

Ear-piercing complications in children and adolescents

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Abstract

Question Ear piercing is one of the most common forms of body modification seen in children and adolescents presenting to my office. Parents of my younger pediatric patients inquire about potential post-piercing complications and risk factors associated with earlobe infections. What guidance should I give them? Also, are there any specific post-piercing complications to consider for older pediatric patients seeking second piercings in the upper cartilage area?

Answer Piercing the earlobe or auricular cartilage continues to be a popular procedure among children and adolescents. Despite its widespread practice, improper aseptic piercing technique, insufficient training, and trauma to the soft tissue during high-pressure piercing (eg, use of spring-loaded ear-piercing instruments) can increase one's susceptibility to infections, bleeding, and microfractures. Other post-piercing complications include embedded earrings, keloids, hypertrophic scarring, and cutaneous hypersensitivity. Early recognition and treatment of infections and perichondritis secondary to transcartilaginous piercings can prevent the progression of severe ear deformities requiring reconstructive surgical interventions.

Complications du perçage des oreilles chez les enfants et les adolescents

Résumé

Question Le perçage des oreilles est l'une de formes de modifications corporelles que je vois communément chez les enfants et les adolescents qui viennent à ma clinique. Les parents de mes plus jeunes patients pédiatriques s'informent des complications potentielles à la suite du perçage des oreilles et des facteurs de risque associés aux infections des lobes d'oreille. Quels conseils devrais-je leur donner? De plus, y a-t-il des complications particulières dont il faut tenir compte à la suite des perçages chez les patients pédiatriques plus âgés qui en veulent d'autres, dans la région du cartilage supérieur?

Réponse Le perçage des lobes d'oreilles ou du cartilage auriculaire continue d'être une procédure populaire chez les enfants et les adolescents. Malgré la généralisation de cette pratique, une technique de perçage mal aseptisée, une formation insuffisante et un traumatisme aux tissus mous durant un perçage à haute pression (p. ex. le recours à des instruments de perçage d'oreilles à ressort) peuvent accroître la susceptibilité d'une personne à des infections, des saignements et des microfractures. Parmi d'autres complications ultérieures à un perçage figurent l'incrustation des boucles d'oreilles, des cicatrices chéloïdes ou hypertrophiques et une hypersensibilité cutanée. La détection et le traitement rapides des infections et des périchondrites secondaires à des perçages à travers le cartilage peuvent prévenir la progression de déformations sévères des oreilles qui exigeraient des interventions chirurgicales de reconstruction.

The typical age of a first piercing among young children and adolescents ranges from 6 months to 10 years.¹ The ear, including the earlobe and cartilage of the pinna, is the most common location for piercings.² A cross-sectional survey of 766 college students from 18 universities across the United States and Australia reported that 51% (n=391) of participants had 1 or more body piercings and almost half (45%) reported local infections including pus, blisters, drainage from site, pain, and redness.³ A study of 52 children with ear-piercing complications in Scotland reported 34 (65%) children with local infection, 41 (79%) with embedded earrings, and 1 (2%) with cellulitis.⁴ Among females aged 18 to 28 years, the prevalence of infection after

ear cartilage piercing was significantly more frequent than after earlobe piercing (41.4% vs 29.6%, respectively, $P=0.0004$).⁵ These more-severe infections (eg, keloids, auricular perichondritis) and associated slow healing are likely owing to limited vascularity of the cartilage.⁵ Although most infections are local, piercings have also been linked with more-severe complications (less than 3%) such as endocarditis, toxic shock syndrome, and viral hepatitis.^{6,7}

Complications

Embedded earrings. Clinical presentation of embedded earrings, frequently involving the backs of the earring, includes ear pain, redness, and local infection.⁸

A retrospective review from Cincinnati Children's Hospital in Ohio reported an incidence rate of 25 per 100,000 patient visits.⁸ Most (60%) patients were younger than 10 years of age and the median age was 8 years. The earrings are often embedded in the earlobe (87%),⁸ and are more common in young children with thick, fleshy earlobes that have been pierced with spring-loaded guns.⁹ The earring or backing can be removed by gentle probing, but a small incision with local anesthesia may be necessary if the jewelry cannot be easily located or removed.^{8,9} Oral antibiotics may be needed after the minor procedure.⁸

Keloids and hypertrophic scarring. Earlobe piercing is one of the most common causes of keloids (0.25 to 11 cm) among children 2 to 19 years old in the United States, with an estimated incidence of 2.5%, and is more frequently seen among children with familial keloids, with dark skin and those undergoing puberty.¹⁰⁻¹² Multiple treatment strategies, including surgical excision, intralesional injection of corticosteroids, radiotherapy, and compressive therapy, have been studied to reduce the high recurrence rate (25% to 29%).^{10,11} Khan et al found that the treatment group that underwent excision with steroid therapy had the lowest recurrence rate (13 of 27) compared with other groups, such as those that had excision alone (7 of 24), excision with radiation (4 of 9), and excision with steroids and compression (3 of 5), but the sample size was rather small.¹⁰ While the differences were not statistically significant, the authors recommended excision with absorbable sutures and intralesional corticosteroid injection.

Nickel-allergic contact dermatitis. Nickel-allergic contact dermatitis is the most common delayed-type (type IV) cutaneous hypersensitivity reaction.¹³ In Finland, children with ear piercings were more likely to exhibit a reaction to nickel than those without pierced ears (31% vs 2%, $P < .001$).¹⁴ Replacement with hypoallergenic earrings, avoidance of nickel-containing products, and application of topical corticosteroids are key to managing symptoms of nickel-allergic contact dermatitis.¹³

Auricular perichondritis. Transcartilaginous piercing of the helix, scapha, or antihelix of the ear increases susceptibility to minor infections and perichondritis.^{15,16} *Pseudomonas aeruginosa*, *Staphylococcus aureus*, and *Streptococcus pyogenes* have been identified as the most common organisms causing piercing infections.¹⁷ A systematic review of 29 articles and 66 patients (mean age 18.7 years) with transcartilaginous ear piercings reported *Pseudomonas* infection in 87.2% ($n=34$) of total post-piercing perichondritis, with more than 90% of patients needing hospitalization.¹⁵ Notably, ear deformity was more likely to occur post-piercing to the scapha than to the helix (100% vs 43% respectively, $P=.003$).¹⁵

Oral antibiotics (eg, cephalexin, clindamycin) are an effective treatment.¹⁸ Infected pinna caused by *Pseudomonas* is treatable with fluoroquinolone (eg, ciprofloxacin).¹⁵ Without treatment, permanent deformities to the outer ear and abscesses may develop, resulting in a need for surgical intervention.

Prevention

Prevention of piercing complications includes the use of appropriate aseptic technique and daily cleaning with antiseptic solution until the hole is completely epithelialized.⁹ The American Academy of Pediatrics recommends postponing piercing decisions until children are mature enough to care for the pierced sites themselves.¹⁹ Individuals with higher risk of keloid formation or increased vulnerability to infections (eg, diabetes, history of allergies and systemic diseases, use of anti-coagulant medication) should discuss ear piercing with their health care providers.²⁰ Repiercing should occur no earlier than 3 months after the procedure and in an unscarred area away from the previous piercing site.²

Conclusion

Earlobe and cartilage piercings are common, and while complications from earlobe piercings are mild, some patients will need local treatment or systemic antibiotics. Cartilage piercing is associated with more-severe infections. Appropriate hygiene and precautions should help reduce the risk of complications related to ear piercing. 🌸

Competing interests

None declared

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References

- Dunlop DG, McCabe M, Evans R, Richmond P. Ear piercing and children's rights. *BMJ* 1994;308(6944):1636-7.
- Breuner CC, Levine DA; Committee on Adolescence. Adolescent and young adult tattooing, piercing, and scarification. *Pediatrics* 2017;140(4):e20163494. Epub 2017 Sep 18. Erratum in: *Pediatrics* 2017;140(4):e20171962.
- Greif J, Hewitt W, Armstrong ML. Tattooing and body piercing. Body art practices among college students. *Clin Nurs Res* 1999;8(4):368-85.
- Macgregor DM. The risks of ear piercing in children. *Scott Med J* 2001;46(1):9-10.
- Binkhamis K, Habib HA, Alkahtani MK, Alrasheed DA, Barakeh MM, Alohal LM, et al. Cartilage ear piercing probable infections among females between 18 and 28 years old in Riyadh. *J Nat Sci Med* 2022;5(2):182-7.
- Fijałkowska M, Kasielska A, Antoszewski B. Variety of complications after auricle piercing. *Int J Dermatol* 2014;53(8):952-5. Epub 2013 Nov 21.
- Saraf S. Ear nodules due to embedded earring backs. *Indian J Dermatol Venereol Leprol* 2007;73(1):65.
- Timm N, Iyer S. Embedded earrings in children. *Pediatr Emerg Care* 2008;24(1):31-3.
- Muntz HR, Cui PA-C DJ, Asher BF. Embedded earrings: a complication of the ear-piercing gun. *Int J Pediatr Otorhinolaryngol* 1990;19(1):73-6.
- Khan FA, Drucker NA, Larson SD, Taylor JA, Islam S. Pediatric earlobe keloids: outcomes and patterns of recurrence. *J Pediatr Surg* 2020;55(3):461-4. Epub 2019 Jul 24.
- Stahl S, Barnea Y, Weiss J, Amir A, Zaretski A, Leshem D, et al. Treatment of earlobe keloids by extraleisional excision combined with preoperative and postoperative "sandwich" radiotherapy. *Plast Reconstr Surg* 2010;125(1):135-41.
- Bayat A, Arscott G, Ollier WER, McGrouther DA, Ferguson MWJ. Keloid disease: clinical relevance of single versus multiple site scars. *Br J Plast Surg* 2005;58(1):28-37.
- Silverberg NB, Pelletier JL, Jacob SE, Schneider LC; Section on Dermatology, Section on Allergy and Immunology. Nickel allergic contact dermatitis: identification, treatment, and prevention. *Pediatrics* 2020;145(5):e20200628.
- Kerosuo H, Kullaa A, Kerosuo E, Kanerva L, Hensten-Pettersen A. Nickel allergy in adolescents in relation to orthodontic treatment and piercing of ears. *Am J Orthod Dentofacial Orthop* 1996;109(2):148-54.
- Sosin M, Weissler JM, Pulcrano M, Rodriguez ED. Transcartilaginous ear piercing and infectious complications: a systematic review and critical analysis of outcomes. *Laryngoscope* 2015;125(8):1827-34. Epub 2015 Mar 30.

16. Rivera-Morales MD, Rodríguez-Belén JL, Vera A, Ganti L. Perichondritis: not all ear pain is otitis. *Cureus* 2020;12(10):e111141.
17. Naseri E, Cartmell C, Saab M, Kerr RG, Ahmadi A. Development of 3D printed drug-eluting scaffolds for preventing piercing infection. *Pharmaceutics* 2020;12(9):901.
18. Preslar D, Borger J. Body piercing infections. In: *StatPearls*. Treasure Island, FL: StatPearls Publishing; 2022. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK537336/>. Accessed 2022 July 16.
19. Schor EL, editor. *Caring for your school-age child. Ages 5 to 12*. New York, NY: Bantam Books; 2004. Available from: <https://publications.aap.org/aapbooks/book/386/Caring-for-Your-School-Age-Child-Ages-5-To-12>. Accessed 2022 Jul 29.
20. Lane JE, Waller JL, Davis LS. Relationship between age of ear piercing and keloid formation. *Pediatrics* 2005;115(5):1312-4.

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