Dental Traumatology 2005; 21: 254–257

DENTAL TRAUMATOLOGY

Oral piercing and oral trauma in a New Zealand sample

Kieser JA, Thomson WM, Koopu P, Quick AN. Oral piercing and oral trauma in a New Zealand sample. Dent Traumatol 2005; 21: 254–257. © Blackwell Munksgaard, 2005.

Abstract – This study investigated the periodontal and dental trauma resultant from tongue and lip piercings in a convenience sample of 43 adult dental patients. Patients underwent an intra-oral examination followed by the administration of a questionnaire. Each patient was examined for lingual or buccal recession of the upper and lower incisors as well as the extent of abnormal toothwear or trauma on these teeth. Following bivariate analyses, regression analyses were conducted to test the study hypotheses and derive adjusted estimates for the dependent variables. Of the 43 individuals who participated (93.0% females; mean age 21 years; age range 14–34 years) 76.7% had a tongue piercing, 34.9% had a lip piercing, and 11.6% had both. Only four had had their piercing procedure provided by a doctor or dentist. Postpiercing complications were reported by 34.9%. Most of those with a labial piercing (80.0%) had 1+ labial site with gingival recession (GR), and almost one-third of those with a tongue piercing had at least one lingual site with GR. Age was a significant predictor of the prevalence of lingual recession, with the odds of having lingual recession increasing by 1.17 (95% CI 1.01, 1.35) for every year older than 14. Age was the only significant predictor of the number of lingual sites with recession, but was not a predictor of the prevalence of labial recession or the number of affected sites. There were no significant associations between piercings and abnormal toothwear or trauma. These findings suggest that oral piercings are associated with localized gingival recession, and that the providers of such procedures should ensure that, as part of the informed consent process, prospective patients are informed of the likelihood that their periodontal health may be compromised.

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Key words: oral piercing; gingival recession

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Accepted 9 July, 2004

There appears to be an increase in the numbers of patients who present in general practice with oral piercing *in situ* (1). A number of recent case reports have highlighted general pathological conditions associated with this practice such as; pain, swelling and infection; the transmission of hepatitis B and C, Herpes Simplex virus, candida and HIV; Ludwig's angina and hypotensive collapse (1–4). Orodental complications have also been documented, ranging from abnormal tooth wear to cracked tooth syndrome, gingival recession or fibrous gingival overgrowth covering the entire tongue stud (5–11). To our knowledge, the prevalence and associations of the orodental trauma and piercing have never been investigated. Hence, the aim of this pilot study was to investigate general and dental complications of oral piercing in a convenience sample of adult dental patients in New Zealand.

Materials and methods

Data for the present study were collected from a consecutive clinical convenience sample of patients who attended the University of Otago Dental

School and the Porirua Dental Department, Kenepuru Hospital, Wellington, New Zealand. Patients who presented with an oral piercing (lip or tongue) were asked to complete a questionnaire which gathered data on age, sex, type of piercing, time since piercing, who performed the operation, and any complications arising from the piercing. Each respondent was also given a dental examination, which recorded details of any lingual or buccal recession according to Miller's classification (12), and the extent of any abnormal wear on the upper and lower incisors. In this context, we used Imfeld's (13) definition of abrasion, which was recorded for lesions deeper than 1 mm.

Data analysis was conducted using Stata (Intercooled Stata 7.0, Stata Corporation, College Station, TX 77840, USA, 2001). Following the computation of univariate statistics, bivariate associations were tested for statistical significance ($\alpha = 0.05$) using Chi-square tests for categorical data, and analysis of variance (ANOVA) for continuous variables. Regression analyses were conducted to test the study hypotheses and derive adjusted estimates for the dependent variables. Poisson regression modeling was used for count data (such as the number of sites with gingival recession), and logistic regression was used to model dichotomous oral health outcomes (such as the prevalence of gingival recession).

Results

Information was received from 43 individuals, of whom 40 (93.0%) were female. The mean age of participants was 21 years (SD 5 years; range 14–34 years), and did not differ for males and females. A tongue piercing was observed in 33 (76.7%); 15 (34.9%) had a lip piercing, and five (11.6%) had piercings in both sites. The three males had lip piercings only. Four participants reported that their piercing procedure had been provided by a doctor or dentist, while the remainder had received their piercing from other sources. Postpiercing complications were reported by 15 persons (34.9%), and these involved swelling and/or infection (12 of 15), pain (six of 15) and lymphadenopathy (one of 15). There were no significant differences in the occurrence of complications by provider. Almost three-quarters (32, or 74.4%) of participants had had their piercing for 2 or fewer years, while two (4.6%) had had theirs for 5 or more years.

Gingival recession was observed in one or more labial sites in 12 individuals (27.9%), and in one or more lingual sites in 12 individuals (27.9%), but only one person (who had both lip and tongue pierced) had gingival recession in both types of site. Abnormal tooth wear was observed in 12 participants (27.9%), of whom four had only one tooth affected, six had two teeth affected, and two had three teeth affected.

Data on the site-specific prevalence and extent of gingival recession and abnormal tooth wear are presented by piercing type in Table 1. Most (80.0%) of those with a lip piercing had at least one labial site with gingival recession (and their number of affected sites was greater, on average), while almost one-third of those with a tongue piercing had at least one lingual site with gingival recession. A higher proportion of people with lip piercings (but proportionally fewer of those with tongue piercings) had gingival recession in either site (Table 1). All of those with both lip and tongue piercings had at least one site with gingival recession, and their average number of affected sites was greater. There were no significant differences with respect to abnormal tooth wear and piercing type. One third of persons who had tongue piercing also had one or more teeth

Table 1. Site-specific prevalence and extent of gingival recession and abnormal tooth wear by piercing type

	Piercing site(s)					
	Labial		Lingual		Both sites	
	No	Yes	No	Yes	No	Yes
Gingival recession						
Labial recession						
No. with 1+ sites affected (%)	0 (0.0)**	12 (80.0)	7 (70.0)	5 (15.2)**	0 (0.0)	5 (100.0)**
Mean no. of sites affected (SD)	0.0 (0.0)**	2.3 (1.6)	1.9 (0.7)	0.5 (1.2)**	0.5 (1.2)	3.2 (1.1)**
Lingual recession						
No. with 1+ sites affected (%)	9 (32.1)	3 (20.0)	2 (20.0)	10 (30.3)	4 (80.0)	1 (20.0)
Mean no. of sites affected (SD)	0.7 (1.3)	0.8 (1.7)	0.8 (1.7)	0.7 (1.3)	0.7 (1.4)	0.8 (1.8)
Either type of recession						
No. with 1+ sites affected (%)	0 (0.0)	14 (93.3)**	9 (90.0)	14 (42.4)**	18 (47.4)	5 (100.0)*
Mean no of sites affected (SD)	0.7 (1.3)	3.1 (1.9)**	2.7 (1.6)	1.2 (1.9)*	1.2 (1.6)	4.0 (2.4)**
Abnormal tooth wear						
No. with 1+ teeth affected (%)	9 (32.1)	3 (20.0)	1 (10.0)	11 (33.3)	10 (26.3)	2 (40.0)
Mean no of teeth affected (SD)	0.6 (1.0)	0.4 (0.8)	0.2 (0.6)	0.6 (1.0)	0.5 (0.9)	0.8 (1.1)

*$P < 0.05$; **$P < 0.01$.

affected by tooth wear, compared with only 10% without tongue piercing. However, these findings were not statistically significant.

Because of the strong possibility that the occurrence of gingival recession in the sample was at least partly associated with the age of the participants we used multivariate modeling to examine the association between piercing type and those characteristics while controlling for age. Logistic regression modeling showed that age was a significant predictor of the prevalence of lingual recession, with the odds of having lingual recession increasing by 1.17 (95% CI 1.01, 1.35) for every year older than 14. Moreover, Poisson regression showed that age was the only significant predictor of the number of lingual sites with recession. However, age was not a predictor of the prevalence of labial recession or the number of affected sites.

Discussion

General complications

Aside from the obvious postoperative sequelae of pain and swelling, it appears that infection and subsequent edema are the most commonly recorded generalized complication of tongue piercing (2, 3). More seriously, Perkins et al (4) reported a case of swelling that progressed to Ludwig's angina in a 25-year-old female who had her tongue pierced. Similarly, Hardee et al (14) reported a case of hypotensive collapse after tongue piercing in a 19-year-old female. Our study showed that 15 (35%) of our participants reported prolonged postpiercing swelling and/or infection.

A number of authors have cautioned against non-oral health professionals performing oral piercings (4, 7, 15). Interestingly, our study showed that there were no systematic differences in the occurrence of complications between professional or non-professional operators.

Gingival trauma

Two case reports have suggested that localized progressive gingival recession might be associated with lip piercings, particularly on the labial aspects of the lower central incisors (6, 11). There is also a single case report of buccal gingival recession of the lower incisors, associated with a tongue barbell (9). The present study has also showed an association between lip piercings and gingival recession on the labial aspect of the lower incisors, lending support to the early reports (6, 7) and underlining the need for those undergoing the procedure to be fully informed of the likely periodontal consequences.

Tooth wear and trauma

That tongue piercing may result in abnormal tooth wear (abrasion) was first suggested by DiAngelis (1) who reported two cases of cold sensitivity in female patients following placement of a lingual barbell. In both cases, sensitivity was localized to the lower left first molar teeth and attributed to cracked tooth syndrome. More recently, DeMoor and co-workers (16) examined 15 patients with tongue piercings and found that the most common complaint (12 of the 15 cases) was chipping of the teeth. They also reported four cases with cuspal fracture. In contrast, our study found that tooth wear was less common, with only 12 individuals (28%) showing any form of abnormal abrasion.

The present study should however, only be seen as a pilot study of the association between orofacial piercing and the occurrence of localized gingival recession. Its exploratory nature is reflected in its cross-sectional design, the fact that it used a convenience sample of dental patients, and the relatively small sample size used. Moreover, no information was collected on the occurrence of gingival recession elsewhere in the mouth, precluding exploration of the role of periodontal disease as a potential confounder. Accordingly, generalizing from the findings should be done with caution. Nevertheless, a sufficiently strong association exists to justify systematic research on a larger scale.

If it is assumed that the individuals in this clinical convenience sample were (more or less) representative of those who have oral piercings, then there is a clear case for the provider of such procedures to ensure that, as part of the informed consent process, prospective patients are informed of the likelihood that their periodontal health may be compromised.

Acknowledgement – The authors thank an anonymous referee whose comments greatly improved the text.

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