

Mishaps to baby teeth: Report of a case and review of literature

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ABSTRACT

Children have a habit of placing various objects in their mouths as a part of normal development. Accidental ingestion or embedment of the object in hard and soft tissues of the oral cavity is commonly encountered. A thorough history and clinical and radiographic examination aid in the diagnosis and treatment planning in such cases. The present article describes foreign body impaction in the primary tooth of a young child and its successful management along with a review of literature highlighting cases of foreign objects in primary dentition and their retrieval.

Key words: Foreign body, Pediatric endodontics, Preschoolers, Primary dentition, Young child

Accidental ingestion of foreign objects is a rather common phenomenon among children [1]. The incident is more frequent in the age group of 3–6 years, where the child develops a habit of inserting new objects of interest in the mouth to discover about it [2]. Although this is considered as a part of early childhood development, at times, impaction of the foreign object in the oral soft or hard tissues may have serious consequences [3]. A paucity of information exists regarding the prevalence of foreign body impaction in the primary dentition, but a recent article by Diaconescu *et al.* from a credible scientific source reveals that the peak incidence of foreign body ingestion is between the ages of 6 months and 4 years and has an equal gender distribution [4].

An often reported case scenario is the lodgment of the foreign object in the pulp chamber or root canal of a tooth which may be previously exposed either due to trauma or dental caries [5]. The foreign object becomes a potent source of infection leading to pain, swelling, and recurrent abscesses [6]. Widespread scientific literature is available on sequelae of foreign body impaction in the permanent dentition but that in deciduous teeth is scarce [7]. The present case report describes the successful retrieval of a foreign object from a deciduous tooth along with the literature review specifically focusing on the different types of foreign body impactions in primary dentition and their management.

CASE REPORT

An apparently healthy 5-year-old girl accompanied by parents reported to the department of pedodontics and preventive dentistry, with a chief complaint of pain in the upper front tooth region for 3 days. The pain was mild, intermittent, short, non-radiating,

and aggravated on biting food. There was no alleged history of trauma.

On extraoral examination, an apparently symmetrical face with non-palpable cervical deep lymph nodes (submandibular and submental lymph nodes) was observed. Intraoral examination revealed a carious deciduous maxillary right central incisor with frank pulpal exposure and occlusal caries in relation to deciduous maxillary right and left first molars. On clearing off the debris from the exposed pulpal chamber of deciduous maxillary right central incisor, a glossy gray metal-like material was found to be impacted (Fig. 1). On further enquiry, the patient revealed “eating” the beaded neckline of her dress.

The intraoral periapical radiograph of the tooth in question showed a ring-like radiopaque object embedded in the pulpal chamber (Fig. 2). Based on the clinical and radiographic findings, the tooth was diagnosed with chronic irreversible pulpitis.

Non-surgical retrieval of the foreign object was planned for the deciduous maxillary right central incisor under rubber dam to avoid aspiration or ingestion of the foreign body during its removal. The vibratory motion of the ultrasonic scaler (Woodpecker DTE D5, Unicorn Denmart Limited, New Delhi, India) was used to break the tightly embedded object which was then removed in parts (Fig. 3). All the unsupported enamel and carious dentin were removed using an ISO 016 carbide bur (Shofu Dental Corporation, San Marcos, USA). The root canal was cleaned of inflamed pulp and debris and irrigated with 0.9% normal saline and sodium hypochlorite. The root canal filling was completed using calcium hydroxide-iodoform paste (Fig. 4) and the final restoration was done using a strip crown (3M ESPE, St. Paul, MN, USA). The patient was followed up after 1 month and no clinical and/or radiographic sign of failure was encountered.



Figure 1: A glossy grey metal-like material embedded in the exposed pulp chamber of deciduous maxillary right central incisor in a 5-year-old girl



Figure 3: The fragments of the metal bead retrieved from the pulp chamber of deciduous maxillary right central incisor in a 5-year-old girl



Figure 2: An intraoral periapical radiograph of deciduous maxillary right central incisor in a 5-year-old girl showing a ring-like radiopaque object embedded in the pulp chamber



Figure 4: A post-operative intraoral periapical radiograph of deciduous maxillary right central incisor in a 5-year-old girl showing completed root canal filling

DISCUSSION

Preschoolers are reported to have a higher incidence of dental trauma (36% in primary dentition) as they gradually learn to walk and are subjected to repeated falls, often leading to traumatic tooth exposures [8]. The prevalence of early childhood caries during this period may also be at the peak [9]. With either of the mentioned factors present, it is likely for a foreign object to get embedded in the exposed tooth or in its root canal. The scientific literature reveals impalement injuries to be most frequent in children of age 6 years or less [2]. The reported case is an apt example of foreign body embedment in a cariously exposed primary tooth in a young child. Commonly reported impacted foreign bodies include coins, balls, plastic beads, fish bones, metal screws, staple pins, darning needles, pencil leads, and toothpick in both primary and permanent dentition [7].

The diagnosis in most of the cases is accidental, if asymptomatic, as the child does not inform his parents due to fear of punishment [10]. Development of masochistic habits has been commonly reported in such cases. The impacted object in the tooth

increasingly becomes a nidus of infection, often leading to painful complications like a dental abscess. Further complications may arise if the foreign object gets embedded beyond the furcation area of the deciduous tooth which, in turn, can cause trauma to the developing permanent successors. Sequelae of traumatic injuries to succedaneous teeth vary according to the stages of tooth development and can manifest as severe malformations such as complex odontoma or in a lesser degree, mild hypoplastic defects [11].

Therefore, a thorough history and a detailed clinical and radiographic examination are the key to a successful management of such cases. Clinical assessment should be carried out under adequate light source and after the removal of debris, if any. McAuliffe *et al.* reported five radiographic methods to localize a metallic foreign body in the oral cavity: (i) Parallax views (either horizontal or vertical); (ii) vertex occlusal views; (iii) triangulation techniques; (iv) stereo radiography; and (v) tomography [6]. In recent times, radiovisiography and three-dimensional computerized axial tomography scans are being used as adjuncts to conventional radiography [12].

Table 1: Foreign body impaction cases in deciduous teeth along with the treatment done

Author	Impacted object	Tooth number	Treatment protocol
Robbins (1967) [16]	Metallic pellet from an air rifle	Unerrupted deciduous left mandibular second molar	Extraction of tooth under local anesthesia
Gelfman <i>et al.</i> (1969) [17]	Two pieces of straw fibers	Deciduous maxillary central incisor	Extraction of tooth under local anesthesia
Lamster and Barenie 1977) [18]	Pencil lead tip of 10 mm length	Deciduous left mandibular first molar	Extraction of tooth under local anesthesia
Damm and Douglas (1984) [19]	Round copper object consistent with a metallic pellet	Retained deciduous left maxillary central incisor;	Extraction of tooth under local anesthesia
Forde (1997) [20]	Blue-colored piece of drinking straw	Deciduous right mandibular central incisor	Retrieval of straw using subgingival excavators
Pomarico <i>et al.</i> (2005) [21]	Metallic screw of 3.5 × 1.5 mm in dimension	Deciduous left mandibular first molar	Extraction of tooth under local anesthesia
Holla <i>et al.</i> (2010) [22]	Case 1: Two staple pins and a small piece of aluminum foil Case 2: Broken head of a sewing needle	Case 1: Deciduous right maxillary canine Case 2: Deciduous right maxillary central incisor	Case 1: Extraction of tooth under local anesthesia Case 2: Extraction of tooth under local anesthesia
Gujjar <i>et al.</i> (2010) [12]	Case 1: Broken office pin of 4.5 mm dimension Case 2: Pencil lead tip of 8 mm length	Case 1: Deciduous left mandibular first molar Case 2: Deciduous right mandibular second molar	Case 1: Extraction of tooth under local anesthesia followed by space maintenance using band and loop space maintainer Case 2: Extraction of tooth under local anesthesia followed by space maintenance
Sharma and Virk (2010) [11]	Metallic screw	Deciduous right mandibular second molar	Extraction of tooth under local anesthesia followed by space maintenance
Lehl (2010) [23]	Metallic paper clip	Deciduous right maxillary central incisor	Extraction of tooth under local anesthesia
Dhull <i>et al.</i> (2013) [24]	Ball pin	Deciduous right mandibular first molar	Extraction of tooth under local anesthesia
Katge <i>et al.</i> (2013) [25]	Metallic screw of 6.5×4 mm in dimension	Deciduous right mandibular first molar	Retrieval of the screw using piezoelectric ultrasonic at low intensity followed by pulpectomy and final restoration using stainless steel crown
Leith and O'Connell (2013) [26]	Plastic ring likely to have originated from a children's toy/internal mechanism of a plastic pen	Deciduous right mandibular central incisor	Extraction of tooth under general anesthesia
Pereira and Pereira (2013) [7]	Ballpoint pen tip of a ballpoint pen refill	Deciduous right maxillary first molar	Extraction of tooth under local anesthesia
Mahesh <i>et al.</i> (2014) [27]	Staple pin	Deciduous right maxillary central incisor	Extraction of tooth under local anesthesia
Indushekar <i>et al.</i> (2015) [28]	Metallic screw of approximately 5 mm length	Deciduous left mandibular first molar	Extraction of tooth under local anesthesia
Kanumuri <i>et al.</i> (2016) [29]	Seven metal wires and one staple pin	Deciduous left mandibular second molar	Extraction of tooth under local anesthesia
Mahesh <i>et al.</i> (2018) [30]	Case 1: One metal wire measuring 7 mm approximately and 3–4 non-metallic objects measuring approximately 5 mm. Case 2: One staple pin which was measured about 5.5 mm	Case 1: Deciduous right maxillary canine Case 2: Deciduous left maxillary lateral incisor	Case 1: Extraction of tooth under local anesthesia Case 2: Extraction of tooth under local anesthesia

The importance of thorough radiographic examination lies in determining the size, nature, and location of the impacted object which, thereby, determines the difficulty involved in and the method of retrieval of the object from the tooth. It is important for the clinician to decide if and when retrieval of the embedded object is possible. Various techniques and instruments such as ultrasonic tips, Masserann kit, and modified Castroviejo Needle Holders have been suggested for the removal of foreign bodies

from teeth [13-15]. Accidental ingestion and aspiration are to be taken care of during removal of the object as it will further complicate the case and cause a higher level of psychological trauma to the child.

A short review of foreign body impaction cases in deciduous teeth along with the treatment done has been presented in this article (Table 1). The 21 cases described in these case reports involved five primary maxillary central incisors (23.8%), one

primary maxillary lateral incisor (4.8%), two primary maxillary canines (9.5%), one primary maxillary first molar (4.8%), two primary mandibular incisors (9.5%), six primary mandibular first molars (28.6%), and four primary mandibular second molars (19%). Pencil lead tips and staple pins were found to be amongst the most commonly impacted objects.

An interesting finding is that most of the authors have opted for the extraction of the primary tooth. The choice is usually guided by the pulpal and periapical status of the tooth in question, the exfoliation timing, and level of difficulty in retrieving the object and on patient factors such as the child's age and level of cooperation. In the present case, retrieval of the foreign body and pulp therapy of the tooth were planned as the patient was cooperative and there were no clinical or radiographic signs of periapical infection.

CONCLUSION

Community campaigns to educate parents on the unusual sequelae of dental caries and dental trauma should be carried out. Anticipatory guidance related to keeping sharp objects out of the reach of children should also be provided to parents. However, young children will always try to explore and may get their "baby teeth" into mishaps. It is the responsibility of the clinician to detect such instances and provide treatment to the best of knowledge and ability.

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