

Orthodontic - Surgical Management of An Impacted Lower Incisor Associated With Odontomes - A Case Report

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Abstract

The incidence of impacted incisors is relatively low. However, due to their multifactorial etiology and varied clinical presentation, they pose a challenge to the orthodontist. Often, these cases would need to be treated using a multi disciplinary approach. Depending on the intra oral features, these cases can be treated by orthodontic extrusion of the impacted tooth, extraction of the impacted tooth followed by prosthetic rehabilitation etc. This article describes the management of an impacted mandibular lateral incisor whose eruption was impeded by complex odontomes, which was treated by surgical removal of the odontomes and exposure of the impacted incisor, followed by orthodontic extrusion.

Keywords: Impacted incisor, Odontomes, Orthodontic correction

INTRODUCTION

Anterior teeth can get impacted for various reasons. The most common causative factors being supernumerary teeth and odontomes. Other reasons for impacted anterior teeth include ectopic tooth bud position, ankylosed primary teeth, mucosal or bony barriers to eruption, dilaceration.^(1,2)

The management of impacted anterior teeth depends on many factors. Some of these include the dental and chronological age of the patient, associated pathologies such as odontomes or cysts, inclination of the impacted tooth etc.⁽¹⁾

This case report aims to showcase the treatment of an impacted lower lateral incisor associated with complexodontomes via surgical exposure and orthodontic extrusion.

CASE REPORT

A 12 year old boy S.W, reported to the Department of Orthodontics at Penang International Dental College with the chief complaint of 'small tooth pieces on the lower gums'. On clinical examination, he presented with bilateral Class I molar and canine relationships, mild maxillary anterior crowding, fractured incisal edge due to trauma on tooth number 22, presence of odontomes in the region of the clinically missing mandibular left lateral incisor (**Figure1**). An IOPA confirmed the diagnosis of odontomes, which also revealed a vertically impacted mandibular left lateral incisor (**Figure2**). Although literature does mention use of other radiographic methods such as CBCT in case of incisor impactions, we felt that from an ethical and radiographic

safety point of view, these were not necessary as the IOPA revealed enough information to proceed with the treatment of the case⁽³⁾. Extra oral examination revealed a mild convex profile, but otherwise harmonious facial proportions.

Taking the above mentioned facts into consideration, the following treatment plan was carried out.

1. Pre adjusted edgewise brackets (MBT Prescription 0.022" slot) were bonded on both the arches. Initial levelling and alignment were carried out using a progression of wires from 0.012" Ni-Ti (Nickel titanium) to 0.017" x 0.025" Ni-Ti. This phase of treatment lasted for 15 weeks.
2. On a 0.019" x 0.025" stainless steel wire, a Nickel Titanium open coil spring was placed between the mandibular left central incisor and the mandibular left canine to make space for the eventual extrusion of the impacted lateral incisor. The contralateral lateral incisor was used to measure the approximate space that the impacted tooth would eventually occupy in the arch. The required space was achieved in a month's time.

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3. Once satisfactory space was obtained, Surgery was planned to extract the odontomes and to expose the mandibular lateral incisor. Under local anaesthesia, a mucoperiosteal flap was elevated with anterior crevicular incision and a distal releasing incision, to extract the odontomes. At the same time, the mandibular lateral incisor crown was exposed. The crown was thoroughly irrigated with saline and isolation was achieved with cotton rolls. A mandibular incisor bracket was then bonded to the tooth, and an elastic chain was applied from the bracket to the stainless steel archwire (**Figure3**). The flap was then repositioned with 3-0 silk sutures.

4. In 8 weeks' time, around 5mm of the crown of the mandibular

left lateral incisor was visible clinically. At this stage, the bracket was repositioned (as accurate positioning was not possible during surgery), and a 0.012" Nickel titanium wire was placed to continue the levelling and alignment of the mandibular left lateral incisor. (**Figure 4**)

5. Final alignment of the tooth was achieved using 0.017x0.025" Niti wires and 0.019x 0.025" stainless steel wires, followed by 4 weeks of 6.5oz Class II elastics for settling of the occlusion.

6. The case was debonded and lingual retainers were placed from canine to canine in both the arches. Total treatment time was 15 months. (**Figure 5**)



Figure1



Figure2



Figure3

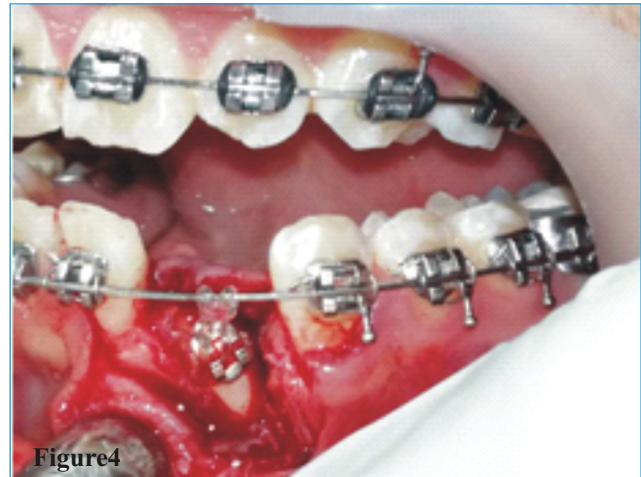


Figure4



Figure5

DISCUSSION

Various methods have been reported in the literature regarding methods to treat impacted incisors. These include surgical exposure followed by orthodontic extrusion, extraction of the impacted tooth followed by space closure or prosthetic rehabilitation.⁽⁴⁾

There are two main methods employed to extrude impacted incisors- open and closed method. Studies have shown that the closed method (where the flap is replaced and sutured in its original position) leads to better gingival contours, better bone support, and adequate amount of keratinized gingiva when compared to the open method (where the flap is replaced apically, leaving the coronal portion of the tooth exposed)⁽⁵⁾. Hence, the closed method was utilized in this case.

Using the adjacent teeth as anchorage to extrude the impacted teeth is the most common method used. However, utilizing a single flexible wire such as NiTi has been shown to intrude the anchor teeth, and alter the occlusal plane. A more stable option, from a biomechanical standpoint, is to use a stainless steel base archwire, ligate all the anchor teeth, and then use a NiTi wire as a 'piggyback' to get the impacted tooth into its final position.⁽⁶⁾ In our case, we initially used an elastomeric chain to provide the extrusive force, and once the crown got exposed clinically, then we applied the piggyback method.

CONCLUSION

This case report shows one of the methods towards the treatment of an impacted incisor, associated with complex odontomes by a combined orthodontic- surgical approach. There exists very less literature about orthodontic management of mandibular incisors in particular. Further well designed studies are required to compare the effects of different methods of surgical exposure, different orthodontic traction techniques etc.

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