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# Aspiration-Irrigation technique - A non-surgical method to remove Periapically displaced gutta-percha

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## Abstract

The inflammatory responses caused due to the presence of foreign body in the periapical region can progress to persistent periapical lesions. For managing such lesions, conservative non-surgical methods should be the first option. This case report describes an aspiration-irrigation technique to remove a Periapically displaced fragment of gutta-percha in an immature open apex tooth.

**Keywords:** Periapically displaced gutta - percha, Immature tooth, Open apex, Central incisor, Aspiration-irrigation technique, 18-guage needle.

## Introduction

The persistence of bacteria within the root canal system usually results in endodontic treatment failure [1]. Although being a less common cause, Nair (2003) has reported that the presence of a foreign body in the periapical tissues can also lead to endodontic failure [2]. An inflammatory response can be triggered against the foreign body, which is characterized by the abundance of macrophages and giant cells. This inflammatory response can further progress to a periapical radiolucent lesion [3].

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macrophages and giant cells. This inflammatory response can further progress to a periapical radiolucent lesion [3].

**Case Report**

A 19-year-old female patient having no contributory medical history reported to Dept. of Conservative Dentistry and Endodontics with the complaint of mild pain and swelling in relation to the left maxillary central incisor for about 6 months.

She gave a history of intermittent pain and swelling which often enlarges and drains with discharge of pus. On elaborating, she had an alleged history of fall 9 years ago. 5 years back, she had a similar history of pain and pus discharge, for which she had undergone long-term intracanal calcium hydroxide therapy for 1 year, followed by obturation using GP by roll-cone technique (data obtained from previous medical records). An acrylic crown was also given to her at that time.

Patient had a history of swelling and pus discharge 6 months ago for which she had consulted a dental clinic (Fig. 1) and had undergone endodontic treatment of right maxillary central incisor and left maxillary lateral incisor. Later, her acrylic crown was removed and retreatment of left maxillary central incisor was initiated from the clinic. But there was no reduction in symptoms. incisor. Later, her acrylic crown was removed and retreatment of left maxillary central incisor was initiated from the clinic. But there was no reduction in symptoms.

From the above-mentioned findings, a conservative approach which involved the aspiration-irrigation technique (through the canal) was attempted to remove the remnant of previously obturated material from the periapical area.

Fig. 1: Initial radiograph.

Fig. 2: Intra-oral clinical image.

Fig. 3: Preoperative radiograph showing remnant of obturated material in the periapical space.

**Clinical procedure**

Informed consent was obtained from the patient. After giving local anaesthesia with rubber dam isolation, a 25 mm #55 size K-file was inserted through the canal, into the periapical area (1 mm beyond the apex) and circular strokes with continuous irrigation using normal saline was done. The remnants of previously obturated material were aspirated through the canal using an 18-gauge needle (Fig. 4). Remaining material was removed by flushing action. It was found to be the remnant of a tailor-made GP cone with which the tooth was previously obturated (Fig. 5). A radiograph was taken to ensure that the separated GP had been removed completely (Fig. 6).

Cleaning and shaping was carried out under continuous irrigation with 3% sodium hypochlorite solution. When preparation was complete, the canal was dried with paper points and a calcium hydroxide dressing (Met apex, Meta Biomed) was placed and reviewed (Fig. 7).

Fig. 4: 18-guage needle used

Fig. 5: Remnants of GP removed from periapical region

Fig. 6: Radiograph taken to ensure the complete removal of GP

Fig. 7: Radiograph showing root canal with Calcium Hydroxide intracanal medicament.

**Discussion**

For successful healing, all the root canal treatment procedures and obturating material should terminate at the apical constriction which is 0.5 to 1 mm from the radiographic apex [6]. In this case, the remnant of

previously obturated GP had an iatrogenic displacement into the periapical region in an attempt of retreatment.

The expulsion of a foreign body to the periapical region triggers inflammation and foreign body reaction, preventing the periapical healing [3].

The current philosophy employed in the management of all periapical lesions includes the initial use of conservative nonsurgical methods. Surgical approach is adopted only when the non-surgical methods are found unsuccessful [7, 8]

According to Bhaskar, instrumentation should be carried out 1 mm beyond the apical foramen when a periapical lesion is evident on a radiograph as it may cause transitory inflammation and ulceration of the epithelial lining, resulting in resolution of the lesion [9]. Bender further added that the penetration of instrument to the centre of the radio lucency establishes drainage and relieves pressure. Once the drainage is stopped, fibroblasts will begin to proliferate and deposit collagen. This compresses the capillary network and the epithelial cells are thus starved, which leads to degeneration and being engulfed by the macrophages [10].

Foreign bodies can be forced into the periapical region by any of the three different ways: (i) compacting food in teeth with a necrotic pulp and destroying the pulp chamber, (ii) a patient intentionally introducing objects into his or her mouth, and (iii) accidentally displacing a foreign body during dental procedures [7]. In this case report, the foreign body (GP) was iatrogenic ally displaced into the periapical tissues in an attempt of retreatment.

The method used in this case is the aspiration-irrigation technique, attempted through the root canal as suggested by Hoen et al. [5]. According to them, aspirating the unknown contents of a bony cavity and saline irrigation of a body wound are basic surgical techniques and the combination of these two techniques can be used to treat persistent peri radicular pathosis. The disadvantage of this technique is the creation of buccal and palatal wound that may cause discomfort to the patient [11]. To overcome the disadvantage of this technique, a simple method of aspiration through the root canal was followed in this case as proposed by Jaikailash et al. [4].

Since the apex was open and the canal was wide, it favoured the separated GP to be aspirated out from the periapical area.

**Conclusion**

Nonsurgical retreatment procedures in failing root canal treated teeth have shown higher success rates and therefore should be the primary choice initially. The technique illustrated to retrieve the Periapically displaced GP is conservative and reliable.

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