



ISSN (O): 2320-5407
ISSN (P): 3107-4928

Journal Homepage: [-www.journalijar.com](http://www.journalijar.com)

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/23428
DOI URL: <http://dx.doi.org/10.21474/IJAR01/23428>



RESEARCH ARTICLE

RESTORING THE ESTHETIC FOCAL POINT: ORTHODONTIC MANAGEMENT OF AN IMPACTED MAXILLARY CENTRAL INCISOR- A CASE REPORT

Vidhya Lakhshmi M¹, Shreya Lakshmi², Anwesha Dey³, Rupa Ghosh⁴, MD. Golam Hasan⁵ and Santhosh Kumar R⁶

1. Post Graduate Trainee, Department of Orthodontics and Dentofacial Orthopaedics, Dr. R. Ahmed Dental College and Hospital, Kolkata, India.
2. MDS, Senior Lecturer, Department of Orthodontics and Dentofacial Orthopaedics, D. J. College of Dental Sciences and Research, Modinagar, Ghaziabad, Uttar Pradesh, India.
3. MDS, Consultant Orthodontist, Private Practice, West Bengal, India.
4. MDS, Professor and HOD, Department of Orthodontics and Dentofacial Orthopaedics, Dr. R. Ahmed Dental College and Hospital, Kolkata, India.
5. MDS, Dental Surgeon, West Bengal Health Service, India.
6. Post Graduate Trainee, Department of Orthodontics and Dentofacial Orthopaedics, Dr. R. Ahmed Dental College and Hospital, Kolkata, India.

Manuscript Info

Manuscript History

Received: 4 March 2026
Final Accepted: 8 April 2026
Published: May 2026

Key words:-

Impaction, Central Incisor, Esthetics, Interdisciplinary, Maxillary arch

Abstract

Tooth impaction is a common clinical finding in orthodontic practice and may involve different teeth across the dental arch, each presenting unique diagnostic and therapeutic challenges. Impaction of the maxillary central incisor is a relatively uncommon condition. Despite its low prevalence, it presents significant esthetic, functional, and psychological concerns in growing patients. Early diagnosis and timely intervention are essential to prevent complications and achieve favorable outcomes. Successful treatment depends on accurate localization, controlled biomechanics, and patient cooperation. The present case report describes the orthodontic management of impaction of central incisor in the maxillary arch. The outcome highlights the successful alignment of the impacted teeth in the dental arch restoring function, balance and esthetics.

"© 2026 by the Author(s). Published by IJAR under CC BY 4.0. Unrestricted use allowed with credit to the author."

Introduction:-

Tooth eruption is a physiologic process by which a developing tooth migrates from its intra-osseous location to its functional position in the oral cavity. Disturbances in this eruptive mechanism may result in tooth impaction.¹ Tooth impaction represents a significant clinical problem in orthodontics, as it may compromise dental alignment, occlusal function, facial esthetics, and periodontal health besides other. The prevalence and clinical significance of tooth impaction vary depending on the type of tooth involved.² The maxillary central incisor plays a crucial role in facial esthetics, smile harmony, speech, and functional occlusion. Delayed eruption or impaction of this tooth is an uncommon occurrence, with a reported incidence of approximately 0.06%–0.2%, but it can create considerable esthetic and psychological distress in young patients. Because of its strategic position in the anterior maxillary region, failure of eruption often becomes an immediate concern for both patients and parents.³ Several local factors have been associated with impaction of the maxillary central incisor, including supernumerary teeth, odontomas,

Corresponding Author: Vidhya Lakhshmi M

Address: Post Graduate Trainee, Department of Orthodontics and Dentofacial Orthopaedics, Dr. R. Ahmed Dental College and Hospital, Kolkata, India.

trauma to primary incisors, retained deciduous teeth, space deficiency, and abnormal tooth angulation or dilaceration. If left untreated, the condition may lead to arch asymmetry, loss of space, displacement of adjacent teeth, root resorption, cystic changes, and compromised periodontal support.⁴ Accurate diagnosis aided by radiographic assessment and timely intervention are essential for successful management. Contemporary treatment usually involves a combined surgical and orthodontic approach aimed at facilitating eruption, establishing proper alignment, and restoring optimal esthetics and function.⁵

Case Report:

A 12-year-old male patient reported with the chief complaint of spacing in the upper front tooth region. Patient had a history of fall 7 years back. On intraoral examination, it was revealed that maxillary left central incisor was missing and the upper midline was deviated by 1 mm to the left side with Class I molar and canine relation having normal overjet and a slightly increased overbite of 5 mm with mild crowding in the lower anterior region. On radiographic interpretation, it was unveiled that the tooth was impacted with the complete root formation. (Fig 1,2)

Diagnosis:

A 12-year-old male patient with Class I molar and canine relation with average growth pattern had impacted left upper central incisor with mild crowding in the lower anterior region.

Treatment Objectives:

The treatment objectives were to disimpact the impacted maxillary left central incisor and to align it in the arch. To correct the deviated midline. To relieve the crowding in the lower anterior region. To maintain the overjet and to achieve ideal overbite. And finally, to improve the esthetics and provide a harmonious smile.

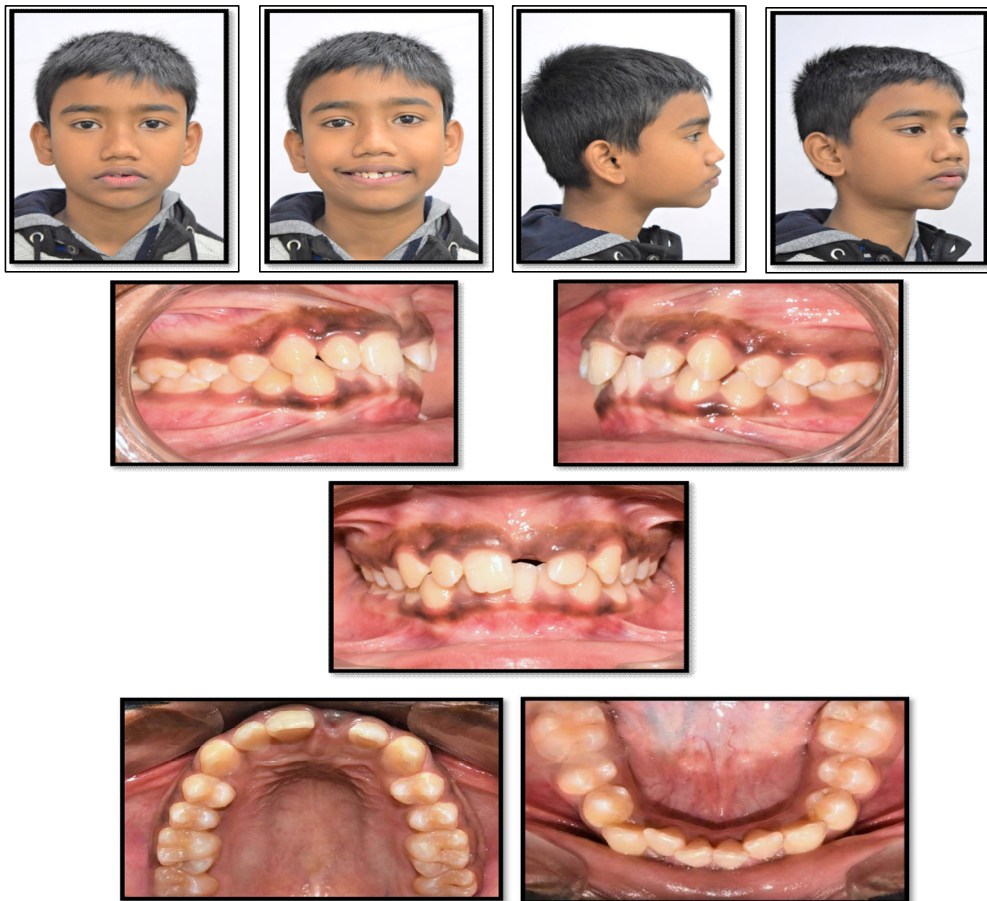


FIG:1 PRE-TREATMENT EXTRAORAL & INTRAORAL PHOTOGRAPHS



FIG:2 PRE-TREATMENT RADIOGRAPHS -
ORTHOPANTOMOGRAM AND LATERAL CEPHALOGRAM

Treatment Progress:

Patient was planned to be treated with non-extraction treatment strategy using MBT (0.022x 0.028 slot) Preadjusted Edgewise in continuous arch mechanics. After reaching 0.019 x0.025 SS base archwire, the adequate space was created for the impacted 21 with help of open coil spring. Closed surgical exposure was done and a bondable attachment was placed, followed by traction of impacted 21. The tooth was brought into occlusion followed by its levelling and alignment.(Fig 3)

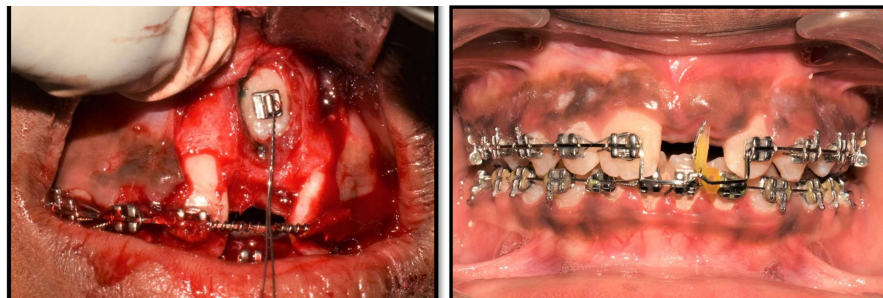


FIG:3 SURGICAL EXPOSURE OF IMPACTED 21
FOLLOWED BY PLACEMENT OF BONDABLE
ATTACHMENT AND ORTHODONTIC TRACTION

Treatment Result:

It can be appreciated that the impacted incisor was successfully aligned in proper position with harmonious gingival margin levels with no clinical or radiographic evidence of root resorption or loss of alveolar bone support. The molar and canine relations were maintained in Class I with normal overjet. The dental midline symmetry and satisfactory overbite were established. The crown morphology and incisal edge position were well integrated into the smile arc, contributing to improved faciaesthetics and smile harmony.(Fig 4,5,6& Table 1)

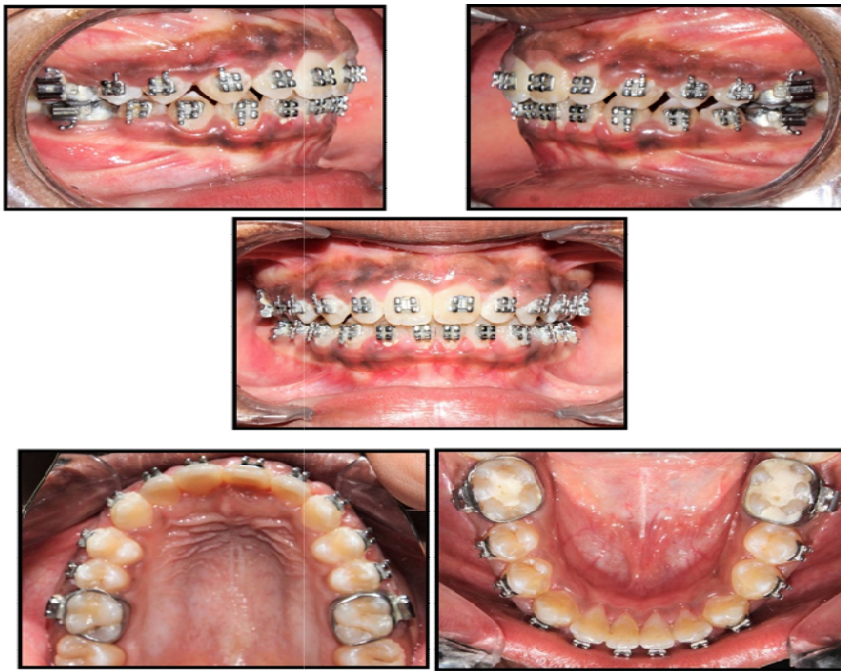


FIG:4 MID-TREATMENT INTRAORAL PHOTOGRAPHS

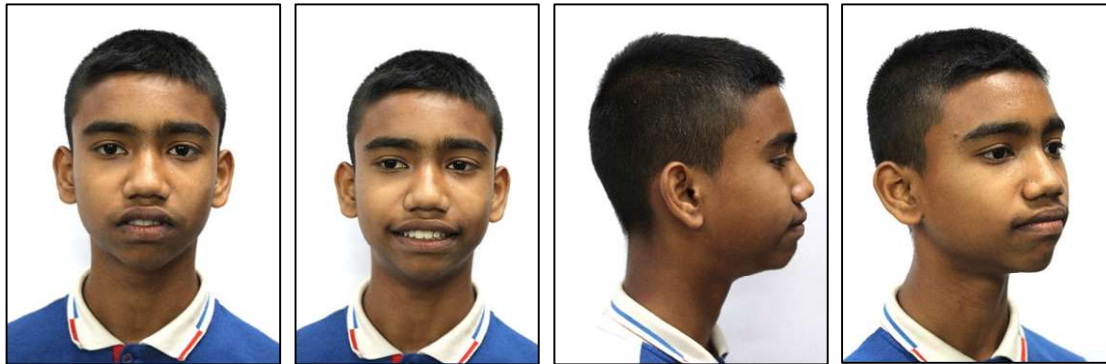


FIG:5 POST-TREATMENT EXTRAORAL & INTRAORAL PHOTOGRAPHS

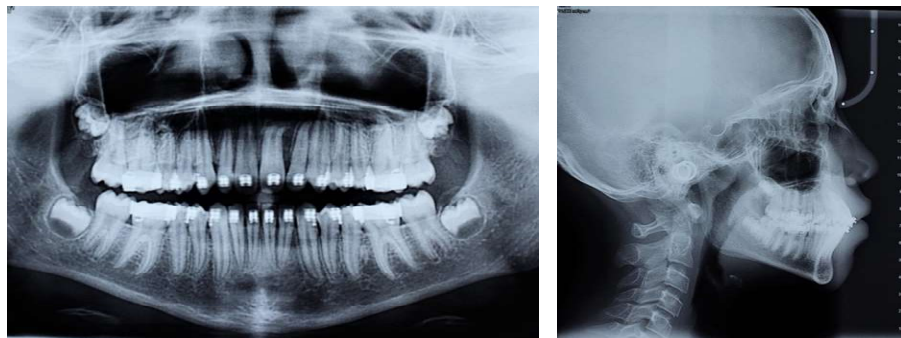


FIG:6 POST TREATMENT RADIOGRAPHS- ORTHOPANTOMOGRAM AND LATERAL CEPHALOGRAM

PARAMETERS	PRE TREATMENT	POST TREATMENT
SNA	81°	81.5°
SNB	77°	78°
ANB	4°	3.5°
WIT'S APPRAISAL	+3 mm	+3 mm
UPPER CI TO NA (LINEAR/ANGULAR)	2mm / 20°	4mm / 25°
LOWER CI TO NB (LINEAR/ANGULAR)	4mm / 35°	6mm / 28°
IMPA	96°	99°
INTERINCISAL ANGLE	136°	126°
FMA	23°	24°
Y-AXIS	58°	59°
JARABAK'S RATIO	69.3%	66.3%
NASOLABIAL ANGLE	77°	78°
RICKET'S E-LINE (UPPER/LOWER)	+2 mm / +2 mm	+2 mm / +4 mm

TABLE 1: COMPARISON OF CEPHALOMETRIC VALUES BETWEEN PRE AND POST TREATMENT

Discussion:-

Impaction of the maxillary central incisor is a relatively rare anomaly; however, because of its prominent location in the dental arch, it can produce considerable esthetic, functional, and psychological concerns.⁶ The condition is commonly associated with supernumerary teeth, retained deciduous teeth, trauma to primary incisors, odontomas, dilaceration, and inadequate arch space. Early diagnosis is important to prevent long-term complications and to improve the prognosis of treatment.⁷ If left untreated, impacted maxillary central incisors may result in several complications including loss of space in the arch, midline deviation, displacement or root resorption of adjacent teeth, cystic changes, periodontal defects, and compromised facial esthetics. Delayed eruption of anterior teeth can also negatively affect speech, mastication, and the patient's self-confidence during growing years.⁴ The management of impacted maxillary central incisors depends on factors such as the patient's age, root development, tooth position, and associated pathology.⁸ Different treatment approaches have been described in the literature. Removal of the etiologic factor alone may be sufficient when spontaneous eruption potential exists. In cases where eruption does not occur naturally, surgical exposure followed by orthodontic traction is considered the treatment of choice. Surgical repositioning or extraction may be indicated in severely dilacerated, ankylosed, or unfavorably positioned teeth with poor prognosis.^{9,10} In the present case, a combined surgical-orthodontic approach was employed to guide the impacted incisor into the dental arch. Light orthodontic forces and controlled biomechanics helped achieve proper alignment while maintaining periodontal health and gingival esthetics. The successful outcome of this case emphasizes the importance of timely intervention, accurate diagnosis, and interdisciplinary management in achieving favorable esthetic and functional results.²

Conclusion:-

Impacted teeth occurring in various regions of the dental arch present distinctive diagnostic and biomechanical challenges that demand a tailored, tooth-specific approach. Predictable outcomes are achieved through precise localization, timely intervention, and the judicious application of controlled orthodontic forces following appropriate surgical exposure.¹¹ Ultimately, successful management should aim at conserving the natural dentition while restoring esthetics, arch integrity, functional occlusion, and long-term periodontal health.

Patient Consent:

Written informed consent obtained from the patient for publication of records and images.

Conflict of Interest:

None declared.

Source of Funding:

Nil.

References:-

1. Proffit WR, Fields HW, Larson BE, Sarver DM. Contemporary Orthodontics. 6th ed. St. Louis: Elsevier; 2019.
2. Becker A. The Orthodontic Treatment of Impacted Teeth. 3rd ed. Oxford: Wiley-Blackwell; 2012.
3. Di Biase DD. Midline supernumeraries and eruption of the maxillary central incisor. *Dent Pract Dent Rec.* 1969;20(1):35–40.
4. Becker A. Early treatment for impacted maxillary incisors. *Am J OrthodDentofacialOrthop.* 2002;121(6):586–587.
5. Pavoni C, Mucedero M, Laganà G, Paoloni V, Cozza P. Impacted maxillary incisors: diagnosis and predictive measurements. *Ann Stomatol (Roma).* 2012 Jul;3(3-4):100-5.
6. Grover PS, Lorton L. The incidence of unerupted permanent teeth and related clinical cases. *Oral Surgery, Oral Medicine, Oral Pathology.* 1985;59(4):420–425.
7. Dachi SF, Howell FV. A survey of 3,874 routine full-mouth radiographs. II. A study of impacted teeth. *Oral Surgery, Oral Medicine, Oral Pathology.* 1961;14:1165–1169.
8. Orthodontics: Current Principles and Techniques Graber TM, Vanarsdall RL, Vig KWL, Huang GJ. Orthodontics: Current Principles and Techniques. 6th ed. St. Louis: Elsevier; 2017
9. Chaushu S, Becker A, Zeltser R, et al. Surgical and orthodontic management of impacted maxillary incisors. *Am J OrthodDentofacialOrthop.* 2004;126(3):339–349.
10. Frank CA. Treatment options for impacted teeth. *J Am Dent Assoc.* 2000;131(5):623–632.
11. Kokich VG, Mathews DP. Surgical and orthodontic management of impacted teeth. *Dent Clin North Am.* 1993;37(2):181–204.