

Overview of Complications Secondary to Tongue and Lip Piercings

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SOMMAIRE

Au cours des dernières années, les perçages intra-buccaux et péri-buccaux ont gagné en popularité auprès des adolescents et des jeunes adultes, et cette tendance préoccupe les médecins et les dentistes qui s'inquiètent des risques et des complications pour la santé buccodentaire et l'état général de santé. Les risques et les complications associés au perçage de la langue et des lèvres vont de l'usure anormale des dents et du syndrome de la dent fissurée à la récession gingivale et aux infections systémiques. Dans le présent article, nous présentons un aperçu des problèmes associés aux perçages buccaux, auxquels les dentistes peuvent avoir à faire face.

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Body piercing is a cultural practice or tradition in various civilizations dating back to antiquity. In recent years, body piercing has become increasingly fashionable for purely esthetic reasons, and the practice cuts across all sectors of society. The emergence of oral piercing, especially among young adults, is of concern to dental and medical professionals because of the risks and complications for oral, dental and general health. Intraoral piercings involve the tongue, while perioral piercings involve the lips, the cheeks and, to a lesser extent, the uvula and the frenum. Among those with non-traditional body piercings, the tongue is the most prevalent site followed by the lips.¹ Since the first warnings by Chen and Scully in 1992² of the risks and complications associated with oral piercings, an increasing number of studies on this issue have been published. Risks and complications (**Box 1**) are diverse and range from temporary inconveniences related to the presence of the jewellery in the mouth, to gingival recession and severe systemic infections.

In this article, we present a brief review of the current literature on potential complications and adverse consequences of tongue and lip piercings. Our objective is to provide a general overview of possible problems that may be encountered by dentists. In addition, we highlight the urgent need for dentists and doctors to inform target patients of the risks associated with oral piercings.

Oral Piercing Procedures

The tongue is usually pierced at the midline, typically in the median lingual sulcus, although piercings may also be performed on the dorso-lateral lingual surface anterior to the lingual frenum. The principal type of jewellery used in tongue piercings is barbells, which consist of a bar with a ball screwed onto each end. Lip piercings are mainly performed on the middle portion of the lower lip, but may also be near the commissura and on the lower lip near the canines. Labrets, with the flat end on the mucosal

Box 1 Risks and complications associated with oral piercings

Airway compromise
Allergic reaction to metal
Bleeding and risk of hemorrhage
Galvanism
Gingival recession
Hyperplastic and scar tissue formation
Increased salivary flow
Inhalation of the jewellery
Interference with radiographic images
Interference with speech, chewing and swallowing
Localized and systemic infections
Nerve damage and paresthesia
Pain
Swelling
Tooth fracture or chipping

side of the lip, as well as rings and barbells, are commonly used for lip piercings. After the piercing procedure, regular rinsing with warm salt water or antiseptic mouthwash is suggested, and smoking and alcoholic beverages should be avoided. It is generally recommended that the jewellery not be removed for a long period to prevent the piercing site from closing spontaneously. However, once healing is complete, the jewellery should be removed daily and cleaned and brushed thoroughly to maintain good oral hygiene and avoid plaque and calculus build-up. In a recent survey, De Moor and others³ reported that most patients never remove their jewellery for cleaning.

Piercing procedures are usually performed without anesthesia by unlicensed, non-medical people, who are often self-trained and have little knowledge of the anatomy of the intraoral and perioral area; serious medical conditions, such as heart valve disease and bleeding disorders; sterilization procedures; or prevention of complications following piercing.⁴

Mucosal Injury

Because of its extreme vascularity and its location in the upper airway, the tongue is particularly vulnerable to complications, which are diverse and range from minor to potentially life-threatening. Oral and dental complications associated with tongue piercings are categorized as acute (early) or chronic (late).⁵ Acute complications typically arise within 24 hours following insertion of the jewellery into the tongue and are usually confined to injuries of weak tissues.³ The most common immediate acute symptoms

include pain, swelling, bleeding and localized infection.^{4,6} Potential complications that occur within weeks of the piercing include functional problems, such as dysphonia, dysphagia, interference with mastication and the generation of galvanic currents between the barbell and metallic dental restorations.^{3,7} Hypersensitivity reactions, known as allergic contact dermatitis, to the metal when jewellery is not of the best quality or contains nickel have been reported.⁸ Less common acute symptoms include increased salivary flow rates. Irritation of the skin around the jewellery inserted into the lower lip has been shown to be related to contact allergy and to saliva flowing through the pierced site.⁹ In most cases, these complications have not been detrimental and tend to disappear with time. However, more serious and potentially life-threatening complications have been reported, including prolonged bleeding,¹⁰⁻¹² infections, disease transmission and airway problems secondary to swelling of the tongue.^{10,13,14} Finally, the potential risk of aspiration or inhalation of parts of the jewellery if they come loose should not be overlooked.^{1,3,4}

Risk of Hemorrhage

Although in 1977 Boardman and Smith¹ stated that bleeding is not the most frequent complication of tongue piercings, prolonged bleeding is of great concern in medically compromised patients. During the piercing process, blood vessels may be torn and vascular nerves damaged. Hardee and others¹¹ reported a significant loss of blood from hemorrhage following a tongue piercing, which resulted in hypotensive collapse. Prolonged bleeding, hematomas and disturbed wound healing have also been reported following lip piercings.³ Because of the significant complications that may arise when hemorrhage occurs, intraoral and perioral piercings should be regulated by licensing piercing establishments. Hardee and others¹¹ have suggested that all establishments should be given documentation on potential problems and the management of bleeding. Furthermore, a systematic review of the customer's medical history before the piercing procedure should be recommended to rule out a history of a bleeding disorder.¹²

Localized Tissue Overgrowth

Among later complications following oral piercings, traumatic injuries to the mucosal surfaces at the piercing site have been documented. These include enlargement of the piercing hole,⁴ chemical burns associated with excessive aftercare,¹⁵ paresthesia,⁶ sialadenitis,¹⁶ lymphadenitis,¹⁷⁻¹⁹ sarcoid-like foreign-body reactions,²⁰ granulomas and scar tissue formation at the piercing site after the removal of a labret or barbell.^{3,9} Moreover, barbell shanks that are too short may lead to localized tissue overgrowth, with the mucosal surface of the tongue healing over the barbell.²¹ Lingual piercings that become embedded (buried) in the ventral⁵ or dorsal surface of the tongue have been reported.^{21,22} In

contrast, an excessively long shank (long-stem barbell) may allow the barbell to move in the tissue, which may lead to an inflammatory hyperplastic tissue reaction¹ and the accumulation of dental plaque and calculus on the shank.^{1,3,4,23}

Intraoral piercings have also been implicated in the formation of hypertrophic keloid tissue.^{23,24} Keloid lesions are formed when unaffected tissue infiltrates the piercing; they are characterized by the production of an interstitial mucinous material on the collagen of connective tissue. In the episodic case of keloid or hypertrophic tissue without any signs of infection reported by Neiburger,²³ an improvement in the patient's oral hygiene and a reduction in the size of the barbell shank resulted in a significant improvement, but did not completely resolve the lesion. In most reported cases of tissue proliferation following tongue piercings, surgical interventions were not required and complete healing occurred following removal of the jewellery.^{23,24}

Dental Trauma

Traumatic injuries to the hard dental tissue have been directly associated with jewellery. Tongue piercings are the most commonly reported cause of damage to the dentition. In 1997, DiAngelis²⁵ first suggested that tongue piercings may result in abnormal tooth wear (abrasion) that may lead to cold sensitivity in the lower first molar teeth caused by cracked-tooth syndrome.

Teeth may be injured during speaking or masticating or by biting the barbell or hitting it against the teeth. Injuries to the teeth are usually limited to the enamel or the dentin but may also involve the pulp.^{7,26,27} Based on published case reports, Campbell and others⁵ reported that fractures of the posterior teeth, including molars and premolars, are frequently caused by tongue jewellery. Physical damage to the dentition may occur within the first year of use of the device, especially if the long-shank barbell used for initial placement is not replaced after 2 weeks.^{27,28} A positive correlation between the duration of wear and the occurrence of trauma to posterior teeth has been demonstrated.⁵ Other factors contributing to tooth fractures following tongue piercing include habitual biting or chewing of the device, barbell stem length, the size of the ornament attached to the barbell and the type of material used in it.

The restorative method used for a tooth traumatized by tongue jewellery depends on the individual case. Restorative approaches compatible with the existing tongue jewellery must be considered to increase their clinical longevity.²⁹ Porcelain onlays, for example, are not suitable in the presence of barbell tongue ornaments because of the brittle nature of porcelain and its low resistance to impact.³⁰ Porcelain crowns may also be chipped by tongue jewellery. Thus, patients should be advised to remove the oral jewellery permanently or to replace metal balls with non-metallic ones. Recently, soft rubber ends and acrylic screw caps have become available and are considered less likely to cause tooth chipping.

Gingival Trauma

Increasing numbers of case reports have pointed to oral piercings as a significant factor in gingival trauma (Fig. 1). The nature, extent and severity of mucogingival defects are usually categorized using Miller's classification of marginal tissue recession.³¹ Gingival recession has been especially correlated with lip studs or labrets^{1,3,7,17} and frequently occurs on the labial aspect of the lower central incisors.^{3,5,9,17,28,32,33} Gingival recession, particularly on the lingual aspect of the mandibular anterior teeth, has also been associated with tongue jewellery.^{3,5,7,16,32,34} A positive correlation has been demonstrated between the prevalence of gingival recession due to tongue and lip piercing and duration of wear.^{5,33} According to Campbell and others,⁵ lingual recession of gingiva is observed after 2 years of wear. Long-stem barbells significantly increase the prevalence of lingual recession. Recently, Leichter and Monteith³³ reported an increased incidence and severity of buccal recession with lip piercing and duration of wear.

Jewellery-associated recession frequently develops as a narrow, cleft-like defect on the lingual and buccal aspects of the mandibular incisors,³² with recession depths of 2–3 mm or more often extending to or beyond the level of the mucogingival junction.⁵ Patients with oral jewellery may also be at risk of developing significant loss of periodontal attachment that may lead to tooth loss.³² Severe attachment loss can develop even when gingival recession is minimal.⁵ Because attachment loss may escape detection,^{5,32,35} regular checks of the periodontium and examinations for gingival recession, especially on the lingual aspect of the anterior teeth, are recommended for patients with oral piercings or a history of oral piercings.^{5,35}

Localized Infections

Because piercings invade the subcutaneous tissues, they have an inherently high potential for infectious complications. During piercing procedures, infection control standards, which include the use of disposable gloves, sterile or disposable instruments and sterilized



Figure 1: Localized gingival recession due to the presence of lip piercing.

jewellery, should be followed. However, as body piercing remains largely unregulated, it is often performed without adequate cross-infection protection and hygiene measures. Thus, oral piercing customers are at high risk of developing localized and generalized systemic infections.

Infections are the most common generalized complication of tongue piercings.^{6,13} One recent report estimated a 20% infection rate with intraoral piercing.³⁶ The accumulation of dental biofilm and calculus at pierced sites may promote the development of infections.¹⁰ Treatment includes improving oral hygiene with the use of antiseptic oral cleanser, the administration of adequate antibiotic therapy and surgical drainage and incision of abscess.

Systemic Infections

The open wound at the pierced site may also be a source of systemic infectious complications as it may allow microorganisms to enter the bloodstream. This may lead to subsequent infection of other organs by microorganisms inhabiting the oral cavity. Recurrent bacteremias may constitute a threat long after tongue piercing, especially in immunocompromised people.³⁷

Rheumatic heart disease, congenital deformities, hypertrophic cardiomyopathy, mitral valve prolapse associated with murmur and mitral calcification have been cited as predisposing factors. Infective endocarditis may be caused by metastatic oral bacteria. Once bacteria have entered the bloodstream, the subsequent colonization of the endocardium typically affects valves with congenital or acquired dysfunction. Infective bacterial endocarditis following body piercing is relatively rare. However, over the past few years, an increasing number of case reports have described episodes of infective endocarditis following tongue piercings.³⁷⁻⁴⁰ A recent survey investigating the practice of tongue piercing revealed that few piercers are aware of the risk of bacterial endocarditis in certain categories of people.⁴

To avoid the serious sequelae of these infections, patients at risk of endocarditis should receive preventive antibiotics before the piercing procedure just as those at high risk of complications receive antibiotic treatment before invasive dental procedures.⁴¹ Although relatively rare, other serious life-threatening complications, such as the development of cerebral brain abscesses⁴² and Ludwig's angina,⁴³ as a result of infections following tongue piercings have been described.

Inadequate aseptic surgical techniques and inappropriate instrument sterilization during piercing procedures may significantly increase the incidence of infectious disease transmission. Although no statistical studies assessing the potential risks of infectious disease transmission following oral piercing have been reported, the National Institutes of Health identified piercing procedures as a possible means of transmission of bloodborne viruses, such as hepatitis and human immunodeficiency virus.⁴⁴ Hepatitis B and C are the most common viruses transmitted by body piercing.⁴⁵

Many have suggested that oral piercing may allow transmission of human immunodeficiency virus, although no reports have appeared in the literature.

Conclusion

Tongue and lip piercings represent a significant risk for direct and indirect damage to soft and hard oral tissues. Although much less prevalent, lethal systemic infections may also occur. Considering the growing popularity of intraoral and perioral piercings, dental professionals should be aware of the potential complications associated with this practice and be able to identify those at high risk for adverse outcomes. Together with parents and educators, dental professionals should play an active role in warning patients of the serious consequences of oral piercing and should provide appropriate guidance. ❖

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References

- Boardman R, Smith RA. Dental implications of oral piercing. *J Calif Dent Assoc* 1997; 25(3):200-7.
- Chen M, Scully C. Tongue piercing: a new fad in body art. *Br Dent J* 1992; 172(3):87.
- De Moor RJ, De Witte AM, Delme KI, De Bruyne MA, Hommez GM, Goyvaerts D. Dental and oral complications of lip and tongue piercings. *Br Dent J* 2005; 199(8):506-9.
- Stead LR, Williams JV, Williams AC, Robinson CM. An investigation into the practice of tongue piercing in the South West of England. *Br Dent J* 2006; 200(2):103-7.
- Campbell A, Moore A, Williams E, Stephens J, Tatakis DN. Tongue piercing: impact of time and barbell stem length on lingual gingival recession and tooth chipping. *J Periodontol* 2002; 73(3):289-97.
- Farah CS, Harmon DM. Tongue piercing: case report and review of current practice. *Aust Dent J* 1998; 43(6):387-9.
- De Moor RJ, De Witte AM, De Bruyne MA. Tongue piercing and associated oral and dental complications. *Endod Dent Traumatol* 2000; 16(5):232-7.
- Abramovits W, Stevenson LC. Hand eczema in a 22-year-old woman with piercings. *Proc (Bayl Univ Med Cent)* 2004; 17(2):211-3.
- Venta I, Lakoma A, Haahtela S, Peltola J, Ylipaavalniemi P, Turtola L. Oral piercings among first-year university students. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2005; 99(5):546-9.

10. Shacham R, Zaguri A, Librus HZ, Bar T, Eliav E, Nahlieli O. Tongue piercing and its adverse effects. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2003; 95(3):274–6.
11. Hardee PS, Mallya LR, Hutchison IL. Tongue piercing resulting in hypotensive collapse. *Br Dent J* 2000; 188(12):657–8.
12. Rosivack RG, Kao JY. Prolonged bleeding following tongue piercing: a case report and review of complications. *Pediatr Dent* 2003; 25(2):154–6.
13. Keogh IJ, O'Leary G. Serious complication of tongue piercing. *J Laryngol Otol* 2001; 115(3):233–4.
14. Trachsel D, Hammer J. A vote for inhaled adrenaline in the treatment of severe upper airway obstruction caused by piercing of the tongue in hereditary angioedema. *Intensive Care Med* 1999; 25(11):1335–6.
15. Knevel RJ, Kuijkens A. Tongue piercing: part I. *Int J Dent Hyg* 2004; 2(2):98–100.
16. Soileau KM. Treatment of a mucogingival defect associated with intraoral piercing. *J Am Dent Assoc* 2005; 136(4):490–4.
17. Kieser JA, Thomson WM, Koopu P, Quick AN. Oral piercing and oral trauma in a New Zealand sample. *Dent Traumatol* 2005; 21(5):254–7.
18. Zaharopoulos P. Fine-needle aspiration cytology in lesions related to ornamental body procedures (skin tattooing, intraoral piercing) and recreational use of drugs (intranasal route). *Diagn Cytopathol* 2003; 28(5):258–63.
19. Dyce O, Bruno JR, Hong D, Silverstein K, Brown MJ, Mirza N. Tongue piercing. The new "rusty nail"? *Head Neck* 2000; 22(7):728–32.
20. Ng KH, Siar CH, Ganesapillai T. Sarcoid-like foreign body reaction in body piercing: a report of two cases. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1997; 84(1):28–31.
21. Theodossy T. A complication of tongue piercing. A case report and review of the literature. *Br Dent J* 2003; 194(10):551–2.
22. Lopez-Jornet P, Camacho-Alonso F, Pons-Fuster JM. A complication of lingual piercing: a case report. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2005; 99(2):E18–19.
23. Neiburger E. A large hypertrophic-keloid lesion associated with tongue piercing: case report. *Gen Dent* 2006; 54(1):46–7.
24. Dunn WJ, Reeves TE. Tongue piercing: case report and ethical overview. *Gen Dent* 2004; 52(3):244–7.
25. DiAngelis AJ. The lingual barbell: a new etiology for the cracked-tooth syndrome. *J Am Dent Assoc* 1997; 128(10):1438–9.
26. Brennan M, O'Connell B, O'Sullivan M. Multiple dental fractures following tongue barbell placement: a case report. *Dent Traumatol* 2006; 22(1):41–3.
27. Ram D, Peretz B. Tongue piercing and insertion of metal studs: three cases of dental and oral consequences. *ASDC J Dent Child* 2000; 67(5):326–9, 302.
28. Chambrone L, Chambrone LA. Gingival recessions caused by lip piercing: case report. *Dent Assist* 2004; 73(5):14, 16–7, 19.
29. Bassiouny MA, Deem LP, Deem TE. Tongue piercing: a restorative perspective. *Quintessence Int* 2001; 32(6):477–81.
30. Lesser R. Tongue piercing: a restorative perspective? *Today's FDA* 2003; 15(11):17–8.
31. Miller PD Jr. A classification of marginal tissue recession. *Int J Periodontics Restorative Dent* 1985; 5(2):8–13.
32. Brooks JK, Hooper KA, Reynolds MA. Formation of mucogingival defects associated with intraoral and perioral piercing: case reports. *J Am Dent Assoc* 2003; 134(7):837–43.
33. Leichter JW, Monteith BD. Prevalence and risk of traumatic gingival recession following elective lip piercing. *Dent Traumatol* 2006; 22(1):7–13.
34. Kretschmer MC, Moriarty JD. Metal piercing through the tongue and localized loss of attachment: a case report. *J Periodontol* 2001; 72(6):831–3.
35. Knevel RJ. Tongue piercing: part II. *Int J Dent Hyg* 2004; 2(3):145–6.
36. McGeary SP, Studen-Pavlovich D, Ranalli DN. Oral piercing in athletes: implications for general dentists. *Gen Dent* 2002; 50(2):168–72.
37. Lick SD, Edozie SN, Woodside KJ, Conti VR. Streptococcus viridans endocarditis from tongue piercing. *J Emerg Med* 2005; 29(1):57–9.
38. Tronel H, Chaudemanche H, Pechier N, Doutrelant L, Hoen B. Endocarditis due to Neisseria mucosa after tongue piercing. *Clin Microbiol Infect* 2001; 7(5):275–6.
39. Akhondi H, Rahimi AR. Haemophilus aphrophilus endocarditis after tongue piercing. *Emerg Infect Dis* 2002; 8(8):850–1.
40. Friedel JM, Stehlik J, Desai M, Granato JE. Infective endocarditis after oral body piercing. *Cardiol Rev* 2003; 11(5):252–5.
41. Dajani AS, Taubert KA, Wilson W, Bolger AF, Bayer A, Ferrieri P, and others. Prevention of bacterial endocarditis. Recommendations by the American Heart Association. *JAMA* 1997; 277(22):1794–801.
42. Martinello RA, Cooney EL. Cerebellar brain abscess associated with tongue piercing. *Clin Infect Dis* 2003; 36(2):e32–4.
43. Perkins CS, Meisner J, Harrison JM. A complication of tongue piercing. *Br Dent J* 1997; 182(4):147–8.
44. Management of Hepatitis C. National Institutes of Health. Consensus Development Conference Statement, March 24–26, 1997. Available from URL: www.consensus.nih.gov/1997/1997HepatitisC105html.htm (accessed March 12, 2007).
45. Tweeten SS, Rickman LS. Infectious complications of body piercing. *Clin Infect Dis* 1998; 26(3):735–40.