

Complications of Oral Piercing

SUMMARY

Over the last decade, piercing of the tongue, lip or cheeks has grown in popularity, especially among adolescents and young adults. Oral piercing usually involves the lips, cheeks, tongue or uvula, with the tongue as the most commonly pierced. It is possible for people with jewellery in the intraoral and perioral regions to experience problems, such as pain, infection at the site of the piercing, transmission of systemic infections, endocarditis, oedema, airway problems, aspiration of the jewellery, allergy, bleeding, nerve damage, cracking of teeth and restorations, trauma of the gingiva or mucosa, and Ludwig's angina, as well as changes in speech, mastication and swallowing, or stimulation of salivary flow. With the increased number of patients with pierced intra- and peri-oral sites, dentists should be prepared to address issues, such as potential damage to the teeth and gingiva, and risk of oral infection that could arise as a result of piercing. As general knowledge about this is poor, patients should be educated regarding the dangers that may follow piercing of the oral cavity.

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LITERATURE REVIEW (LR)

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Introduction

Body piercing is a form of body art or modification, and as a cultural practice, dates back to antiquity. Piercings have been found on preserved bodies of people who lived between 4,000 and 5,000 years ago¹. It has been practiced by many tribal societies, particularly in Africa, Asia, and South America, as far back as can be traced and has involved a variety of materials, including wood, metal, pottery and ivory^{1,2}. Anthropologists describe piercing as a way for an individual to identify with a specific group, to denote one's financial or marital status or even as a method of beautifying the body. In some parts of the world, body and oral piercing may be part of religious beliefs¹⁻⁷.

Currently, in western societies, piercing is growing in popularity, particularly among adolescents and young adults, who view it as denoting marginality, beauty, or group identity¹⁻⁸. Various body parts are preferred for this type of adornment; most commonly the ears, nostrils, eyebrows, navel, and tongue. In the body areas of concern to the dentist, the most frequently punctured body parts

are the tongue and lips, but other areas may also be used for piercing, such as the cheek, uvula, and lingual frenum^{1,7,9}. The data show that the tongue (5.6%) is the most commonly pierced site, followed by lips (1.5%). On the basis of 3 studies, the prevalence of cheek piercings was 0.1%. Less common locations were the lingual fraenum, the dorso-lateral tongue and the uvula^{1,10-12}. According to the existing literature, uvula piercing is rare because of the inherent difficulties in performing the piercing, as well as the risk of nausea, throat irritation and/or dysphagia^{1,10}.

Piercing jewellery is predominantly made of metal, usually stainless steel, gold, niobium, titanium, or metal alloy¹³. Recently, however, synthetic materials like Teflon and nylon or plastic have also been used¹⁴. The shape and size of the piercing are determined by the body part to be pierced and personal preferences. The most common type of jewellery used in the tongue is the barbell, which consists of a curved or straight metallic stem like a needle with a sphere attached to each end. A common modification of this is the labret, where 1 of the "spheres" is replaced by a smooth flat disc. A third type of piercing

is a ring with 1 or 2 spheres on each end. Labrets, with the flat end on the mucosal side of the lip, as well as rings and barbells, are used for lip piercing^{5,7,9,15}.

Piercing procedures are usually performed by unlicensed, non-medical people, often self-trained, who have little knowledge of local anatomy, medical conditions, sterilization, prevention of complications, or emergency procedures^{7,9,16-18}. Simple precautions such as using an aseptic technique for puncturing could reduce the occurrence of complications. Anaesthesia is rarely used. Pain is the most common immediate complication^{12,16,19-21}.

Oral piercing is linked to a series of local and systemic risks and complications, some of which are both immediate (related to the immediate moment of puncturing and lasting through the first postoperative day) and chronic, because of long-term display (Tab. 1)^{5,7,9,22}.

Table 1. Complications associated with oral piercings

Complications during piercing procedures	Primary postoperative complications	Secondary postoperative complications
Pain	Swelling, oedema, inflammation	Mucosal injury, tissue alteration
Bleeding, haemorrhage	Allergic reactions	Damage to the periodontium
Nerve damage	Localized and systemic infections	Dental trauma
Infectious complications	Increased salivary flow	Aspiration and ingestion of the jewellery
	Ludwig's angina	Problems during medical/dental care procedures
	Thrombophlebitis	Generation of galvanic currents

The purpose of this article is to present a brief review of the literature on potential complications of oral piercings and to highlight the need for dentists to inform patients of the associated risks.

Complications during piercing procedures

Pain: Pain is the most profound and immediate consequence, and results from the lack of any kind of anesthesia during the piercing procedure^{12,16,19-21}.

Haemorrhage: During the piercing process, blood vessels may be torn and vascular nerves damaged. Major haemorrhage is not a frequent complication, nevertheless it is of great concern, especially in tongue piercing, due to the high vascularity of this organ and the implications for medically compromised patients^{9,23,24}. One study reports

a case of significant loss of blood from haemorrhage following tongue piercing, which resulted in hypotensive collapse²³. Prolonged bleeding and hematomas have also been reported following lip piercings. Although major haemorrhage is rare, controllable bleeding usually results^{5,9}.

Nerve Damage and Paraesthesia: Piercing sites are innervated with sensory or motor fibres, and special care must be taken to avoid causing damage or paraesthesia. The tongue is typically pierced in the midline and just anterior to the lingual frenum^{20,25}. As a result, injury to the lingual frenum is the most common complication during the piercing procedure, sometimes resulting in impaired mastication, deglutition, or speech^{5,25}.

Infectious Complications: As piercing remains largely unregulated, and is often performed without adequate cross-infection protection and hygiene measures, it has been identified as a possible vector for transmission of blood-borne viruses (HIV, hepatitis B, C, D, and G, herpes simplex, Epstein-Barr), tetanus, syphilis or tuberculosis^{18,21,26,27}.

Complications Immediately Following Piercing (Primary Post-Operative Complications)

Swelling, Oedema and Inflammation: Painful ulceration is a common primary postoperative complication of piercing, reported by almost half of recipients, followed by inflammation, involving around 9% of cases^{5,18,28-30}. Inflammation usually occurs between 6 and 8 hours after piercing, reaching a peak on day 3 or 4. Inflammation can sometimes persist for weeks^{5,30}. Swelling and inflammation may cause problems, such as dysphonia, dysphagia, interference with mastication or swallowing, respiratory difficulties or even asphyxia^{5,7,18,20,28-30}.

Allergic Reactions: The most widely reported allergic reaction to piercing is contact dermatitis produced by nickel, chromium or nickel-cobalt^{5,9,16,25,27,31}. The European Union has issued a directive to limit the amount of nickel in all products that are in direct contact with human tissue, with a limit of 0.05% for the nickel used in oral/perioral piercing jewellery. It also recommends that gold used for this purpose should be at least 14-18K²⁹. Some of the materials inserted may also cause anaphylactic reactions^{7,9,18}.

Increased Salivary Flow: Increased salivary flow is a less common complication and tends to disappear with time^{7,9}.

Localized Infections: Because piercing invades the subcutaneous tissues, it has an inherently high potential for causing infectious complications. During piercing procedures, infection control standards, which include the

use of disposable gloves, sterile or disposable instruments and sterilized jewellery, are not always followed. Thus, oral piercing customers are at high risk of developing localized infections^{16,32,33}. The accumulation of dental biofilm and calculus at pierced sites may aggravate the development of these infections²⁴.

Systemic Infections: The invasion of subcutaneous tissues, disruption of mucosal integrity and placing of a foreign body in the wound involved in oral piercing also have implications for systemic infections. The wound originating from the insertion of the jewellery can allow numerous different microorganisms that normally inhabit the oral cavity to enter the bloodstream and cause metastatic infections in other organs, including vital organs such as the heart^{5,7,9,33,34}. There is a particular risk of this after tongue piercing through the lingual veins that drain into the internal jugular vein. Infective endocarditis may be caused by metastatic oral bacteria. The subsequent infection of endocardium typically affects valves with congenital or acquired dysfunction (birth valve defect, damaged heart valve, new heart valve after surgery, history of endocarditis)^{7,9,34}. Another life threatening complication which can result is the development of a cerebral abscess^{9,35,36}.

Ludwig's Angina: A severe complication of tongue piercing is acute glossitis, which can lead to Ludwig's angina^{12,25,32,36}. Ludwig's angina is a cellulitis, or connective tissue infection, of the floor of the mouth. It may cause stridor or difficulty in breathing and is potentially life threatening^{9,36-38}.

Thrombophlebitis: A case of thrombophlebitis associated with pneumonitis after tongue piercing has been reported³⁶.

Long-Term Complications (Secondary Postoperative Complications)

Mucosal Injury and Tissue Alteration: Among late complications, traumatic injuries to the mucosal surfaces at the piercing site have been documented^{5,7,9,30}. These include enlargement of the piercing hole³⁹, chemical burns associated with excessive aftercare⁴⁰, sarcoid-like foreign-body reactions⁴¹, granulomas and scar tissue formation. Oral piercings have also been linked to the formation of reactive hypertrophic tissues^{5,7,9} and keloid scarring^{5,7,9,42,43}. Tissue overgrowth can also be caused by continuous movement of the jewellery in the pierced tissue. In most cases of tissue proliferation, surgical interventions are not necessary, because healing occurs after removal of the jewellery. However, the insertion wound can become covered with epithelium, complicating the removal of the jewellery^{9,29,30}. The swelling and excessive tissue growth reaction can cause the jewellery

to be incorporated into the oral tissues. Lingual piercings that become embedded in the ventral²⁰ or dorsal^{3,32} surface of the tongue have been reported. By contrast, long-stemmed jewellery moves inside the piercing location and traumatizes the surrounding tissues more easily, in addition to favouring the build-up of plaque and calculus^{25,39}.

Effects on Periodontal Tissues: Microbiological analyses of oral piercing sites have shown that jewellery can serve as a reservoir for periodonto-pathogenic bacteria^{1,7}. In addition, in the long run, the friction caused by oral piercings can cause gingival recession, loss of periodontal attachment, tooth mobility and tooth loss^{7,16,44}. All these complications are influenced by the location and size of the piercing object, as well as the duration of wear^{14,20,25}. Gingival recession has been especially correlated with lip piercing and commonly occurs on the labial aspect of the lower central incisors^{8,20,25,31,45-49}. The use of tongue jewellery was found to be strongly associated with the occurrence and severity of gingival recession in the mandibular anterior lingual region^{20,25,45-50}. The consequences of piercings on the gingival margins should not be overlooked as severe attachment loss can develop, even when gingival recession is minimal, and it is therefore critical that patients with oral piercings routinely undergo comprehensive periodontal assessment^{20,25}.

Damage to the Dentition: One of the late adverse effects of oral piercing is traumatic injury to the teeth such as chipping, fracturing of teeth and restorations and pulpal damage. The lesions are usually limited to enamel and dentin but the pulp may also be involved^{5,7,9,17,44}. Tongue piercings are the main reported cause of damage to the dentition^{4,7,9,20,25,51-53}. A possible reason for the damage to teeth is that the beaded jewellery may become trapped between the teeth during speaking, mastication and/or intentional interposition. The range of lengths of the jewellery allows a varying degree of mobility for the devices and therefore could contribute to the degree or severity of the observed complication. Dental trauma is more common where longer jewellery is used^{4,9,18,44}. It has been reported that switching to shorter jewellery reduces damage to teeth. A positive correlation between the duration of wear and the occurrence of dental hard tissue damage has been demonstrated^{7,20,25,53}. However, physical damage to the dentition may occur even within the first year of use of the device²⁰. Jewellery with soft rubber ends and acrylic screw caps are considered less likely to cause tooth chipping than those with metal ends⁹.

Aspiration and Ingestion: the potential risk of aspiration or inhalation of parts of the jewellery when piercings are not fastened securely should not be overlooked.

Complications Concerning Medical and Dental Care Procedures: The presence of oral jewellery may cause problems during medical procedures such

as intubation and administration of anaesthetics⁵⁴, radiographic examination⁵⁴⁻⁵⁶, and teeth bleaching⁵⁴.

Production of Galvanic Currents: Galvanic currents between jewellery and metallic dental restorations can be generated^{19,25}.

Practical Implications

Dental care professionals can play an active role in providing information to those who are planning to obtain oral and/or peri-oral piercings, and helping patients make informed decisions. As general knowledge on this subject is poor, patients should be educated regarding the dangers that may follow piercing of the oral cavity. If a patient presents with an oral and/or peri-oral piercing, a dental care professional should examine the device and the surrounding tissues for possible short- and long-term complications on the patient's general and/or oral health. With the increased number of patients with pierced intra- and peri-oral sites, dentists should be prepared to address issues, such as potential damage to the teeth and gingiva, and risk of oral infection that could arise as a result of piercing^{1,5,7,9,25}. Additionally, it is recommended that questions regarding piercings be included in medical questionnaires^{1,9,56}.

Conclusions

Oral piercing has gained wide acceptance in western societies, mainly among young people.

Although complications from the use of oral piercing may involve simple, self-limiting local changes, direct and indirect damage to both soft and hard oral tissues, there is always the possibility of potentially fatal problems.

Dentists need to play an active role in educating patients about the dangers of oral piercing before the patients indulge in this body art.

Patients who have oral piercings should be regularly examined and taught about the possible short- and long-term complications they might face.

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