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Case Report

Multiple dental fractures following tongue barbell placement: a case report

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Abstract – The number of adolescents and young adults undergoing intra-oral piercing, is increasing worldwide. There have been several case reports documenting oral and systemic complications of this practice. These include damage to the dentition, gingivae, infection, speech impediments and nerve damage. The case presented here draws attention to the possibility of multiple tooth fracture as a result of trauma incurred from a barbell inserted into the tongue.

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Throughout history people have decorated and altered the appearance of their bodies in many different ways. Body piercing is one of the oldest forms of adornment and body modification (1). Ancient Egyptians pierced their navels to signify royalty. Mayans pierced their tongues for spiritual purposes and in North America, body piercing was a tradition of the Native Americans (2). Over the last decade body piercing has gained increased popularity in the western world for reasons unrelated to ceremonial and religious practices. In modern society, traditional body piercing is perceived as a means of self-expression. Piercings are also sought for their sexual and spiritual benefits (3).

Of significance to the dental profession is the growing popularity of intraoral piercing which involves the insertion of jewellery into the oral soft tissues including the lips, cheeks, fraenulum and tongue. While there has been numerous reports of complications associated with this procedure there are as yet no studies to investigate the relative incidence of these. Most involve barbells, rings or studs and are made of gold, silver or stainless steel (4). Tongue piercing is usually carried out in the midline, anterior to the lingual fraenulum. The procedure is usually performed without anaesthesia. The protruded tongue is clamped, supported by a piece of cork and pierced by a needle of equal gauge to that of the barbell stem (6). Due to the common occurrence of swelling, it is recommended that a longer barbell shank initially be placed in the tongue, followed by the insertion of a shorter barbell shank after healing (7).

Since the first report of oral piercing in the medical literature in 1992 (8) numerous potential complications have been reported and are summarized in Table 1. As enthusiasm for such 'body art' is growing rapidly, it is imperative that clinicians are aware of the risks, complications and dental implications of such procedures.

Case report

An 18-year-old Caucasian female presented to the Accident and Emergency Department of the Dublin Dental School and Hospital, complaining of generalized sensitivity to cold drinks and when breathing. She also expressed concern about the chipping of her teeth. On examination, a number of distinct fractures were noted, some of which involved dentine. Fractures were noted on the palatal aspects of teeth 15 and 24 (Fig. 1). Similar lesions were noted on the mesiolingual aspect of teeth 34 and 36 (Fig. 2). In addition, the incisal edges of teeth 11 and

Table 1. Potential complications of oral piercing

	Reference
Early	
Bleeding	12, 13
Pain	1, 3, 4, 5
Swelling	6, 9, 10
Infection (bacterial, fungal, viral)	5, 10
Airway obstruction secondary to swelling	5, 12
Lingual nerve damage	5, 10
Speech impediment	3, 11
Hypersensitivity to metal	3, 5, 11
Late	
Chipped or fractured teeth	2, 7, 8, 14
Mucosal or gingival trauma	6, 8, 9
Hypersalivation	9
Aspiration or swallowing of jewellery	6, 11
Obscuring radiographic image	9
Calculus formation on metal surfaces	4, 9
Hyperplastic or keloid tissue formation	4, 13

21 (Fig. 3) showed loss of incisal edge integrity. Clinical and radiographic examination, including vitality testing, deemed these teeth to be vital.

A barbell shaped stud, with a shaft of 18 mm was noted on the anterior aspect of her tongue. This had been inserted 1 year previously in a body-piercing clinic. No caution of potential adverse complications had been given, apart from the potential for temporary pain and swelling. During examination, it was observed that the patient had a habit of flicking the dorsal cap of the barbell, forwards along the occlusal aspects of her teeth on the right side. The patient also reported that she habitually knocked the device against her teeth and closed her mouth holding the device between the maxillary and mandibular anterior teeth (Fig. 4). Upon questioning the patient with regard to the possible aetiology of the fractures, she indicated that the barbell had initially been placed in reverse order, so that the stainless steel cap contacted the dorsal aspect of the tongue, while the plastic cap lay on the ventral surface of the tongue, rather than vice versa. This had been reversed by the patient herself 9 months after initial insertion, when a friend had noticed the incorrect position of the barbell stud.

Treatment options for the fractured teeth were discussed with the patient, and the risks of further fractures as long as the habit of knocking the device against the teeth persisted, highlighted. These teeth were subsequently restored with composite resin restorations.

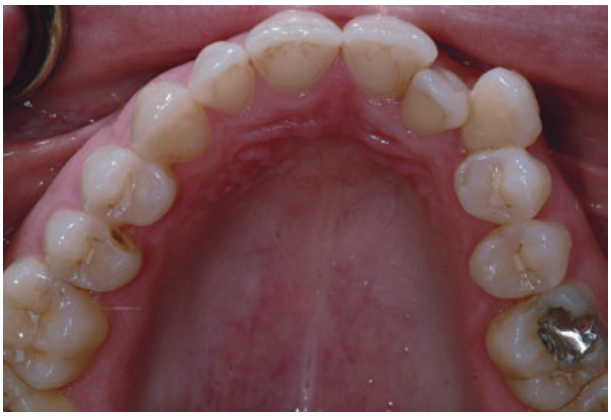

Fig. 1. Fracture of the palatal aspects of teeth 15 and 24.

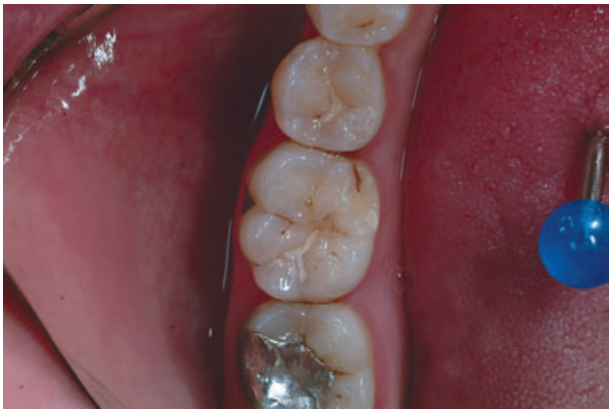

Fig. 2. Fracture of the mesiolingual cusp of tooth 36.

Fig. 3. Chipping of incisal edges of teeth 11 and 21.

Fig. 4. Habitual flicking of barbell between teeth.

Discussion

Over the past decade, several case reports have documented local and systemic complications from tongue piercing (reviewed in Table 1). Common complications are common and include pain, infection, swelling, and masticatory, swallowing and speech difficulties (9). Less commonly, hypersalivation, lingual nerve damage and prolonged bleeding may occur (13). Generation of galvanic current between metallic restorations and barbell has also been reported (9). Local complications include fracturing of teeth, gingival trauma and calculus formation on barbell (9). More serious systemic complications include aspiration of barbell, nickel hypersensitivity (6) and the potential risk of transmission of infections such as hepatitis B and C, HIV and herpes simplex.

De Moor et al. (6), recently cited tooth fracture as the most common dental complication associated with tongue piercing. The teeth may be fractured upon insertion of the barbell shank between the incisal edges of the anterior teeth, upon screwing the ball onto the stem, or when knocking the device against the teeth. The clinician should also be aware of another complication in this population, where following an inferior dental nerve block injection, jewellery in the tongue may accidentally traumatize teeth because of loss of tongue sensation.

Two methods of tooth fracture involving tongue barbells have been suggested. Diangelis (7) proposed that lingual barbells play a role in the aetiology of cracked tooth syndrome by acting as a stressor that may propagate cracks in enamel and dentine. As cusp fractures frequently occur in teeth with large restorations and extensive caries, the possibility exists that a foreign body interfering with the occlusion may predispose to or accentuates existing fractures. Interestingly, none of the involved teeth in the above patient had pre-existing restorations or caries. Croll (14) proposed a useful analogy which may explain the occurrence of fractures in clinically sound teeth. He compares the lingual barbell to a 'wrecking ball'. A wrecking ball consists of a heavy ball suspended in the air by a cable mounted on a crane that swings and strikes the edifice with force. This principle is applied on a smaller scale, when the lingual barbell strikes a tooth. This would suggest that all teeth, regardless of their restorative status, are vulnerable to this type of fracture.

The above case suggests a number of clinical parameters which may increase the risk of this type of injury. These include the length of time the device is in place, habitual biting or chewing of the device, barbell stem length and type of material used in the barbell. While several case reports comment upon biting or chewing as an aetiological factor in the development of teeth fracture, there has been only one study to investigate these parameters. Campbell et al. (8) assessed 52 patients with tongue piercings, to evaluate the effect of time and barbell stem length on gingival recession and tooth fractures. They concluded that long-term use of a barbell increased the incidence of these complications and that barbell stem length appears to differentially affect the incidence of recession and tooth fractures. Despite current trends towards newer materials such as Nobium, Titanium, Platinum and low porosity plastics, no research has been completed evaluating whether these might reduce the incidence of complications. Although one would assume that coloured plastic capping would be less likely to cause dental fractures, current reasons for the choice of this material include hypersensitivity to nickel and patient preference.

With the growing popularity of oral piercing, patients will need to be more informed of potential complications associated with this procedure. Clinicians need to be aware of the potential aetiology of dental fractures, secondary to the placement of intraoral jewellery.

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