

Recovery of Anaerobic Bacteria from 3 Patients with Infection at a Pierced Body Site

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We describe 3 adolescents who developed infections due to anaerobes at pierced body sites: the nipple, the umbilicus, and the nasal septum. Anaerobes (*Prevotella intermedia* and *Peptostreptococcus anaerobius*) were recovered from pure culture of specimens obtained from 1 patient with nipple infection and were mixed with aerobic bacteria in cultures of specimens obtained from 2 patients (*Streptococcus aureus*, *Peptostreptococcus micros*, and *Prevotella melaninogenica* were recovered from a patient with nasal septum infection, and *Bacteroides fragilis* and *Enterococcus faecalis* were recovered from a patient with umbilical infection). The infection resolved in all patients after removal of the ornaments and use of antimicrobial drug treatment.

Body piercing with needles, rings, steel posts, and other devices that penetrate the skin and mucous membranes increases the risk of local infections occurring at the pierced body sites [1]. *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and group A β -hemolytic streptococci are the predominant bacteria that are isolated from these infections [2–5]. Anaerobic bacteria have not been previously recovered from these infections. We describe 3 patients who developed infections due to anaerobic bacteria at pierced body sites: the nipple, the umbilicus, and the nasal septum.

Patient 1. A 15-year-old girl underwent nipple piercing and had earring-like adornments placed. Four weeks later, she was seen with right-nipple infection at the site of piercing. The patient had a temperature of 36.9°C, and results of physical examination were normal, with the exception of induration, redness, and swelling (size, 3 cm \times 5 cm) at the site of piercing

adjacent to the right nipple. The adornment was removed, and warm compresses were administered. Within 48 h, a local abscess developed. The abscess was drained and irrigated. The material was sent to be cultured for aerobic and anaerobic bacteria. Gram stain showed gram-positive cocci in chains, and culture yielded a heavy load of *Prevotella intermedia* and *Peptostreptococcus anaerobius*. The infection resolved after the patient was treated with oral clindamycin, 300 mg t.i.d. for 10 days. The patient discontinued wearing the adornments, and no recurrence of infection occurred during 2 years of follow-up.

Patient 2. A 16-year-old boy underwent piercing of his nasal septum and tongue and had ornaments placed at these sites. Three months later, he was seen with swelling (duration, 8 days), redness, and fever (duration, 24 h; temperature, 38.3°C). The WBC count was 16,000 cells/mm³ (75% neutrophils, 18% lymphocytes, and 7 bands). On examination, the patient had a temperature of 37.8°C, redness of the face and nose, and swelling around the site of the nasal piercing. The area was tender and oozed purulent secretion. Findings from the rest of the physical examination were normal. The abscess material was aspirated after the nasal mucosa was disinfected with Betadine and alcohol, and 2.5 mL of purulent fluid was collected. The material was sent to be cultured for aerobic and anaerobic bacteria. Gram stain showed large gram-positive cocci in clusters and small gram-positive cocci in chains. Culture yielded mixed flora of *S. aureus*, *Peptostreptococcus micros*, and *Prevotella melaninogenica*. Oral therapy with dicloxacillin, 250 mg q.i.d., and metronidazole, 250 mg t.i.d., was administered for 14 days. The patient's symptoms resolved completely, and no recurrence occurred during 2 years of follow-up.

Patient 3. A 17-year-old girl underwent piercing of her umbilical area and had an adornment placed. Three weeks later, she was seen with redness, pain, edema, and induration, all of 3 days' duration. The patient had a temperature of 38.2°F, and findings on physical examination were normal, with the exception of induration, redness, and swelling of the umbilical area around the pierced location. Purulent, foul-smelling material was noted. Samples of this purulent material were cultured for aerobic and anaerobic bacteria, and cultures yielded *Bacteroides fragilis* and *Enterococcus faecalis*. Gram stains showed gram-positive cocci in chains, weakly stained gram-negative bacilli, and numerous polymorphonuclear leukocytes.

The adornment was removed, and topical compresses with Betadine were administered. Therapy with amoxicillin-clavulanate, 500 mg t.i.d., was given by mouth for 14 days, and the

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lesion resolved. No recurrences occurred during 18 months of follow-up.

Discussion. This report describes, for the first time, the isolation of anaerobic bacteria from infected pierced body sites. These organisms were recovered in pure culture of specimens obtained from the pierced body site of 1 patient, and mixed with aerobic bacteria from the pierced body sites of 2 patients. The origin of these endogenous organisms, which were isolated from infections at the sites of piercings of the nipple, nasal septum, and umbilical area may be the patient's or a contact's normal flora. Peptostreptococci and *Prevotella* species are part of the oropharyngeal flora and have been previously recovered from breast abscesses [6] and nasal septal abscesses [7]. Similarly, *B. fragilis* and *E. fecalis* are part of the gastrointestinal flora [8] and have been previously recovered from umbilical infections in newborns [9]. *Peptostreptococcus* species have been recovered from sites of infection due to foreign bodies [10].

Although most infections of pierced body sites resolve after removal of the ornament and use of topical therapy [1], administration of systemic antimicrobial agents may be required for patients with serious infections. Many of the antimicrobial agents that are effective against *S. aureus*, group A β -hemolytic streptococci, and *P. aeruginosa* are not effective against all anaerobic bacteria. Anaerobic gram-negative bacilli can be resistant to penicillins through the production of β -lactamase [11]. The presence of β -lactam antibiotic-resistant anaerobic organisms may require the use of antimicrobial agents that are effective against these bacteria. Such agents include clindamycin, metronidazole, imipenem, ceftioxin, chloramphenicol, and the

combination of a penicillin (i.e., amoxicillin) and a β -lactamase inhibitor (i.e., clavulanate) [12].

Prospective studies are warranted to elucidate the role of anaerobic bacteria in infections of pierced body sites. It is, however, recommended that specimens that are obtained from those sites undergo culture for both aerobic and anaerobic bacteria. This will ensure that if systemic antimicrobial agents are used, coverage for these organisms can be appropriate.

References

1. Samantha S, Tweeten M, Rickman LS, et al. Infectious complications of body piercing. *Clin Infect Dis* **1998**;26:735–40.
2. McCarthy BP, Peoples WM. Toxic shock syndrome after ear piercing. *Pediatr Infect Dis J* **1988**;7:741–2.
3. Stately R, Fitzgibbon JJ, Anderson C. Auricular infections caused by high ear piercing in adolescents. *Pediatrics* **1997**;99:610–11.
4. Turkeltaub SH, Habal MB. Acute *Pseudomonas* chondritis as a sequel to ear piercing. *Ann Plast Surg* **1990**;24:279–81.
5. Warwick-Brown NP, Richards AES. Perichondritis of the ear following acupuncture. *J Laryngol Otol* **1986**;100:1177–9.
6. Brook I. The aerobic and anaerobic microbiology of neonatal breast abscess. *Pediatr Infect Dis J* **1991**;10:785–6.
7. Brook I. Recovery of anaerobic and aerobic bacteria from a post-traumatic septal abscess: a report of two cases. *Ann Otol Rhinol Laryngol* **1998**;107:959–60.
8. Brook I. Indigenous microbial flora of humans. In: Howard R, Simmons RL, eds. *Surgical infectious diseases*. 3d ed. Norwalk, Connecticut: Appleton & Lange, **1995**:37–46.
9. Brook I. Microbiology of necrotizing fasciitis associated with omphalitis in the newborn infant. *J Perinatol* **1998**;18:28–30.
10. Brook I. Peptostreptococcal infection in children. *Scand J Infect Dis* **1994**;26:503–10.
11. Brook I. Beta-lactamase-producing bacteria in head and neck infection. *Laryngoscope* **1988**;98:428–33.
12. Wexler HM, Finegold SM. Current susceptibility patterns of anaerobic bacteria. *Yonsei Med J* **1998**;39:495–501.