



## Role of Periodontal Plastic Surgery in Interceptive Orthodontics - A Case Report

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### Abstract

**Background:** The aim of this case report was to re-expose maxillary right central incisor by periodontal plastic surgical (apically displaced flap) procedure in a 13 years old female patient to preserve attached gingiva.

**Methods:** A 13 years old girl was referred to Periodontia Department from Department of Orthodontia for surgical re-exposure of right central incisor on which Orthodontic correction was going on. Combined periodontal plastic surgery and orthodontic treatment and regular follow - up was performed.

**Results:** The tooth was in proper alignment with adjacent teeth and sufficient attached gingiva was found on labial surface of it.

**Conclusions:** Periodontal plastic surgery has a great role for correction of mucogingival complex positioning in esthetic region during orthodontic procedures.

**Keywords:** Apically displaced flap, Incisor exposure, Interceptive Orthodontics

### Introduction

Impaction of permanent maxillary incisors usually occurs because of displacement of the tooth bud or pathological obstruction, such as the presence of supernumerary teeth that comprise about 56-60% of permanent incisors impaction.<sup>1</sup> The pathological obstruction could also happen as a result of odontomas, cysts, as well as root dilaceration following a trauma to the primary incisor tooth.<sup>2,3</sup> In addition, crowding, early loss and/or over retained (ankylosed) deciduous tooth are considered among local causes of permanent central incisors impaction (American Academy of Pediatric Dentistry, 2020). Even though the impaction of maxillary central incisor is uncommon, with an impaction prevalence rate of less than 1%, compared to third molars or canines with 1- 4% of incidence rate, it poses esthetic and phonetic problems that require early detection and management.<sup>4</sup>

Methods of exposing impacted teeth in order to bring them into the line of the arch include gingivectomy, the apically repositioned flap and closed eruption techniques. In situations where the labially impacted tooth is positioned very high within the buccal sulcus, near to the nasal spine or deep within the alveolus, an apically repositioned flap may be difficult to use.<sup>5</sup> In these clinical situations the surgical method of choice is the closed eruption technique.<sup>6</sup>

In this article, maxillary right central incisor was surgically re-exposed by apical displaced flap surgery and regular follow up was done.

### Case Report:

A 13 years old girl was referred to Periodontia Department from Department of Orthodontia for surgical re-exposure of right central incisor on which Orthodontic correction was going on. Patient was medically fit and had no history of dental trauma.

Past dental history revealed that previous surgical correction was done 3 months back and orthodontic treatment was initiated for proper positioning of maxillary right central incisor. There was no significant extra oral finding present.

An intra-oral examination showed plaque, calculus and gingival index score 2,1, 1 respectively. Oral hygiene was good. 11 was not erupted and one end of the ligature wire was remained fixed on 11 and submerged under alveolar mucosa and other end was attached with arch wire. Sufficient space for 11 was present between 12 and 21 (Fig.1). Intra-oral periapical radiograph showed slightly distally and palatally placed 11 (Fig.2). Crown of 11 was at the level of cemento-enamel junction (CEJ) of 12. The whole treatment plan was explained to the patient and patient's relatives and their consent was taken in a consent form.

The initial preparation phase for treatment consisted of oral hygiene instructions, scaling and root planing. Re-evaluation were done 4 weeks after the completion of this first phase of therapy. Routine blood investigation was normal. Amoxicillin (500mg) 8 hourly was prescribed day before the surgery and Ibuprofen (400mg) was prescribed one hour before the initiation of surgery. Before commencing surgical procedure, the patient was asked to rinse with 0.2% chlorhexidine mouthwash (pre-procedural rinse). Extra-oral scrubbing was done with 7.5% Povidone Iodine solution.

The area was anesthetized by infiltration anesthesia, 2% Lidocaine anaesthetic solution containing 1:200,000 Lidocaine Hydrochloride with Adrenaline. After locating the position of 11 by digital palpation initial incision was given using number 11 surgical blade from distal surface of 12 just above the arch wire and extending mesially along the incisal edge of 11 and extending apically up to Mucogingival junction of 21. Apically displaced flap procedure was performed and whole attached gingiva was preserved. Flap was sutured at the cervical third of 11. (Fig. 3)

0.2% Chlorhexidine mouthwash after the operation for 7 days was recommended to reduce infection and improve soft tissue healing. Post surgical medications should also be prescribed, including antibiotics starting on the day before initiation of surgery and lasting for 5 days (500 mg amoxicillin 8 hourly), analgesics (400mg ibuprofen 8 hourly for 3 days). Patients should be informed in detail with written postoperative instructions after the operation.

Patient was instructed to report after 24 hours of surgery and then after 7 days, 14 days, 2 months and 8 months. After suture removal patient was referred to Orthodontia Department for continuation of Orthodontic treatment procedure. After 2 months 11 was aligned with surrounding healthy attached gingiva in between 12 and 21 completely filling the gap but slightly out of occlusion. After 8 months the tooth was almost in proper position with sufficient healthy attached gingiva. (Fig.4).

**Figure 1: Initial view.**



**Figure 2: Initial intraoral periapical radiograph**



**Figure 3: After completion of surgery**



**Figure 4: Final photograph (after 8 months)**



**Discussion:**

The maxillary incisors should also have the proper inclination and be positioned favorably in horizontal and vertical relationships to all facial structures to ensure maximum facial harmony.<sup>7-9</sup> Other two alternative treatment options for treating such cases includes extraction of the impacted central incisor followed by either closing of the space or prosthetic replacement and surgical exposure of the impaction with orthodontic traction followed by an alignment of the impacted central incisor.<sup>10</sup>

The extraction of the impacted tooth in the present case was not considered as a plan of treatment in order to reduce the risk of alveolar bone loss and to preserve the edentulous alveolar ridge of the impacted tooth. No root resorption was found on tooth 11 in radiograph. On palpation of the labial sulcus there was bulging of the impacted tooth at the mucogingival junction. Closed eruption technique was initially started before referring to this patient in order to obtain an adequate keratinized tissue and a better periodontal condition around the erupting tooth.<sup>6</sup> But due to distal inclination of 11, 12 came in

the path of eruption of 11 and surgical exposure of crown was needed for proper alignment of 11. 11 was surgically expose by apically displaced flap and interceptive orthodontic treatment was continued.

### Conclusion:

Delayed eruption of maxillary incisor is also causing esthetic problem specially in young girls. Only orthodontic treatment in unilateral impacted incisor with simple gingivectomy may cause asymmetry gingival margin. Except very highly placed impacted incisors apically displaced flap surgery is the best treatment option. As it is a long, time-consuming procedure complete follow up was not possible for this patient. She was shifted to another state and further treatment was continued there. Only 8 months follow up was possible.

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