Subgingival foreign body embedment in a preschool child: management with three and a half years follow-up

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Abstract
This is a case report of diagnosis and management of a foreign body embedded in the gingivae of a preschool child. A 3 year-old girl presented with pain, mobility and intraoral oedema of the upper left primary canine (#63). An angular, diffuse radiolucency on the mesial aspect of the primary canine was observed in the periapical radiograph and within this radiolucency, a linear radiopacity was noted in contact with the mesial surface of the root. A clinical diagnosis of severe localized periodontal involvement due to foreign body embedment was made. It was initially attempted unsuccessfully to remove the foreign body by subgingival root scaling and planning. The area was then surgically exposed. Upon flap elevation, a tubular plastic material similar to those used for the insulation of electric wires was found to encircle tightly the cervical area of the root of the primary canine, which was removed. Three months after the surgery, the gingiva of the affected tooth had attained its normal color but had started to recede for about 1 mm. One year post surgery, the gingival recession had progressed to 3 mm and a carious lesion had already developed at the denuded root surface. Three and a half years post surgery a mild inflammation of the buccal gingivae was apparent, but periodontal healing had occurred. Conclusion The dentist must always consider the possibility of a foreign body embedment in the periodontal tissues of children and be familiar to the clinical signs and symptoms as well as the proper treatment procedures.

Keywords: Foreign body, Subgingival, Preschool, Primary teeth.

Introduction
Foreign bodies retained in the oral cavity of infants and preschool children have been mostly reported to be located in the hard or soft palate [Baird and Pavey, 1995; Tseng and Woolley, 1996; de Jong et al., 1998]. There are few cases, however, of foreign body retention in the periodontium of anterior teeth in children. These cases represent embedment of torn fingernails into the gingival sulcus [Brady, 1988; Hodges et al., 1994], subgingival retention of a plastic foreign body [Wellins, 1980] and embedment of a tip fragmented from a plastic chopstick in an unerupted supernumerary tooth [Toida et al., 1992].

This is a case report of diagnosis and management of subgingival foreign body embedment in a preschool child.

Case report
A 3 year-old girl presented in the postgraduate clinic of Paediatric Dentistry Department, University of Athens, Greece, referred by a general practitioner with the complaint of mobility of the upper left primary canine (#63). The patient was well nourished, well developed and her medical history was uncontributory. Dental history revealed that the patient had experienced pain, mobility and intraoral oedema on the gingiva at the area of #63 two weeks earlier with no history of trauma, and she was treated by per os administration of Amoxil (Amoxycillin Sodium, 50 mg/kg) for 7 days. Upon clinical examination, a mild oedema and pigmentation of the labial gingiva of the primary canine was noted (Fig. 1), together with the presence of an 8 mm pocket at the mesial labial aspect of the tooth. Additionally, the tooth presented with more than 1 mm mobility in a horizontal direction, but no premature contacts were detected. The periapical radiograph revealed an angular, diffuse radiolucency on the mesial aspect of the primary canine (Fig. 2).
Within this radiolucency, a linear radiopacity was noted in contact with the mesial surface of the root. Upon probing, no other periodontally involved areas were found. Based on these findings, a clinical diagnosis of severe localized periodontal involvement due to foreign body embedment was made.

Initially, under local anesthesia, an unsuccessful effort was made to remove the foreign body by subgingival root scaling and planning. It was then decided to surgically expose the area, to remove the foreign body and the subsequent granulation tissue. The surgery included a diagnostic full thickness flap, extending from the proximal surface of the left primary lateral incisor (#62) to the distal surface of #63. When the flap was elevated, a tubular piece of plastic material was found to tightly encircle the cervical area of the root of the primary canine, approximately 5x5 mm (Fig. 3). It was an elastic band similar to those used for the insulation of electric wires. The plastic piece had to be incised in order to facilitate its removal. A thorough scaling, in order to remove the granulation tissue, and a root planning of the area were performed after the removal of the foreign body. The flap was repositioned and sutured. The patient was released after being given postsurgical instructions to implement an oral hygiene program appropriate for this age and to twice daily use a 0.12% chlorhexidine gel. The sutures were removed and the healing was satisfactory at a one week follow-up.

Histologic examination of the soft tissue, which was removed from the periodontal pocket and surrounding the foreign body, was made. The specimen consisted of ulcerated stratified squamous cell epithelium underlying fibrous, cellular connective tissue with numerous capillaries and subacute inflammatory infiltration.

Three months after the surgery, the gingiva of the affected tooth had attained its normal colour but a gingival recession of 1 mm was seen (Fig. 4a). The depth of the pocket had decreased from 8 to 6 mm and the tooth mobility had been reduced to Class I. The patient was free from any symptoms. At this visit, emphasis was given to oral hygiene, and fluoride varnish (2.26% F) was topically applied on the exposed root surface to prevent the development of root caries. The patient was advised to return every three months for follow-up examination and fluoride application.

The patient, however, returned one year after and a carious lesion had already developed at the denuded root surface. Gingival recession had progressed to 3...
mm (Fig. 4b), the depth of the pocket had decreased to 5 mm but the tooth mobility was still Class I. Local inflammation of the surrounding gingivae was also noted. At this visit, the carious lesion was restored with a Class V composite (Spectrum TPH/DeTrey, Dentsply).

The patient visited our clinic three and a half years after the operation. Gingival inflammation was apparent in the buccal gingivae, as well as the development of secondary caries at the mesial-cervical margin of the composite restoration (Fig. 5a). The depth of the pocket had decreased to 3 mm and the tooth had no mobility (Fig. 5b). It must be noted that the patient’s level of oral hygiene was poor.

**Discussion**

A rare case of diagnostic and management challenge to the paediatric dentist is presented. It involved the subgingival embedment of a foreign body, complicated by severe localized periodontal involvement and root caries, with a three and a half years follow-up.

There is a similar case reported in the literature concerning the impaction of a piece of plastic tubing in the lower lateral incisor of a preschool child [Wellins, 1980]. Subgingival embedment of fingernails in the anterior teeth of children have been also reported, but no bone loss was found radiographically [Brady, 1988; Hodges et al., 1994]. None of these cases had a follow-up.

Severe localized periodontal involvement in preschool children is a very rare entity and may occur mainly in cases of foreign body embedment or in localized prepubertal periodontitis [Yoshida-Minami et al., 1995]. Localized periodontal involvement in the present case was attributed to the embedment of the foreign body. Other pathologic entities were excluded as verified by the histologic examination. The impaction of the foreign body resulted in localized bone resorption in the area of #63, subsequent loss of attachment, buccal gingival recession and root caries at the one-year recall. Root caries is extremely rare in primary teeth, however in the
present case it occurred as a result of combination of gingival recession and poor oral hygiene. Following this case for three and a half years gave us the opportunity to see the depth of the pocket decreasing from 8 mm initially to 3 mm. This decrease in depth was mainly attributed to the removal of foreign body and healing of the periodontal tissues.

When planning the treatment of this case, the maintenance of the primary canine in a functional state in the dental arch of this girl was very important, not only because of the young age of the patient, but also because of the significant role of the particular tooth in occlusion and development of the dental arches [Grewe, 1982].

Conclusion

In conclusion, the dentist must always consider the possibility of a foreign body embedment in the periodontal tissues, and be familiar with the clinical signs and symptoms as well as the proper treatment procedures.

Acknowledgement

This paper is dedicated to the memory of co-author Associate Prof. Elina Angelopoulou, Oral Pathologist, who has suddenly deceased.

References