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Management of an Impacted Maxillary Central Incisor: A Case Report

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Abstract

Impaction of Maxillary Central Incisor is not very commonly found in regular orthodontic practice. They can occur from numerous etiological factors which include local causes such as Odontoma, supernumerary tooth, delayed exfoliation of deciduous teeth. This case report deals with diagnosis of Impacted Central Incisor and subsequently its surgical exposure and traction into its favourable position in oral cavity by orthodontic traction/

Keywords: Impacted incisor, maxilla, Orthodontic management

Introduction

The maxillary permanent canine is the most frequently impacted teeth in the oral cavity followed by the maxillary permanent central incisors which accounts for 0.06% to 0.2%[1]. The common causes attribute to odontoma, supernumerary teeth and loss of space. The other factors that cause impaction are malformation of crown or root of permanent incisors commonly known as dilacerations due to previous history of trauma and apical follicular cysts that prevent normal eruption[2].

The diagnosis of permanent maxillary central incisor usually appears to occur during mixed dentition stage but it is accurately diagnosed when delay in eruption is encountered. Numerous patients are referred to orthodontists during early mixed dentition period due to parental concern though it is less frequent.[3]

The incidence and prevalence of impacted maxillary central incisor among different population have been reported in previous studies. MacPhee reported the incidence among 5 to 12 years old children was 0.13%.[4]

An abnormal eruption of anterior teeth can affect the facial appearance and cause other problems that can interfere with patients' self-esteem. Some techniques have been developed taking into consideration the clinical scenario. If extraction of the impacted tooth has been planned, loss of alveolar bone is anticipated following the healing period and the alveolar bone ridge becomes thinner and deficient. Facilitation of natural eruption of tooth and maintenance of the natural tooth position in the arch should be the ideal

goals of treatment. Therefore surgical exposure followed by orthodontic treatment to bring the tooth into occlusion should be considered for successful and stable treatment outcomes.

Case Report

A male patient aged 14 years complained of missing upper front teeth. The patient presented with no significant medical history, but he reported to the department due to the presence of an over-retained left upper deciduous Central Incisor.

On intra-oral examination, the patient showed proclined upper teeth with Class I Molar and canine relation bilaterally, overjet of 3mm, and deep bite of 6mm.To determine the location and direction of the impacted tooth panoramic radiographs were obtained which showed the presence of an impacted Maxillary left Central Incisor above the Mucogingival junction.

Fig 1: A- Frontal Rest photograph B- Frontal Smile photograph C- Profile view

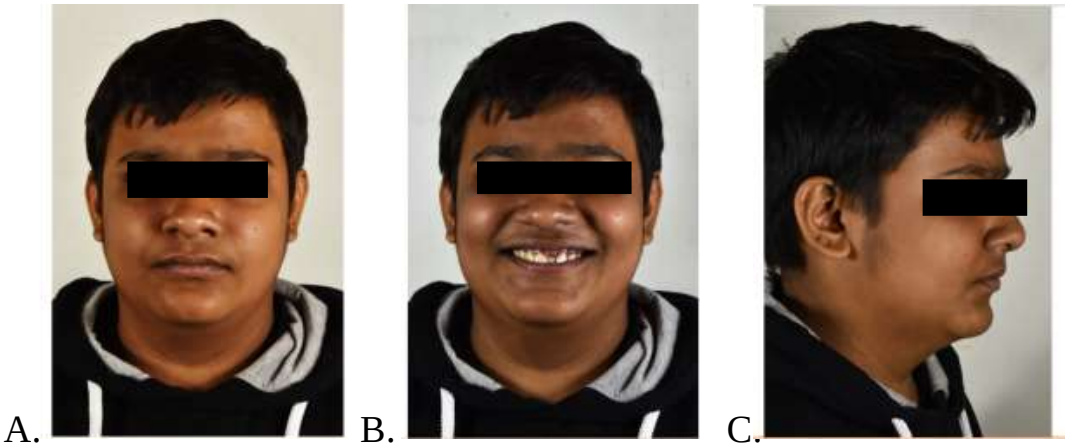
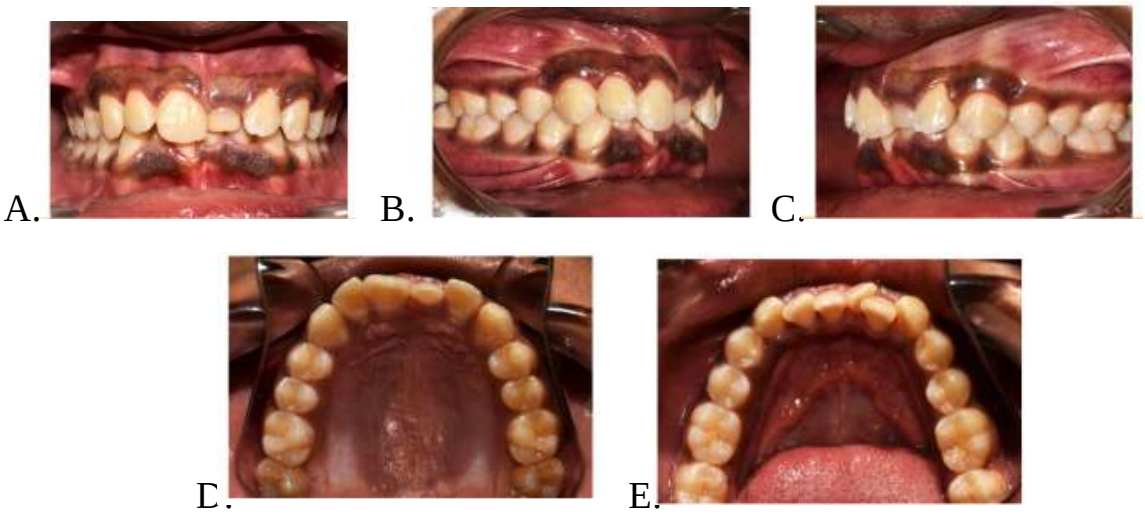


Fig 2: A-E Intra- Oral Veiw of the patient's dentition

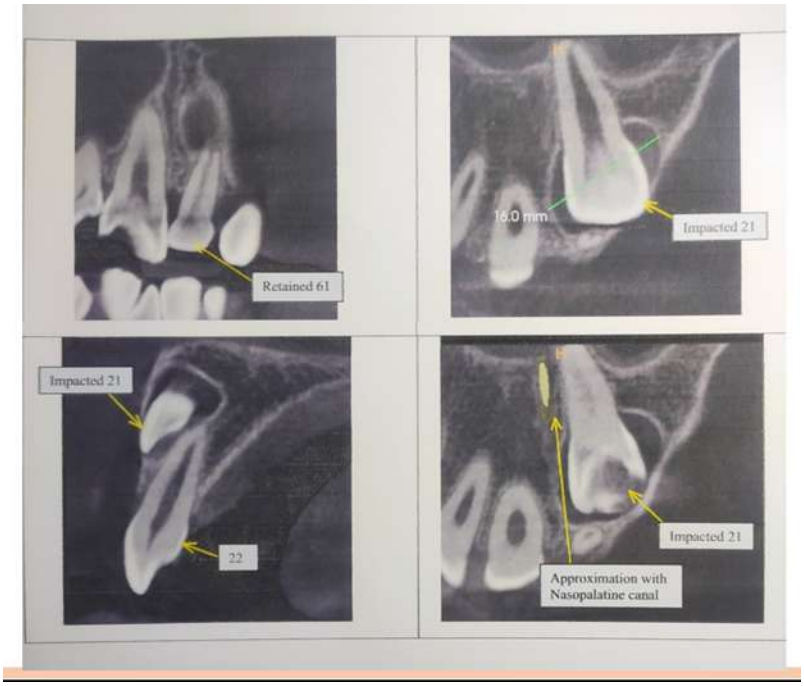


Volume 9, Issue 3; May-June 2026; Page No 426-430

Fig 3. Pretreatment Lateral Cephalogram and Orthopantomogram

A  B 

Fig 4. Cone Beam CT Image showing deciduous left Central Incisor and Impacted Left Permanent Central Incisor on Coronal view, Sagittal and Axial view respectively



The tooth could be seen protruding from labial sulcus positioned in the upper part of the alveolar bone. It is oriented vertically as seen from the Cone Beam CT.

The surgical exposure of the impacted Central Incisor was planned thereafter. An orthodontic treatment was initiated before the surgery, with 0.022X0.028 slot pre-adjusted edgewise brackets following MBT prescription to preserve the maxillary and mandibular arch dimensions.

The initial levelling and alignment were carried from 0.014 round NITI wires, gradually progressing to Rectangular 0.019X0.025 SS wire following variable modulus mechanics. After initial alignment, the extraction of the deciduous left central incisor was performed following surgical exposure of the impacted Permanent Central incisor by closed eruption technique to preserve the alveolar bone thickness. A lingual button was bonded on the labial surface of the impacted teeth. Traction force was applied by a modified ballista spring as space is created for its eruption into normal occlusion by an open coil spring.

Once the central incisor approached towards occlusion, a bracket was bonded onto the tooth surface. Following levelling and alignment of the

Volume 9, Issue 3; May-June 2026; Page No 426-430

central incisor for three months, both arches was coordinated by 0.017 X 0.025 SS.

Fig 5. A- Bonding of Lingual button on exposed Impacted tooth B- Approach of Impacted tooth into occlusion by Balista spring C& D- Right Lateral view and Occlusal view

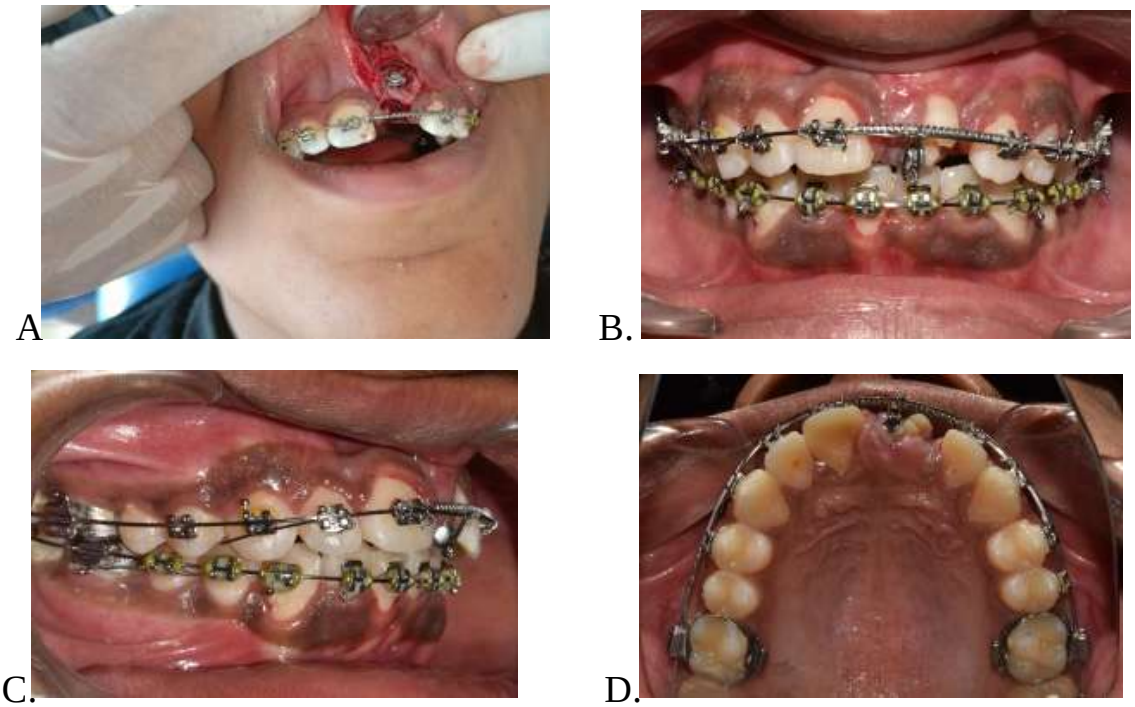
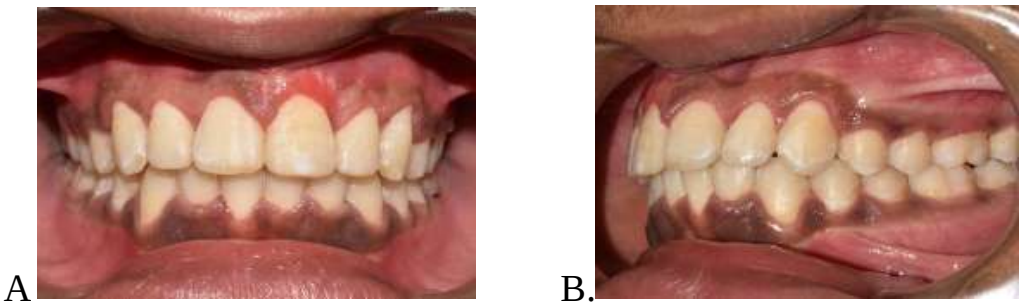


Fig 6. Post treatment Intra- Oral view



Discussion

The management of Impacted Central incisors is a challenging scenario in orthodontic practice. Impaction can result from several factors due to malposition, crowding, over retained deciduous teeth and aberrant growth patterns. Inter- displinary approach with comprehensive treatment plan is required for effective management. 3

The location, angle, proximity of the tooth to significant structures can be determined by radiographic evaluations such as CBCT, cephalometric evaluation and panoramic radiography. 4

Early intervention in orthodontics and surgery is recommended as a preventive measure against potential future issues with tooth alignment.

It is expected to detect impacted tooth through various surgical procedures. 6 As per Lyu et al, it is imperative to examine the diverse types of impactions to determine the optimal approach for the prevention and therapy of dilacerated central incisor.7

Volume 9, Issue 3; May-June 2026; Page No 426-430

In this case sufficient space was created for the tooth to be positioned correctly and anatomically.This method aims to create a keratinized gingiva around the tooth that is just beginning to erupt. A tooth must erupt through via gingival mucosa that is connected, not the alveolar mucosa.

If the impacted tooth is discovered to have fully developed root system or to be an unfavourable position, a multidisciplinary approach is required.10

Conclusion

Maxillary permanent right central incisor which was successfully positioned into proper alignment through surgical crown exposure and orthodontic traction had showed good stability. But long-term monitoring for the stability and periodontal health is usually very important for orthodontic traction. This type of impaction need not be considered as a dilemma for the patients anymore.

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Volume 9, Issue 3; May-June 2026; Page No 426-430