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Review Article

Peri-Operative Management of the Patient with Body Piercings

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Abstract

Numbers of complications have been reported as a result of wearing body jewelry during surgical work-up, perioperative management and during surgical procedures. However, there is a paucity of published data regarding the clinical implications and considerations that physicians should deliberate when encountering the surgical patient with body piercings. We performed a thorough Medline literature review on August 1, 2013 on the topic of "piercings" or "body piercings" and "surgery". Although data are minimal, anesthetic and surgical complications secondary to body piercings may be prevented by thorough informed consent and pre-operative removal of body jewelry. Knowledge of the techniques used for safe jewelry removal, to maintain patent piercing tracts, and for maintaining a non-judgmental attitude will increase patient confidence in his or her physician and surgeon.

INTRODUCTION

A number of complications have resulted from wearing body jewelry during surgical work-up, perioperative management, and surgical procedures. Either due to negligence or in an effort to avoid the discomfort and inconvenience of removing and reinserting body piercings, patients often keep body jewelry on during procedures [1,2]. As the practice of body piercing becomes more common, it is increasingly important for physicians to understand the associated risks and employ safe methods of removing jewelry and maintaining patency of piercing tracts [1,3].

PREOPERATIVE CONSIDERATIONS

Diagnostic imaging

The presence of metal body jewelry has been known to interfere with ultrasound, CT, and MRI and cause injury to the patient during the procedure [2,4,5]. Knowledge of various forms and common locations of body piercing is particularly important during the primary survey of the obtunded trauma patient who requires diagnostic imaging but is unable to confirm the presence of jewelry. Metal jewelry containing ferric oxide can oscillate during MRI scans, creating kinetic energy that can result in patient discomfort, burns, or skin punctures [5-7]. All metal jewelry produces artifacts, or "metallic shadows," that may interfere with the quality and interpretability of MRI reports. Similarly, during plain radiography, metal jewelry scatters x-rays and leaves artifacts on the diagnostic film, often rendering it unusable [2,4]. Body jewelry should be removed prior to an imaging study to prevent potential physical complications and diagnostic delay, both of which may impede surgical management.

Endotracheal intubation

Most preoperative complications caused by body piercings occur during endotracheal intubation [1,3,8-10]. The presence of nose, tongue, or lip jewelry can prevent adequate visualization of the airway. Also, the process of intubation may traumatize the piercing, resulting in bleeding, hematoma formation, tongue edema, or pharyngeal edema. Dislodged jewelry can be easily aspirated [3,10]. In one case, a patient who developed a traumatic post-intubation bleed around a tongue piercing developed complete airway obstruction secondary to laryngeal irritation and laryngospasm [3,8]. Removing oral piercings preoperatively would prevent such complicating events. The oral cavity should also be examined post-operatively to identify trauma from jewelry left in place or to confirm that jewelry has not been lost during the procedure [3]. In the case that jewelry has been lost, fiberoptic endoscopy may be utilized for localization and extraction within the nasopharynx, esophagus, larynx, or trachea [3].

Urinary catheterization

Urinary catheter insertion, when done without care in the presence of a genital piercing, can create partial or full thickness urethral tears that may require suprapubic cystostomy or primary surgical closure [11,12]. Untreated urethral injuries from manipulation of genital piercings can cause urethral obstruction, scar formation, and urinary flow changes [5,12,13]. To avoid urethral damage, physicians should select a smaller

gauge catheter to bypass the jewelry or advise patients to remove genital piercings beforehand [11,12].

SURGICAL CONSIDERATIONS

Body jewelry left in place during surgery has been reported to cause burns, pressure-related tissue injury, and infection [1,2]. In cases utilizing electrocautery, body jewelry may conduct the electrical current and cause electrical burns to the surrounding tissue [2]. When patients (particularly those who are overweight or obese) are placed in the prone position for extended periods of time, nipple, navel, and other piercings on the chest and abdomen may cause pressure injury [1]. Jewelry pieces that become loosened or dislodged during surgical procedures may potentially enter the surgical wound and remain inside a body cavity. Removing body jewelry preoperatively or securing it to the body with tape will avert such occurrences. Anterior and lateral radiographs of head, neck, chest, and abdomen may be used to visualize pieces lost within body cavities.

Invasive surgical procedures heighten the risk of transient bacteremia, which can seed body piercings and cause a local or systemic infection. A case of sepsis is reported to have resulted from the reinsertion of body jewelry two days after a spinal arthrodesis, when the jewelry was colonized by blood borne bacteria and became a locus of infection [14-18]. Just as the American Heart Association recommends prophylactic antibiotics for patients with prosthetic heart valves undergoing surgical procedures[14,15], practitioners may consider a dose of prophylactic antibiotics for the surgical patient with extensive body piercings to minimize the risk of piercing site infections [16,17]. This phenomenon has also been observed with nipple piercings following breast implantation. One report describes a female patient who developed cellulitis and subsequent inflammation of her implant from a piercing received after breast augmentation surgery [19]. Another describes a male patient who similarly pierced his nipples after bilateral breast implants, resulting in infection and eventual explantation [20]. These cases suggest that nipple piercings may be contraindicated during a certain period of time after breast implantation.

Organ transplantation

Transmission of blood-borne diseases is a potential risk in transplantation of organs from patients with body piercings [21]. Organ donation has traditionally been restricted to those donors who lead relatively low-risk lifestyles, but with a growing shortage of hearts available for allotransplantation, some donation centers have revised Copeland's traditional heart donor selection criteria to include "marginal" donors with a history of high-risk social behavior, including those with tattoos or body piercings performed by unlicensed amateurs [21]. While these revisions have increased access to well-functioning grafts, some fear increased rates of viral transmission and decreased transplant survival [21].

To address this concern, a recent study compared the survival of patients who received "marginal" donor hearts to that of patients who received highly desirable hearts, finding that the presence of high risk tattoos or piercings alone had no impact on graft survival [21]. 30.7% of marginal donors had tattoos or piercings performed by amateurs. At the time of donation, all donors were screened for hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV) infection. Patients receiving a marginal heart exhibited a 30 day post-transplant survival rate of 95.8%, compared to 95.0% in the control recipient group [21]. 50% of participants who received HBV-positive donor hearts seroconverted, but none developed HBV related complications. 82% of participants who received HCV-positive donor hearts seroconverted, and 55.5% of this group had died at follow up, but only one death was attributed to HCV infection [21]. In fact, among the recipients of these marginal hearts, only donor HCV status statistically impacted survival [21].

When managing a candidate for organ transplantation who presents with body piercings, it is important to note that having piercings do not disqualify a patient from becoming a donor. Piercings may be left in place, except at the time of surgery.

In the case of an organ transplant recipient who is receiving immunosuppressive therapy following transplantation who wishes to obtain new piercings, the patient should be counseled to seek piercing professionals who are licensed and use sterile technique, in order to minimize the risk of infection. Such patients may also be given prophylactic antibiotics before and after the piercing procedure, as they would be for an elective operation.

RECOMMENDED MANAGEMENT OF BODY JEWELRY

Although peri-operative removal of body jewelry is quick, feasible, and safe, few physicians and ancillary medical staff are trained in the proper removal of various types of piercings [2,4,12,22]. Many suggest that training in piercing removal should be required for certain specialties including emergency medicine, anesthesiology, surgery, dermatology, and family practice [1-3,10,12,23]. Educational kits demonstrating body jewelry removal are already available [12].

Safe removal of jewelry requires the physician to first be aware of the different types of jewelry and anatomical regions in which they are most commonly encountered (Table 1). Most piercings are of three common types: barbells, curved barbells, and captive bead rings. Barbells and curved barbells, similarly to nuts and bolts, can be removed by unscrewing the ball portion from the rod. Nose studs have a small bump on the end of a straight shaft that prevents the jewelry from dislodging. Studs are removed simply by pulling them carefully straight out. Nose screws are similar to nose studs but lack the bump; they have a distal curvature to prevent the jewelry from dislodging. These are removed by slowly twisting the jewelry out of the tract similar to unthreading a barbless fishhook. Captive bead rings are semicircular pieces of steel bent to appear like rings with a dimpled bead held "captive" in-between the gap by the tension of the ring. Applying opening pressure from the inside of the ring until the bead is released opens captive beads.

Sub-dermals, along with surface piercings, which use flexible or curved barbell on a flat surface of skin, are common on the chest, nape of the neck, above or below eyebrows, maxillofacial folds, near the clavicle, skin medial to and overlying the anterior iliac crest. The jewelry is a perforated anchor under the skin, which allows visibility to half of the piercing. Sub-dermals are

Table 1: Safe removal methods for available jewelry types.

Jewelry Type	Anatomical Location Used	Method of Removal
Barbells, Curved Barbells, and Circular Barbells	Ear, Eyebrow, Lip, Tongue, Nostril, Naval, Genitalia	The beads on both ends are threaded and unscrew counter-clockwise to the shaft of the jewelry.
Captive bead ring	Ear, Eyebrow, Lip, Nostril, Nipple, Naval, Genitalia	Apply an opening pressure from the inside of the ring until the bead is released from the tension of the ring.
Labret stems (similar to a barbell with a flat back inside the lip)	Lip	The bead or spike at one end, unscrews counter-clockwise to the shaft of the jewelry.
Nose studs	Nostril	Nose studs have a small bump on the end of a straight shaft that prevents the jewelry for falling out. These are removed simply by pulling them carefully straight out.
Nose screws	Nostril	Nose screws are similar to nose studs but lack the bump and are curved into a small circle at the end to prevent the jewelry from falling out. These are removed by slowly twisting the jewelry out of the tract similar to unthreading a barbless fishhook.
Sub-dermals	Chest, nape of the neck, above or below eyebrows, maxillofacial folds, near collar bones, skin medial and overlying the anterior iliac crest.	Elliptical excision, with removal of scar tissue and jewelry

maintained in the skin by the scar tissue that results from the foreign body reaction secondary to piercing. For removal, they require an elliptical excision or if jewelry size permits, a 5mm punch biopsy.

A number of methods may be employed to safely maintain a patent piercing. Tract gauge and length of procedure are important considerations if the original jewelry is to be re-inserted post-operatively. Techniques to maintain patency require substituting the piercing with an alternative object. Before planned procedures, patients may purchase temporary non-metallic jewelry that they can insert on their own [2]. These temporary jewelry pieces are commercially known as "retainers" and are usually made of acrylic or silicone. However when procedures are unplanned or when such devices are not available, more creative approaches to maintaining tract patency are required. In such situations, epidural or intravenous catheters may be threaded through the tract [2,3]. This method works well for most piercings other than those on highly vascularized tissue such as the tongue, as these tracts tend to close rapidly [3]. Tongue piercings can be held patent by inserting a catheter into the tract, threading a suture through the catheter, removing the catheter, and then tying the suture so that it forms a loop that will remain in place for the duration of the procedure [2]. When the jewelry is to be reinserted, a new catheter can be threaded onto the cut suture loop and used as a guidewire [2]. For this technique, a large suture such as a number 2 Prolene should be used. Alternatively, lawn care nylon line can be trimmed and fashioned into a spacer by melting one end to create a "stop" and tapering the other end with a scalpel [2]. Although such techniques will maintain patency, it should be noted that suture material is thinner than body jewelry and will inevitably result in tract shrinkage in as little time as the procedure's duration.

Oral piercings, including tongue and lip labrets, have a tendency to close quickly even with older, well-established piercings. In an un-published case report, a tongue piercing that had been in place for 10 years was removed for a six hour procedure. Post-operatively, the tract had closed sufficiently to prevent re-insertion of the 10mm original jewelry piece, and closed entirely within 36 hours. For tract maintenance during prolonged procedures involving highly vascularized tissue, a pediatric urinary catheter may be inserted as a spacer. The urinary catheter should be cut to 2 cm length and then tying a number 2 Prolene suture so that it forms a loop through the catheter in the piercing tract and unilaterally around the tongue. The suture serves to secure the catheter and prevent aspiration if it is dislodged during the surgery.

Each of the described methods is safe and offers protection from electrocautery burns. Lawn care nylon may be treated with topical antiseptics such as Betadine; otherwise these methods are all potentially sterile [2].Attempts to remove jewelry forcefully with ring or bolt cutters should be avoided as this may result in additional tissue injury [12].

CONCLUSION

Medical and surgical complications secondary to body piercings may largely be prevented by thorough informed consent and pre-operative removal of body jewelry [1,3,9,10]. All patient piercings should be recorded during anesthesia's pre-operative evaluations, in case jewelry must be located and removed intra-operatively [3].

Knowledge of the techniques used to maintain patent piercing tracts may increase patient confidence in his or her physician and surgeon [12]. Because of the often-sensitive nature of piercings, physicians must assume a non-judgmental approach that encourages patients to seek treatment from medical professionals rather than their piercer or the internet [13,23-26].

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REFERENCES

1. Holak EJ, Schiller ED, Pagel PS. Another potential anesthetic implication of body piercing. J Anesth. Feb 2010; 24: 152-153.
2. Muensterer OJ. Temporary removal of navel piercing jewelry for surgery and imaging studies. Pediatrics. 2004; 114: 384-386.
3. Mercier FJ, Bonnet MP. Tattooing and various piercing: anaesthetic considerations. Curr Opin Anaesthesiol. 2009; 22: 436-441.
4. Messahel A, Musgrove B. Infective complications of tattooing and skin piercing. J Infect Public Health. 2009; 2: 7-13.
5. Holbrook J, Minocha J, Laumann A. Body piercing: complications and prevention of health risks. Am J Clin Dermatol. 2012; 13: 1-17.
6. Armstrong ML, Elkins L. Body art and MRI. Am J Nurs. 2005; 105: 65-66.
7. Shellock FG, Crues JV. MR procedures: biologic effects, safety, and patient care. Radiology. 2004; 232: 635-652.
8. Wise H. Hypoxia caused by body piercing. Anaesthesia. 1999; 54: 1129.
9. Stanko P, Poruban D, Mracna J, Holly D, Janicek B, Pinakova Z, et al. Squamous cell carcinoma and piercing of the tongue - a case report. J Craniomaxillofac Surg. 2012; 40: 329-331.
10. Meltzer DI. Complications of body piercing. Am Fam Physician. 2005; 72: 2029-2034.
11. Koenig LM, Carnes M. Body piercing medical concerns with cutting-edge fashion. J Gen Intern Med. 1999; 14: 379-385.
12. Nelius T, Armstrong ML, Rinard K, Young C, Hogan L, Angel E. Genital piercings: diagnostic and therapeutic implications for urologists. Urology. 2011; 78: 998-1007.
13. Matheron E, Kapoula Z. Face Piercing (Body Art): Choosing Pleasure vs. Possible Pain and Posture Instability. Front Physiol. 2011; 2: 64.
14. Rethman MP. AHA 2007 guidelines for the prevention of infective endocarditis: perspectives. Dent Today. 2007; 26: 90, 92-95.
15. Everett ED, Hirschmann JV. Transient bacteremia and endocarditis prophylaxis. A review. Medicine (Baltimore). 1977; 56: 61-77.
16. Nestor MS. Perioperative use of antibiotics: preventing and treating perioperative infections. J Drugs Dermatol. 2005; 4: s34-36.
17. El-Ahdab F, Benjamin DK Jr, Wang A, Cabell CH, Chu VH, Stryjewski ME, et al. Risk of endocarditis among patients with prosthetic valves and Staphylococcus aureus bacteremia. Am J Med. 2005; 118: 225-229.
18. Tsirikos AI, Subramanian AS. Septic shock after posterior spinal arthrodesis on a patient with Scheuermann kyphosis and multiple body piercings. Spine (Phila Pa 1976). 2011; 36: E1497-1500.
19. Kapsimalakou S, Grande-Nagel I, Simon M, Fischer D, Thill M, Stöckelhuber BM. Breast abscess following nipple piercing: a case report and review of the literature. Arch Gynecol Obstet. 2010; 282: 623-626.
20. de Kleer N, Cohen M, Semple J, Simor A, Antonyshyn O. Nipple piercing may be contraindicated in male patients with chest implants. Ann Plast Surg. 2001; 47: 188-190.
21. Xu DS, Hartman D, Ludrosky K, Campbell J, Starling RC, Taylor DO, et al. Impact of donor high-risk social behaviors on recipient survival in cardiac transplantation. Transplantation. 2010; 89: 873-878.
22. Khanna R, Kumar SS, Raju BS, Kumar AV. Body piercing in the accident and emergency department. J Accid Emerg Med. 1999; 16: 418-421.
23. Meltzer DI. Commentary--Complications of body piercing. Pediatr Dermatol. 2008; 25: 283-284.
24. Kluger N, Koljonen V. [Piercings--what the physician needs to know?]. Duodecim. 2012; 128: 1363-1370.
25. Kluger N. Body art and pregnancy. Eur J Obstet Gynecol Reprod Biol. 2010; 153: 3-7.
26. Armstrong ML, Koch JR, Saunders JC, Roberts AE, Owen DC. The hole picture: risks, decision making, purpose, regulations, and the future of body piercing. Clin Dermatol. 2007; 25: 398-406.

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