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Incidental detection and conservative management of an intra canal foreign body: A case report

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Abstract
Self-inflicted oral habits in children and adolescents may occasionally result in the lodgement of foreign objects within teeth having pulpal exposure, often remaining asymptomatic and undetected for prolonged periods. Such cases are usually identified incidentally during routine clinical or radiographic examination. This report describes the incidental detection of an intracanal foreign body in a 15-year-old female patient who reported for orthodontic consultation with no pain or swelling. Clinical examination revealed discoloration of a fractured maxillary central incisor, and radiographic evaluation showed a radiopaque foreign object within the root canal associated with periapical pathology. A detailed history revealed self-insertion of the object following trauma. The foreign body was conservatively retrieved using coronal flaring, EDTA lubrication, and careful bypassing with hand files, followed by nonsurgical root canal therapy. The tooth remained asymptomatic and functional at follow-up. Early radiographic detection and conservative retrieval techniques are essential to prevent pulpal and periapical complications associated with asymptomatic intracanal foreign bodies.

Keywords: Self-inflicted oral injury, foreign body, root canal, conservative retrieval

Introduction
Self-inflicted oral injuries, ranging from mild habits to severe trauma, can occasionally present with embedded foreign objects in teeth, particularly when the pulp chamber is exposed due to caries or trauma [1]. Children may conceal such incidents, making diagnosis challenging. Objects like screws, needles, or beads may become lodged in pulp chambers or root canals, often discovered incidentally on radiographs or due to symptoms like pain or swelling [2]. Clinical and radiographic evaluation is essential for localization. While retrieval from the pulp chamber is manageable, apically displaced objects may require complex or surgical interventions [1]. This case report is unique as it presents a foreign object lodged within the root canal of a fractured maxillary central incisor with minimal pulp exposure, giving a serpentine appearance on radiographs. Unlike most reported cases where foreign objects enter root canal-treated teeth with open dressings or lost temporary restorations, this tooth had no prior endodontic intervention. The patient had inserted the object through a small pulp exposure for sensory stimulation, and it fractured and remained asymptomatic for over a year. This highlights the rarity of such occurrences in non-treated teeth and reinforces the contraindication of leaving pulp chambers open.

Case Report
A 15-year-old female patient reported to the dental outpatient department with the chief complaint of maligned teeth, seeking orthodontic correction. Intraoral examination revealed a fractured and discoloured maxillary right central incisor (tooth #11) with exposed pulp tissue and the presence of a sinus tract at the mucogingival junction. Periapical radiographic evaluation showed a radiopaque foreign object within the root canal, along with widening of the periodontal ligament space, disruption of the lamina dura, and an ill-defined periapical radiolucency. Sinus tract tracing using a gutta-percha point confirmed its origin from tooth #11. Upon detailed history taking, the patient disclosed a traumatic injury due to a fall approximately three years prior, followed by the self-insertion of a foreign object into the tooth

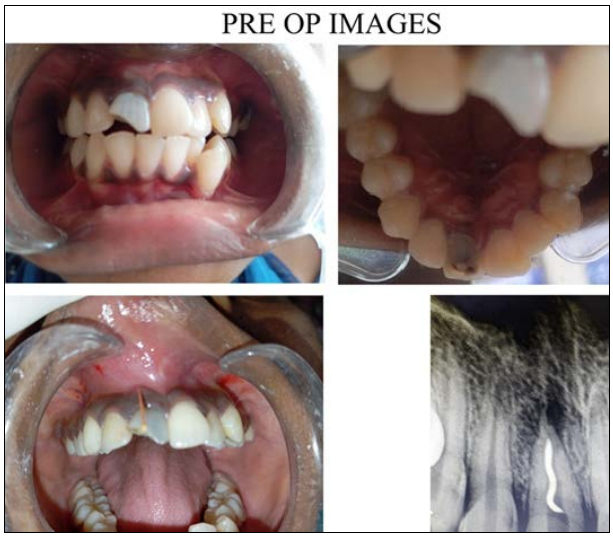
for sensory stimulation, which eventually fractured and remained inside the canal. The tooth had remained asymptomatic since the incident. Based on clinical and radiographic findings, a diagnosis of Ellis and Davey Class IV fracture with chronic apical periodontitis was made. The treatment plan included removal of the foreign object and nonsurgical root canal therapy prior to orthodontic intervention. During the initial visit, an access cavity was prepared, and the foreign object was bypassed and removed using endodontic files with copious irrigation utilizing EDTA. Biomechanical preparation of the root canal system was performed and the canal was enlarged to a size of 60/05 by nickel titanium reciproc files (walfelx) with adequate irrigation with 5% sodium hypochlorite 2ml per instrumentation, followed by placement of an aqueous-based calcium hydroxide intracanal medicament for 14 days. The sinus tract resolved, and the patient remained asymptomatic. Subsequently, the root canal was obturated using gutta-percha and a resin-based sealer by the lateral compaction technique, and the access cavity was restored with composite resin. For discolouration we advised for non-vital bleaching if not resolved by bleaching, then lithium disilicate veneers would be preferred but the patient not worried of discolouration and not willing for correction too.

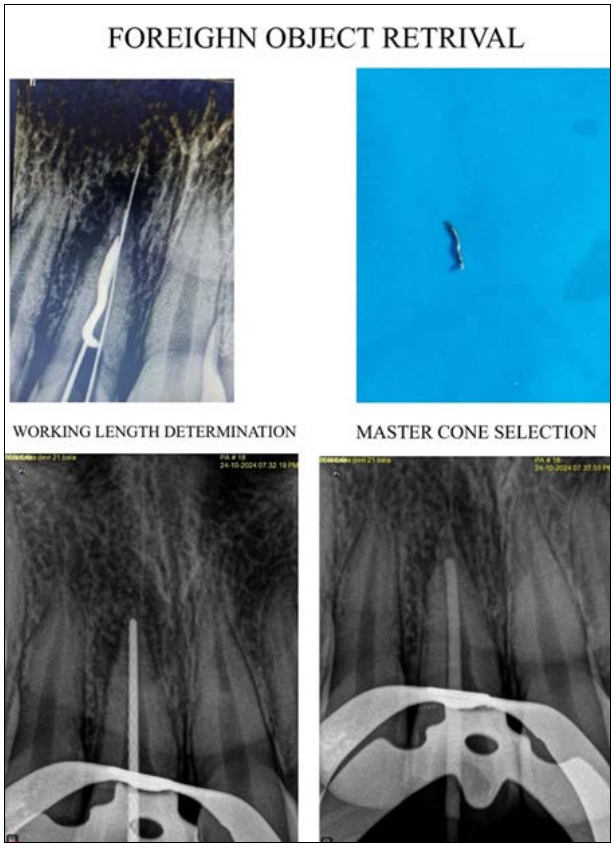
Discussion

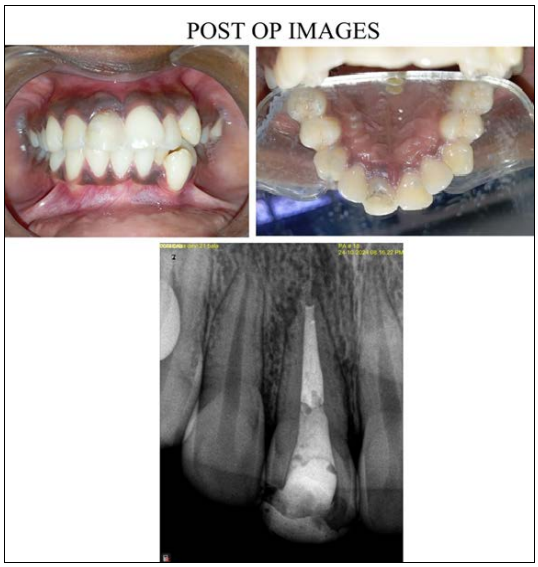
Self-inflicted oral injuries can be intentional, accidental, or due to unusual habits, with foreign objects often found lodged in root canals-especially in children. These objects range from radiolucent materials like wooden toothpicks, plastic pieces, and fingernails to radiopaque items such as staples, pins, and pencil leads, which may cause pain, bleeding, or infection. Accurate localization of radiopaque objects is critical and can be achieved through techniques such as Parallax views, Vertex Occlusal views, Triangulation, Stereo radiography, Tomography (McAuliffe), as well as advanced imaging like Radiovisiography and 3D CT. Retrieval difficulty increases when objects are deeply lodged, especially in the periapical region. Weine advised against leaving access cavities open after drainage, recommending in-office observation followed by sealing to prevent new contamination and foreign body entry [3, 4].

Foreign objects in root canals can become sources of infection if not removed promptly. Reported complications include actinomycosis from a jewellery chain placed in a maxillary incisor [5] and chronic sinusitis caused by foreign bodies pushed into the maxillary sinus [6]. Early removal is essential to prevent such infections. Several authors have reported unusual cases of foreign bodies in canals. Toida *et al*. reported a plastic chopstick in a supernumerary tooth [7]. Zillich, Picken, and Turner described hat and dressmaker pins fractured inside canals [8, 9], while Gelfma *et al*. noted straws in a child's primary incisor. Harris documented a variety of inserted objects like pins, bristles, and crayons. Lamster and Barenie reported a conical metal object in a primary molar [10]. In this case, the foreign object within the root canal was confirmed radiographically and successfully removed through coronal flaring, ample EDTA lubrication, and careful bypassing, without requiring specialized retrieval tools or surgery. Following removal, root canal treatment was completed, and the patient was advised to discontinue self-inflicting habits to prevent recurrence.

Routine dental screening is essential, particularly in children, where self-inflicting habits for sensory stimulation are more common. Early detection and timely management of foreign objects embedded in teeth are crucial to prevent potential complications. This case highlights the need for a standardized classification of such foreign bodies and the development of a clear treatment protocol for effective clinical management.







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