Bone Loss Associated With the Use of Tongue Piercing: Case Report

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INTRODUCTION

The popularity of wearing body adornments in unconventional places, such as the navel, nipples, eyebrow, lips, and tongue has grown significantly, thus contributing to reports of complications associated with this practice. Inserting metal objects in intraoral sites has become a common practice. The perforations are usually made in the tongue and lips, the tongue being the most frequent location, and they are usually placed anterior to the lingual frenum. The first case reported in the literature involving the use of tongue piercing was described by Scully and Chen in 1998. Thereafter, other reports in the scientific literature have recorded different complications that involve this body culture practice.

The most common consequences associated with the use of tongue piercing are pain, swelling, and infection. In addition, there may be damage to perioral structures, compromised airway because of aspirating the device, and edema; interference with speech, mastication, and deglutition; Ludwig’s angina; hypersensitivity to the metal; obstruction in radiographic images; galvanic current; and hemorrhage due to the vascularity of the tongue and probability of blood vessel perforation. Intraoral structural damage can also occur, such as tooth chipping and gingival recession and pulpal damage caused by chronic trauma. Most of the scientific studies that describe the complications of tongue piercing refer particularly to dental structure damage, but few articles have pointed out other damage in the oral cavity. Panagakos, et al and Kretchmer and Moriarty reported the first cases of loss of periodontal attachment related to the use of tongue piercing. However, there are few articles in the literature that refer to periodontal damage such as gingival recession and bone loss as a consequence of the use of tongue piercing, even with no gingival inflammation caused by dental biofilm. This paper reports a clinical case of tongue piercing which resulted in gingival recession and bone loss at the site of the mandibular central incisors.

CASE REPORT

The patient was an 18-year-old leukodermal man who...
had been wearing an orthodontic appliance for 36 months. During routine consultation it was observed that there was a loss of papilla involving teeth Nos. 24 and 25 (Figure 1). The patient was referred to the Periodontal Unit of the State University of Maringá (Brazil), where an intraoral examination showed that the site of the lingual mucosa membrane of the mandibular incisors was swollen and there was lingual gingival recession between teeth Nos. 24 and 25 (Figure 2). Periodontal examination revealed good oral hygiene (oral hygiene index of 22%\(^{15}\)) and no other tooth presented any type of periodontal alteration.

A barbell-shaped tongue piercing perforating the midline of the tongue was detected (Figure 3). The inferior ball of the piercing was in close contact with the swollen area and the mandibular central incisors (Figure 4). The patient reported that he had been wearing the jewelry for approximately 2 years.

In the radiographic exam, bone loss of 5 mm between the mandibular central incisors was observed, involving more than half of the bone support, with characteristics of trauma, such as widening of the periodontal ligament and loss of integrity of the duralamina (Figure 5). The pretreatment orthodontic records showed no alteration in the bone support at the site of the mandibular central incisors (Figure 6).

The proposed treatment was to remove the piercing and to follow up the case. A 3-month radiographic follow-up of the site after the piercing was removed showed absence of edema (Figure 7) and complete bone regeneration of the area at the lingual site between the mandibular central incisors (Figure 8). 

**DISCUSSION**

Body piercing has become increasingly fashionable over the years, especially among young adults.\(^5\) The intraoral sites may involve lips, cheeks, tongue, and uvula.\(^3\) The tongue is the most commonly pierced intraoral site,\(^6\) and the perforation is usually made in the midline, in a ventral dorsum or dorsum ventral direction, and anterior to the lingual frenum.\(^6\) The procedure is usually performed without anesthesia\(^9\) and in 2 stages.\(^3,7\) A temporary plastic stem, larger than the permanent one, is inserted during the healing period\(^7\) to accommodate the swelling of the tongue that usually occurs in the first few days.\(^3\) Approximately 2 weeks after the perforation, the 18 mm temporary piercing is replaced by the permanent metal piercing\(^9\) which can vary in length.

There are numerous consequences related to this practice. Among them, 2 concerning damage in the oral cavity have repeatedly been mentioned in the literature: tooth chipping\(^1,5,6,9\) and gingival recession\(^1,2,5,13\). Tooth
chipping occurs mainly in the molars and premolars (61% and 31%, respectively) and 88% of the gingival recessions are present in the mandibular central incisors.\textsuperscript{5}

In this case report the patient presented with buccal-lingual gingival recession at the site of the mandibular central incisors. The etiological factors related to gingival recession can be attributed to attachment loss due to periodontitis,\textsuperscript{16,17} presence of calculus,\textsuperscript{18} and a high lingual frenum.\textsuperscript{19} In addition, abrasion from toothpastes, excessive pressure when brushing, and horizontal movements of the brush could contribute to gingival injuries.\textsuperscript{20} However, as the patient presented with good oral hygiene, no gingival inflammation caused by dental biofilm, and a high lingual frenum, some of the possible causes of the recession were excluded. Abrasion from toothpastes and tooth brushing trauma were also excluded, since the recessions were restricted to 2 teeth, mainly at the lingual face. The other areas of the periodontium did not present with any disorder. The constant trauma caused by the tongue piercing during the tongue protrusion movements on the mandibular central incisors, associated with the significant size of the ball attached to the end of the metal piercing stem, were clearly indicated as the etiological factor of the problem.\textsuperscript{4,14}

Gingival recession appears to be related to time of use and length of the piercing stem, with 15.9 mm or longer stems being associated with recessions, and shorter stems with tooth chipping.\textsuperscript{5} These 2 factors probably compounded the damage, considering the length of the piercing stem (20 mm) and the period of its use (2 years) (Figure 5).

In this clinical case, the radiographic exam showed a horizontal bone loss of 5 mm between the mandibular central incisors. In agreement with current research, the possible factors related to bone resorption that occurs in the dental support tissues are an inflammatory lesion associated with dental plaque\textsuperscript{21} and/or occlusal trauma.\textsuperscript{22,23} Considering that intraoral examination of this patient did not reveal periodontal pocketing or bleeding on probing, the possibility of an inflammatory lesion associated with dental plaque was excluded. A clear explanation for such bone resorption and gingival recession was the presence of the piercing, a traumatic factor which probably caused the lesion to develop. This could be verified, as removal of the tongue piercing itself promoted regeneration of the
traumatized area. According to Panagakos, et al,13 who first described a case of loss of periodontal attachment related to a tongue piercing, the constant pressure applied in the area during functioning and as part of a parafunctional habit, along with gingival inflammation, led to the development of a severe loss of attachment. Kretchmer and Moriarty2 also reported a situation in which the gingiva and alveolar bone were reduced because of the inflammation caused by dental biofilm associated with the constant trauma caused by a piercing. When compared with occlusion trauma, piercing trauma alone can lead to bone loss, but it cannot cause loss of periodontal attachment. When associated with dental plaque, trauma can increase the speed of periodontal disease progression, acting as a co-factor in the destructive process.24 Therefore, Choe, et al11 agreed that tongue piercing can be a periodontal risk factor.12

Another important aspect to consider in this case is the possibility that the trauma caused by the piercing could result in an oral pathologic tooth migration of the central incisors, as a reaction to the aggression. As the alveolar bone is usually remodeled to adapt to functional changes, this situation could have occurred if the patient had not worn an orthodontic appliance. Thus, it is likely that the orthodontic appliance acted to contain the trauma, and the bone reacted through a pathological resorption.

When such devices are seen by clinicians, they should be removed or the patient should be advised of the risk of retaining such a device. If the patient declines to have it removed, he/she should sign a release form to be added to the chart stating: “I have been advised of the risks of having an oral device in my mouth, decline to have the oral device removed, and accept all risks associated with retaining it.”

**CONCLUSION**

Under certain circumstances, the extensive use of tongue piercing can lead to bone loss and gingival recession in the area of the mandibular central incisors.

**REFERENCES**


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POST EXAMINATION QUESTIONS

1. The most frequent intraoral site for inserting metal objects is:
   a. lips.
   b. cheeks.
   c. tongue.
   d. uvula.

2. The most common consequence(s) associated with tongue piercing is/are:
   a. pain.
   b. swelling.
   c. infection.
   d. all of the above.

3. In tongue piercing, the perforation is usually made:
   a. in the midline.
   b. in a ventral-dorsum or dorsum-ventral direction.
   c. anterior to the lingual frenum.
   d. all of the above.

4. The tongue piercing procedure is usually performed without anesthesia. The procedure is usually performed in 3 stages.
   a. First statement is false, second is true
   b. First statement is true, second is false
   c. Both statements are false
   d. Both statements are true

5. With tongue piercing _____ % of tooth chipping occurs in the molars.
   a. 31
   b. 42
   c. 61
   d. 75

6. _____% of the gingival recessions associated with tongue piercing are present in the mandibular central incisors.
   a. Thirty-one (31)
   b. Sixty-one (61)
   c. Seventy-five (75)
   d. Eighty-eight (88)

7. Metal stems 15.9 mm or longer are associated with gingival recessions. Shorter stems are associated with tooth chipping.
   a. First statement is false, second is true
   b. First statement is true, second is false
   c. Both statements are false
   d. Both statements are true

8. When compared with occlusion trauma piercing trauma can lead to bone loss. When associated with dental plaque, piercing trauma can increase the speed of periodontal disease progression.
   a. First statement is false, second is true
   b. First statement is true, second is false
   c. Both statements are false
   d. Both statements are true
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