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Authors

Urdang, Michael
Mallek, Jennifer T
Mallon, William K.

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Tattoos and Piercings: A Review for the Emergency Physician

Michael Urdang, MD*
Jennifer T. Mallek, MS†
William K. Mallon, MD, DTMH*

* University of Southern California, Department of Emergency Medicine, Los Angeles, California

† University of Southern California, Keck School of Medicine, Los Angeles, California

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Tattoos and piercings are increasingly part of everyday life for large sections of the population, and more emergency physicians are seeing these body modifications (BM) adorn their patients. In this review we elucidate the most common forms of these BMs, we describe how they may affect both the physical and psychological health of the patient undergoing treatment, and also try to educate around any potential pitfalls in treating associated complications. [West J Emerg Med. 2011;12(4):393–398.]

INTRODUCTION

Tattoos and piercings (T&P) are ancient practices of body modification. The word *tattoo* comes from Polynesia and was first described by Captain Cook in 1769. The art form was named for the tapping noise made by a tattoo needle on the skin, which in the native tongue was *tatau* or *tatu*.¹ Piercing, including the ear lobe, is also an ancient process, defined as the insertion of a needle to create a fistula for decorative ornaments. First recorded in the Middle East more than 5 thousand years ago, the practice is mentioned in Genesis 24:22 when Abraham asks his older servant to find a wife for his son Isaac. One of the gifts given to Rebecca, Isaac's new wife, by the servant was a golden earring. Since then, ear piercing has become so well accepted that most scientific literature excludes the ear lobe in the definition of body piercing.

Social acceptability of these practices varies widely from culture to culture. Catholicism and Judaism have banned the practice of tattooing.² Esthetics, personal expression, religious views, communication, and style are all motivations for obtaining a tattoo or a piercing. Once relegated to the margins of society (bikers, military, sailors), tattoos and piercings are now common across all ages and both genders in what has been described as an epidemic. For the emergency physician (EP), tattoos and piercings have become important nonverbal clues about the patient's lifestyle and, furthermore, are increasingly the cause of an emergency department visit.^{3,4}

This review provides EPs with the tools to be able to assess

the lifestyle or social background of their patients, to be able to understand the medical complications that may arise as a result of body modification, and to have a deeper understanding of the psychologic associations of tattooing and, when necessary, the relevance of the body modification to the current chief complaint.

EPIDEMIOLOGY

Within Western society there has been a shift from the stereotype of the tattooed sailors, who used tattoos to communicate their travel and services, the outsider biker of the 1960s (Hell's angels), and the gang members of the 1980s to the ornamental tattoo, which is now part of a collection of body modifications among women as much as men. Recent surveys completed in 2002 and again in 2006 have shown an increase in prevalence in tattoos within the US population.^{5,6} In 2002, a Harris poll showed a tattoo prevalence of 16%, whereas in 2006 a North American survey of 18 to 50 year olds found that 24% had tattoos and 14% had body piercings (excluding the ear). The surveys found that those who were tattooed were more likely to be less well educated, to have a high recreational drug use, and were less likely to show any religious affiliation.

Tattooing can be used to camouflage intravenous drug abuse, where it involves the antecubital fossa, and has an important place within generalized medical therapy. Its use is seen as a camouflage for dermatologic disease, can be added as a final stage in many plastic reconstructive procedures, and is

Table 1. Piercing terminology.⁹

Ampallang: horizontal through the penis
Antitragus: ear and cartilage
Barbell: type of jewelry composed of a straight bar with bead on each end (found anywhere)
Christina: mons pubis
Conch: adjacent to external auditory canal
Finger web
Frowney: lower lip
Guiche: male perineum
Hafada: lateral scrotum
Labret: lips
Madonna: labret upper lip
Prince Albert: transurethral piercing from urethral meatus to below glans penis
Reverse Prince Albert: ring exits on top of penis
Smiley: upper lip frenulum
Triangle: clitoral hood

also used for guidance in radiation therapy, endoscopic surgery, and ophthalmologic procedures.

Studies, which have looked at the epidemiology of piercings, have found that 2% of Americans report having piercings (not including the ear lobe) and that females get more piercings than men. Among young adults who have piercings there is a high rate of associated eating disorders.⁷ Studies also

Table 2. Medical relevance of tattoos and piercings (T&P)

Relevance of T&P
1. Interpretive: understanding the patients and medically relevant aspects of their lifestyle
- Incarceration
- Drug use
- Sexual orientation
- Gang allegiance
2. Complications of T&P, resulting in the ED visit
- Embedded
- Infectious
- Trauma
3. Relevance to the medical work-up in the ED
4. Psychiatric association
5. Procedural related
- Airway
- Magnetic resonance imaging
- Plain films

ED, emergency department.

show that persons who get piercings are more likely to partake in risky activities, including drug taking and sexual promiscuity, and have a higher risk of incarceration. The educational status and income of persons with T&P are generally lower, although these educational and economic disparities are lessening as T&P becomes more mainstream (Table 1).^{8,9}

MEDICAL RELEVANCE FOR THE EMERGENCY PRACTITIONER

There are several ways that T&P are relevant to the practicing emergency practitioner (Table 2).

Interpretive Relevance

For the EP, T&P presents a window to the lifestyle and life experience of the patient. Many questions relevant to the history can be answered by a review of the T&P present. Figures 1 through 4 show examples of information obtained from T&P. While interpretation is not as simple as it was 30 years ago, when sailors, military members, and gangs had the most tattoos, relevant information is often within reach of the observant EP.

Complications of Tattoos

Tattoo complication rates show a prevalence of approximately 2% to 3%. Table 3 summarizes the complications associated with tattoos, many of which will be encountered by EPs. Most complications are related to infection that can be traced back to individual tattooist practicing a nonsterile technique. In particular, the jail and intravenous drug-using population is at risk for hepatitis B and C and methicillin-resistant *Staphylococcus aureus* infection.¹⁰⁻¹² Even syphilis has been transmitted by a tattoo artist licking the tattoo needle.¹³ Failure to recognize a tattoo as the source of a complication leads



Figure 1. “LW” is a gang affiliation meant to be seen when wearing sandals.



Figure 2. Mi vida Loca = My crazy life also seen as ∴ in many patients; in this case, “LOWCA” is a reference to low riders and the automotive culture associated with them. The gang is “Lowell Street,” indicating a traditional Hispanic “turf gang” that is “loco”—crazy or brave.

to incorrect therapy. In many cases the tattoo is not correctly linked to the medical problem because the patient may have multiple risky behaviors.

Complications of Piercings

Complications of piercings are more common than those of tattoos and studies show rates as high as 9%. The types of complications include local or systemic infections, traumatic



Figure 4. “Brown Pride” for racial identity as Hispanic or Latin; the anticubital fossa tattoos often cover intravenous drug abuse tracks, and the woman (right arm) is often the woman who “waits for him” during jail time. Yolanda is his girlfriend, and the left anticubital fossa tattoo is a tribute to a family member in the military, killed in service with “R.I.P.,” or rest in peace, noted above.

insertion, poor cosmesis, and rejection of foreign body, as well as migration and embedding.¹⁴ These are summarized in Table 4.

Jewelry is mainly body-site specific and made from metal. Metals used include stainless steel, gold, titanium, and various alloys. When these alloys contain nickel, there are associated allergic skin reactions and contact dermatitis. Specific



Figure 3. Jiminy Cricket shown (a derogatory reference to the Crips, when called crickets or crabs), with the lipstick mark from a woman who loves him. The N and the E probably refer to northeast and the Chinese characters are of uncertain reference.

Table 3. Medical complications of tattoos.¹⁵

Tetanus ¹⁷
Skin infection (MRSA) ¹⁸
Sepsis
Mycotic and viral infection
Verruca vulgaris ¹⁹
Tuberculosis cutis
Molluscum contagiosum ²⁰
Syphilis ¹⁴
Chancroid
Psoriasis
Magnetic resonance imaging burns
Endocarditis ²¹
Dermatitis
Lichen planus
Lupuslike reaction
Urticaria
Photosensitivity
Tumor induction—including melanoma and carcinoma
Human Immunodeficiency Virus ^{14,22}
Granulomas
Impetigo

MRSA, methicillin-resistant *Staphylococcus aureus*.

complications relevant to the EP are summarized in Table 5. Rarer complications of piercings include bacterial endocarditis, tetanus, piercing migration with embedding, and even a case reported of appendicitis from a swallowed piercing that occluded the appendiceal aperture.^{15–18}

Psychologic Associations of Body Modifications

The EP should be more concerned about illnesses and suicidal behavior in those with body modifications. Tattooing correlates with the perception of decreased mental health, and tattooing and body piercing together correlate highly with increased “sensation-seeking” behavior.¹⁹ A study of young tattooed Korean males conducted in Korea, where body modification is considered part of counterculture, used the Minnesota Multiphasic Personality Inventory personality test and found high scores in items of psychopathic deviance and schizophrenia, suggesting that those with tattoos were impulsive, hostile, and prone to delinquent behavior.²⁰ A data analysis of 4,700 individuals who responded to a Web site (www.bmezine.com) for body modification found a high frequency of abuse in the background of those who participated. This survey also found that 36.6% of the males had suicidal ideation and 19.5% had attempted suicide. For the females, a statistically significant higher suicidality rate was found, with percentage values of 40.8% and 33.3%

Table 4. Medical complications of piercings and pocketing.^{23,25}

Hepatitis B and C infection ²⁶
Pressure necrosis
Ludwigs angina ²⁷
Contact dermatitis ²⁸
Abscess
Hematomas
Aspiration
Dental trauma
Sarcoid granulomas
Argyria (silver pigmentation of skin)
Toxic shock syndrome ²⁹
Keloid formation ³⁰
Traumatic avulsion
Embedding and migration
Perichondritis ^{31,32}
Trigeminal neuralgia ³³
Nasal septal hematoma
Thrombophlebitis
Condom failure
Airway compromise
Appendicitis ³⁴
Endocarditis ^{15,16}

respectively.²¹ Skegg²² noted that piercing was more common among women rated as having low constraint or high negative emotionality and was less common among those with high positive emotionality. Therefore, one can conclude that body piercing and tattoos, especially in females, could be a sign of suicidal behavior. However, no association has been found with eating disorders.⁷

Some authors have attempted to show positive association for these body modifications. In a study of women with eating disorders, the authors suggested that body piercing could be seen as reflecting a positive attitude towards the body, an expression of care.²³ In addition people with piercings are more likely to give attention to their physical appearance and are less likely to be overweight than people without piercings.²²

REMOVAL OF TATTOOS AND PIERCINGS

Burris and Kim²⁴ found that 50% of persons with tattoos express regret and wish for tattoo removal. The quest for tattoo removal reflects earlier poor decision making and an embarrassing stigma often perceived by the age of 40 years. Tattoos may cause immediate and delayed hazard to health and are not easy to remove. Delayed complications include development of allergic, hypersensitivity, or granulomatous reactions that require tattoo removal.²⁵ On average, tattoo regret

Table 5. Summary of specific piercing and/or pocketing complications by anatomic location.

Oral piercings	Airway compromise following tongue swelling or jewelry obstruction. Dental trauma: 10% of those with tongue piercings experience enamel trauma. ³⁵
Ear piercings	Complications are particularly associated with high piercings (above the ear lobe), of which 77% will have some minor infection and 43%, an allergic reaction. Perichondritis, in particular with pseudomonas, can be difficult to treat and may result in permanent disfigurement. ³⁶
Nasal piercings	Are either through the alar or septum, leading to septal hematoma or a perichondritis of the nasal septum.
Nipple piercings	These have a 2- to 4-month recovery time and cause local abscesses, cellulitis, and may interfere with the ability to lactate.
Genital piercing	In men, can result in priapism, paraphimosis, and urethral strictures and in women can cause bleeding, infections, and scarring. ²³ The genital piercing of both sexes interferes with all barrier contraceptive methods and has been shown to cause the local spread of sexually transmitted diseases. ³⁷

occurs 14 years after tattooing and has spawned a whole new industry. Nonprofit organizations also provide tattoo removal to gang members wishing to remove their tattoos (www.homeboy-industries.org). Tattoos can be removed by mechanical, chemical, or thermal methods.

Alternatives to permanent tattoos include the Indian technique of staining the skin with henna. This will fade over a period of 7 to 10 days. In the past year there has been the development of nonpermanent tattoo ink. This technique uses ink-containing beads that are deployed in the same method as used previously. However, the ink can be fully removed by single-pass laser treatment (www.freedom2ink.com) that dissolves the bead, allowing the dye to be exposed to enzymes, laser, and UV rays.

SUMMARY

Tattoos and piercings have become widespread practices that enjoy greater social acceptance than ever before. Body modification is important to the EP because it provides information about the “patient.” The physician can learn a great deal about these patients via their body modification, including information of immediate relevance to their medical evaluation. Secondly, T&P are directly responsible for an increasing number of emergency department visits due to both immediate and delayed complications. The EP armed with knowledge about T&P/body modifications can forge more functional doctor-patient relationships, obtain critical historical data, and provide better treatment and referral for this patient population.

Address for Correspondence: Michael Urdang, MD, University of Southern California, Department of Emergency Medicine, 1200 N State St, Rm 1011, Los Angeles, CA 90033-1029. E-mail: murdang@gmail.com.

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