Marginal periodontitis with alveolar bone loss in lower deciduous incisor due to drinking straw-like plastic tube: Three case reports

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Abstract We present three cases of marginal periodontitis with alveolar bone loss due to the presence of a drinking straw-like plastic tube in the periodontal pocket of a lower deciduous incisor. The plastic tube was removed using diamond tweezers in all cases. The results suggest that the symptoms of periodontitis disappear quickly after removal of the plastic tube in such cases and that the affected tooth is normally replaced with the succedaneous tooth. However, while recovering to some extent, the alveolar bone supporting the affected tooth is unlikely to return to normal. This indicates the importance of raising awareness of this problem among dentists and encouraging manufacturers to improve the design and color of such tubes if this type of accident is to be avoided.

Key words Alveolar bone loss, Drinking straw-like plastic tube, Infant, Lower deciduous incisor

Introduction

Infants use their mouths as an exploratory organ, often inserting objects other than food into the oral cavity. This behavior can, however, result in accidental aspiration and ingestion of foreign substances other than food¹¹–¹⁰. Foreign objects may thus find their way into the periodontal pocket. In adults, foreign objects such as orthodontic elastic bands, rubber dam sheets, impression materials and tongue piercings have been reported to cause marginal periodontitis with localized alveolar bone loss¹¹–¹³. Marginal periodontitis due to the presence of plastic tubes in the periodontal pocket was reported in the deciduous dentition in the 1970’s¹¹–¹³, and four more such cases have been reported in Japan since 2004⁷–¹⁰.

Here, we report three cases of drinking straw-like plastic tubes in the periodontal pocket over the crown of a deciduous incisor in infants and assess the prognosis for periodontitis and alveolar bone loss.

Case 1

A Japanese girl aged 1 year 7 months was referred to the Pediatric Dental Clinic of Tokyo Dental College Chiba Hospital by her family dentist for treatment of traumatic injury to the lower anterior region of the mandible. At the age of 1 year 4 months, she had been taken to the same dentist for injury to the bilateral deciduous lower central incisors due to a collision with a table. However, at that time, no significant symptoms were observed and she had not undergone any treatment. The dentist had, however, pointed out a morphological defect in her lower left deciduous central incisor completely unrelated to the injury. Her mother informed us that the girl had become distressed and consequently began touching the lower anterior...
region of the mandible at that time. Later, the girl fell and injured the same incisors again. The family dentist diagnosed crown fracture of the lower left deciduous central incisor and referred her to our hospital.

Clinical inspection at our department revealed no fracture of the crown of the incisor and no other symptoms apart from minor redness of the surrounding gum. However, a drinking straw-like clear plastic tube was observed over the cervical portion of the incisor (Fig. 1). Dental radiography revealed mild resorption of the alveolar bone of the incisor (Fig. 2). Clinical and radiographic findings suggested that the lesion was marginal periodontitis with localized alveolar bone loss due to the presence of a plastic tube in the periodontal pocket.

The plastic tube was carefully removed using diamond tweezers on the day of the first visit (Fig. 3). She stopped touching the lower incisor region after removal of the plastic tube. The redness of the gum around the lower left deciduous central incisor disappeared (Fig. 4) and regeneration of alveolar bone was observed after 6 weeks (Fig. 5).
Case 2

A Japanese girl aged 3 years 1 month was referred to the Pediatric Dental Clinic of Tokyo Dental College Chiba Hospital by her family dentist for treatment of gingival swelling. The girl had been taken to see her family dentist with the chief complaint of yellow calculus, which was actually a plastic tube, in the lower right deciduous central incisor. The area had been irrigated and the patient received follow-up. However, she was referred our hospital 4 months later due to tooth mobility and recession of the gum.

Clinical inspection at our department revealed moderate mobility in the lower right deciduous incisor, redness of the surrounding gum and the presence of a drinking straw-like yellow plastic tube over the cervical portion of the tooth (Fig. 6). Her mother told us that the yellow substance had been there since soon after the eruption of the tooth. Dental radiography revealed moderate vertical resorption of the alveolar bone around the lower right deciduous central incisor (Fig. 7). Clinical and radiographic findings suggested that the lesion was marginal periodontitis with localized alveolar bone loss due to the presence of a plastic tube in the periodontal pocket.

The plastic tube was carefully cut and removed using diamond tweezers and a probe at the first visit (Figs. 8 and 9). Although tooth mobility continued for 2 months after removal of the plastic tube, symptoms of periodontitis disappeared and mobility improved as the child then stopped thumb-sucking. Later, the patient unfortunately suffered a traumatic injury to the mandibular anterior region including the same tooth during follow-up and was treated again at the age of 4 years 4 months. Nevertheless, the tooth remained in the dentition at the age 5 years.
11 months and physiological root resorption began (Figs. 10 and 11).

Case 3

A Japanese boy aged 1 year 11 months was brought to the Pediatric Dental Clinic of Tokyo Dental College Chiba Hospital for examination of fused teeth. His mother had noticed fused teeth in the lower anterior region when he was 1 year old and taken him to the family dentist. Although the dentist pointed out a tubular white substance over the crown of the left fused incisor, he could not identify what it was and took a wait-and-see approach. Similar advice was given during a further dental check-up at the age of 1 year 6 months.

Clinical inspection at our department revealed that the lower deciduous central and lateral incisors were fused bilaterally and the presence of a drinking straw-like white plastic tube with a yellow-stained tip over the cervical portion of the left fused tooth (Fig. 12). Mild mobility, redness and swelling of the surrounding gum were also observed. Dental radiography revealed moderate vertical resorption of the alveolar bone around the lower left fused tooth (Fig. 13). Clinical and radiographic findings suggested that the lesion was marginal periodontitis with localized alveolar bone loss due to the presence of a plastic tube in the periodontal pocket.

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using diamond tweezers and a probe on the day of the first visit (Fig. 14). Although mild mobility persisted immediately after removal of the plastic tube (Fig. 15), symptoms of periodontitis disappeared within 1 month. The post-treatment course remained uneventful at 1 year after treatment (Figs. 16 and 17) and regeneration of alveolar bone was observed.

Discussion

Worldwide, several reports have been published on periodontal disease due to the presence of foreign objects in the periodontal pocket. However, cases involving a drinking straw-like plastic tube in infants have only been reported prior to 1979\(^1\)–\(^3\), and more recent reports have been related to damage caused by the presence of orthodontic treatment-related devices or materials in the oral cavity\(^4\)–\(^6\). This suggests that, since the 1980’s, such plastic tubes have been designed so as not to fit so easily over the crown of the lower deciduous incisors and to be discovered more easily if they do. Such cases were still reported later than that in Japan, however\(^7\)–\(^10\). In this report, we evaluated the prognostic implications of marginal periodontitis due to the presence of a plastic tube in the periodontal pocket in the deciduous dentition over a long period of time. To our knowledge, no previous studies have reported the long-term prognosis in such cases\(^1\)–\(^10\). In Case 2, long-term observation of over more than 2 years revealed physiological root resorption in the affected tooth, and Case 3 was followed up for as long as 1 year postsurgically. The results suggest that the symptoms of periodontitis disappear quickly after removal of the plastic tube in such cases and that the affected tooth is normally replaced with the succedaneous tooth. However, while recovering to
some extent, the alveolar bone supporting the affected tooth appears unlikely to return to normal.

Furthermore, these three cases show that drinking straw-like plastic tubes made in Japan are difficult to distinguish from the lower deciduous incisors after entry into the periodontal pocket, even for a dentist. In Case 2, the plastic tube had remained in the periodontal pocket for more than 2 years according to the patient’s mother. This indicates the importance of raising awareness of this problem among dentists and encouraging manufacturers to improve the design and color of such tubes if such accidents are to be avoided.

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References