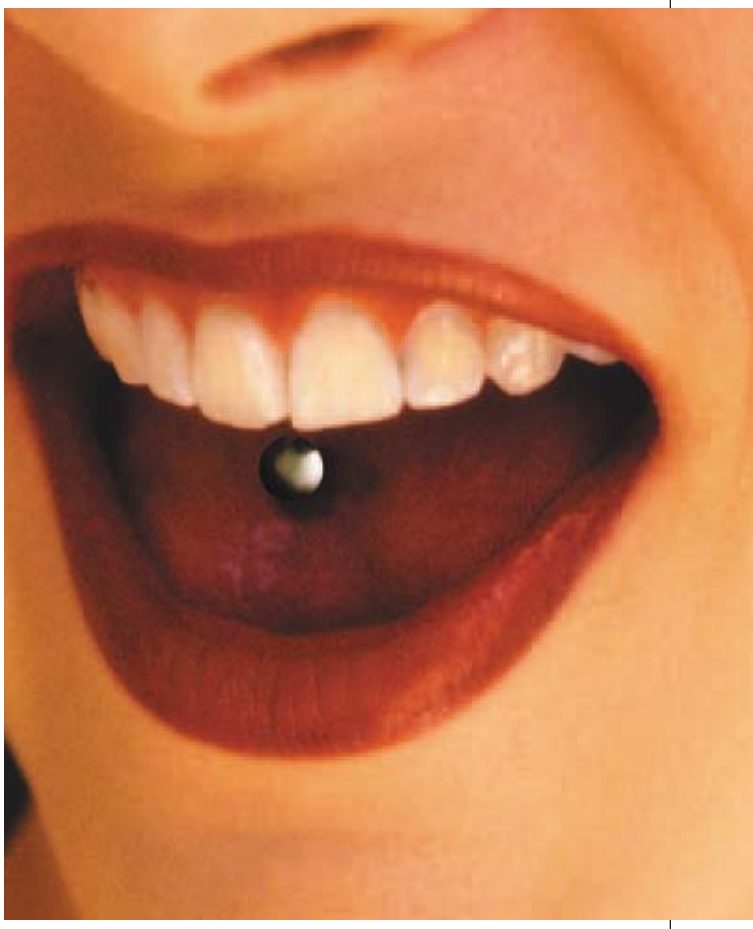
In the 1960s, body piercing was viewed as anti-establishment. Today, navel, eyebrow, lip, nose, tongue and nipple piercing have become quite common. Approximately 80% of North American women have their ears pierced.

TECHNIQUE OF BODY PIERCING

Almost any shopping mall will have kiosks offering ear piercing. For ear lobes, spring-loaded guns puncture the lobe with a sharp metal stud. These guns are designed only for earlobes and are really not adjustable. For non-earlobe piercing, a six-to-18-gauge hollow needle is inserted and corked. Jewelry is brought through the hole in a needle/thread fashion. However, many piercing boutiques will use the earlobe gun for other body parts, and they run the risk the jewelry will become embedded.

BODY PIERCING SAFETY ISSUES

- There is very little training given to the people performing the piercing. Most shops and kiosks use a combination of videos, demonstrations and direct supervision. There is no specified training period, no training in anatomy, infection control or universal precautions.
- Contents of tattoo dyes have not received Food and Drug Administration approval.
- Piercing guns are not easily cleaned and are infrequently sterilized. If the cartridge is disposable, then the gun should be wiped with alcohol. If there is a solid head, the entire gun needs to be immersed in 2% gluteraldehyde.
- There should be single-use needles and corks in individualized sterile packages.
- Gloves should be worn and proper antiseptic technique be used.
- Once the skin is pierced, it is important to clean the site daily.
- Articles that come in contact with the skin only require disinfection with detergent or quaternary ammonium, whereas articles that come in contact with mucous membranes or broken skin require high level disinfection with 70% alcohol; bleach diluted 1:9 with water; 2% gluteraldehyde or 6% hydrogen peroxide.



- Articles that enter the skin **must** be sterilized, *i.e.*, autoclaved with steam or dry heat, and the sterilization procedure must be monitored.

CME

TAKE HOME POINTS ABOUT PIERCING AND TATTOOING:

- Adolescents need adequate information
- Physicians need to assess history of tattoos and piercing with cases of hepatitis and endocarditis.
- Removal of jewelry is likely required to cure local infections.
- Educating the "clients" will force the tattoo artists and piercing kiosks to ensure adequate adherence to infection control policies.

Hypertension