

The Intriguing Case of Impacted Teeth 11, 12, and 13: Unveiling the Dental Dilemma

Received 12/15/2023
Review began 12/18/2023
Review ended 12/27/2023
Published 01/03/2024

© Copyright 2024

Suchak et al. This is an open access article distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Dhwani Suchak¹, Ranjit Kamble¹, Jeni Mathew¹, Rutuja Ragit², Japneet Kaiser¹, Nishu Agarwal¹, Ruchika Pandey¹

1. Orthodontics, Sharad Pawar Dental College, Datta Meghe Institute of Higher Education and Research, Wardha, IND
2. Pediatric and Preventive Dentistry, Sharad Pawar Dental College, Datta Meghe Institute of Higher Education and Research, Wardha, IND

Corresponding author: Dhwani Suchak, dj.suchak25@gmail.com

Abstract

This case study offers a rare and difficult condition involving the impaction of teeth 11, 12, and 13, providing a severe dental challenge. A thorough examination was performed on the patient, which included clinical evaluations and radiographic examinations. Because the impacted teeth were causing discomfort and functional impairment, a multidisciplinary approach was required, which included surgical exposure followed by traction forces to level and align the impacted teeth.

The abstract emphasizes the case's complexity, digging into the diagnosis process and the establishment of a personalized treatment strategy. The complexities of handling many impacted teeth are explored in length, including surgical intervention, orthodontic considerations, and postoperative care.

Categories: Dentistry

Keywords: comprehensive treatment, supernumerary teeth, surgical exposure, impacted teeth, missing teeth

Introduction

The maxillary incisors are important for aesthetics since they are the first teeth to be visible on smiling and during speech in most people. The absence of an incisor can also cause functional issues with speaking, such as difficulty producing the "s" sound. As a result, appropriate tooth eruption, location, and morphology are critical for normal phonation and aesthetics [1].

Pathological obstruction, dental deformity, abnormal position of the tooth bud, non-vital or ankylosed primary teeth, endocrine problems, or bone disorders can all cause maxillary incisor failure to erupt [1]. If the contralateral incisor erupted six months earlier, the lower incisors erupted more than a year earlier, or there is a deviation from the typical eruption sequence, maxillary incisor eruption is considered delayed [2]. The incidence of maxillary central incisor impaction spans between 0.06% and 0.2% [3].

Following the third molar, the upper canines are the next most commonly impacted teeth with an incidence of the same ranging from 1% to 2.5% [4]. Impacted upper canines are frequently addressed in orthodontics. The maxillary cuspid has the most difficult and complex eruption path among any teeth. Initially, it is placed high in the maxilla at the age of three, with its crown directed mesiolingually. While advancing to the occlusal plane, it gradually straightens out until it contacts the distal side of the lateral incisor root. It then continues to erupt in a more vertical direction, ultimately erupting in the oral cavity with a distinctive mesial inclination. This tortuous route makes the canine more prone to impactions [5].

Case Presentation

A male patient, 13 years of age, came with the primary complaint of missing anterior teeth and poor esthetics. Intra-oral examination showed missing 11, 12, and 13, as well as over-retained 53 (Figure 1). Crowding was seen in the lower anterior region along with Angle's class I molar relation on the left side, class II molar relation on the right side, and class I canine relation on the left side intra-orally. The intra-oral findings were confirmed using an orthopantomogram (OPG), which revealed impacted 11, 12, and 13 (Figure 2). A cone-beam computed tomography (CBCT) was taken to confirm the positions of the same (Figure 3).

How to cite this article

Suchak D, Kamble R, Mathew J, et al. (January 03, 2024) The Intriguing Case of Impacted Teeth 11, 12, and 13: Unveiling the Dental Dilemma. Cureus 16(1): e51611. DOI 10.7759/cureus.51611

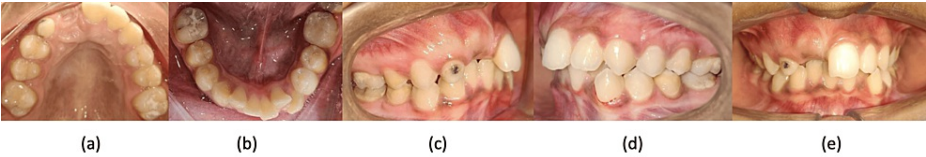


FIGURE 1: Pre-treatment intra-oral images: (a) maxillary arch, (b) mandibular arch, (c) right molar in occlusion, (d) left molar in occlusion, and (e) anteriors in occlusion

Pre-treatment images reveal missing 11, 12, and 13 and crowding in the lower anterior region



FIGURE 2: Pre-treatment orthopantomogram (OPG)

OPG reveals impacted 11, 12, and 13 along with over-retained 53

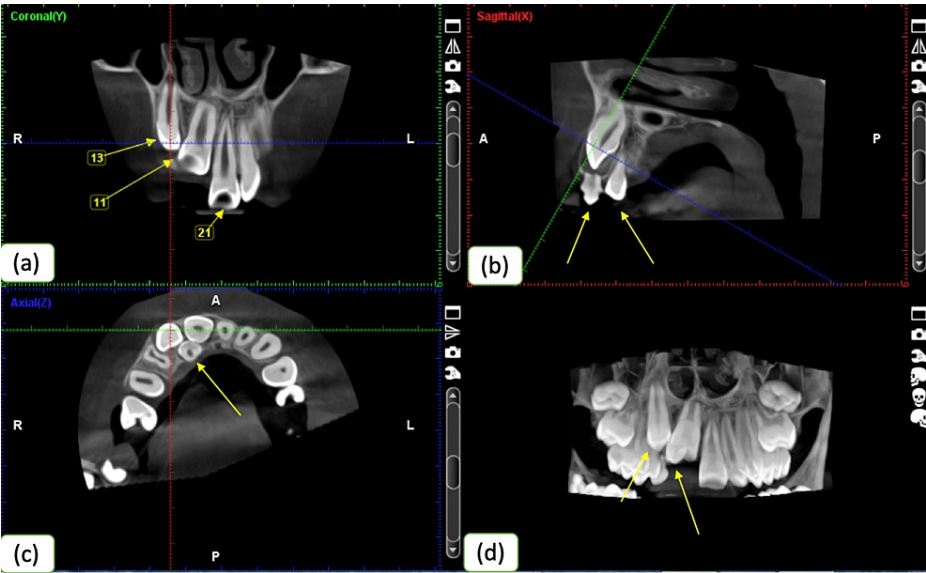


FIGURE 3: CBCT showing the position of the impacted teeth: (a) coronal section, (b) sagittal section, (c) axial section, and (d) 2D image

CBCT, cone-beam computed tomography; 2D, two-dimensional

The treatment was started by strapping up the upper and lower arches. Immediately after the initial alignment of the upper arch using 0.014" and 0.016" nickel-titanium (NiTi) wire, the surgical exposure of the

central incisor and canine along with the extraction of over-retained 53 was done (Figure 4). Since, after exposure, the lateral incisor was found to be rudimentary, it was extracted (Figure 5). A traction force was applied on the exposed teeth by bonding lingual buttons, which were later aligned by a segmental piggyback NiTi wire. The complete levelling and alignment of both arches were done using NiTi wires followed by stainless steel wires (Figure 6). The post-treatment OPG shows proper alignment of 11 and 13 (Figure 7). The pre- and post-treatment smiling photographs are compared in Figure 8. The entire treatment was completed in 16 months.

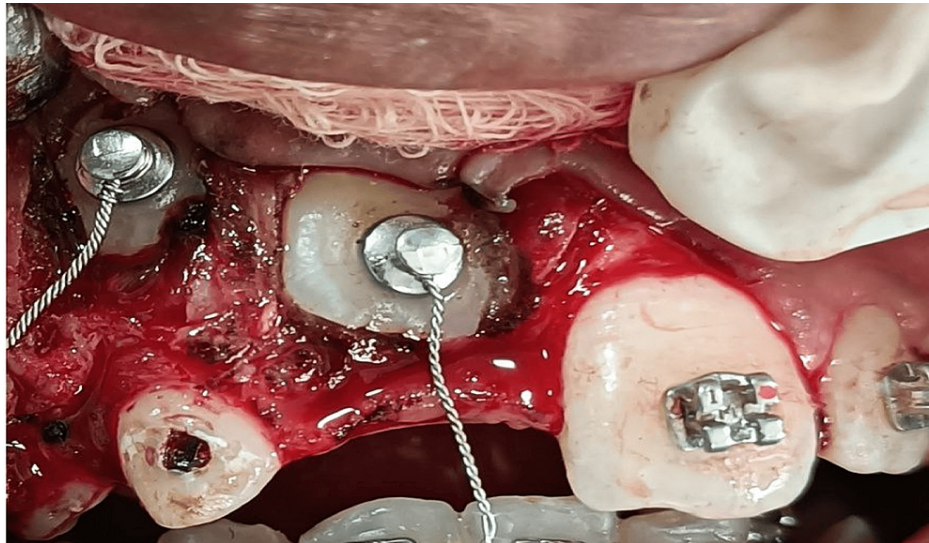


FIGURE 4: Surgical exposure of impacted 11 and 13



FIGURE 5: Rudimentary 12

On surgical exposure, 12 was found to be rudimentary and hence extracted

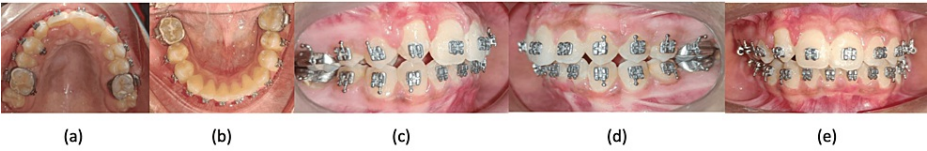


FIGURE 6: Post-treatment intra-oral images: (a) maxillary arch, (b) mandibular arch, (c) right molar in occlusion, (d) left molar in occlusion, and (e) anteriors in occlusion



FIGURE 7: Post-treatment orthopantomogram (OPG)

Post-treatment OPG reveals proper alignment of 11 and 13

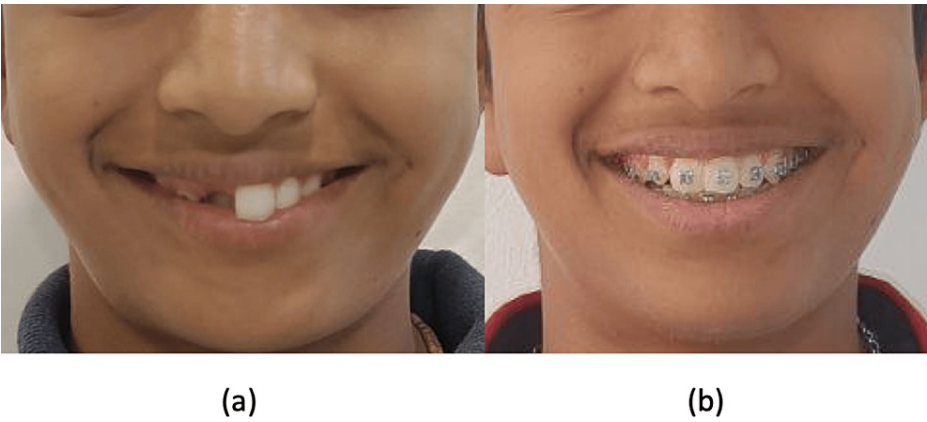


FIGURE 8: Comparison of pre- and post-treatment frontal smiling

Discussion

Impacted teeth are a common occurrence in orthodontic practice. McBride believes that the lack of eruptive force to permanent teeth to bring them into their natural location in the oral cavity typically occurs due to an imbalance between tooth size and overall arch length. When there is such a discord, the teeth that erupt later in the series are either impacted or diverted from their regular eruption courses [6].

For many years, experts have been interested in the reasons for maxillary permanent canine eruption disturbance and impaction. Compared to all other teeth, the upper canines have the most challenging path of eruption and a long development period. Although the etiology of ectopic canines is unknown, it is most likely multifaceted. Both genetic [7-9] and local factors have been reported to be linked with canine impactions, which occur in a small but considerable proportion of most populations [10-12].

Several therapeutic options have been developed. Alveolar bone loss is to be expected if the affected tooth is

extracted. According to Lin et al., alveolar bone resorption is almost inescapable and frequently happens during the first six months post extraction [13]. In such cases, the exposure of the affected tooth surgically followed by orthodontic traction is becoming more popular. A number of studies have indicated that a tooth impacted in the dental arch can be aligned. However, numerous factors may influence whether that tooth can be effectively aligned: (a) the location and orientation of the impacted tooth, (b) the degree of root formation, (c) dilacerations, and (d) the available space for the impacted tooth [14,15].

Conclusions

In conclusion, the presented case of impacted teeth 11, 12, and 13 highlights the intricate nature of managing multiple impacted teeth and the importance of a thorough treatment plan. This case demonstrates the significance of individualized and coordinated care in dealing with such difficult dental problems. As we navigate the complex nature of dental anomalies, the lessons acquired from this case report serve as a guide for clinicians, emphasizing the importance of adaptability, innovation, and a comprehensive approach to patient care.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Dhvani Suchak, Ranjit Kamble, Jeni Mathew, Ruchika Pandey, Rutuja Ragit, Japneet Kaiser, Nishu Agarwal

Acquisition, analysis, or interpretation of data: Dhvani Suchak, Ranjit Kamble, Jeni Mathew, Ruchika Pandey, Rutuja Ragit, Japneet Kaiser, Nishu Agarwal

Drafting of the manuscript: Dhvani Suchak, Ranjit Kamble, Jeni Mathew, Ruchika Pandey, Rutuja Ragit, Japneet Kaiser, Nishu Agarwal

Critical review of the manuscript for important intellectual content: Dhvani Suchak, Ranjit Kamble, Jeni Mathew, Ruchika Pandey, Rutuja Ragit, Japneet Kaiser, Nishu Agarwal

Disclosures

Human subjects: Consent was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

References

1. Jain S, Raza M, Sharma P, Kumar P: Unraveling impacted maxillary incisors: the why, when, and how . *Int J Clin Pediatr Dent*. 2021, 14:149-57. [10.5005/jp-journals-10005-1903](https://doi.org/10.5005/jp-journals-10005-1903)
2. Betts A, Camilleri GE: A review of 47 cases of unerupted maxillary incisors . *Int J Paediatr Dent*. 1999, 9:285-92. [10.1111/j.1365-263x.1999.00147.x](https://doi.org/10.1111/j.1365-263x.1999.00147.x)
3. Grover PS, Lorton L: The incidence of unerupted permanent teeth and related clinical cases . *Oral Surg Oral Med Oral Pathol*. 1985, 59:420-5. [10.1016/0030-4220\(85\)90070-2](https://doi.org/10.1016/0030-4220(85)90070-2)
4. Cooke J, Wang HL: Canine impactions: incidence and management . *Int J Periodontics Restorative Dent*. 2006, 26:483-91.
5. Moyers RE: Handbook of orthodontics. David K (ed): Year Book Medical Publishers, Inc., Chicago, IL; 1988.
6. McBride LJ: Traction--a surgical/orthodontic procedure. *Am J Orthod*. 1979, 76:287-99. [10.1016/0002-9416\(79\)90025-3](https://doi.org/10.1016/0002-9416(79)90025-3)
7. Becker A, Sharabi S, Chaushu S: Maxillary tooth size variation in dentitions with palatal canine displacement. *Eur J Orthod*. 2002, 24:313-8. [10.1093/ejo/24.3.313](https://doi.org/10.1093/ejo/24.3.313)
8. Peck S, Peck L, Kataja M: The palatally displaced canine as a dental anomaly of genetic origin . *Angle Orthod*. 1994, 64:249-56. [10.1043/0003-3219\(1994\)064<0249:WNID>2.0.CO;2](https://doi.org/10.1043/0003-3219(1994)064<0249:WNID>2.0.CO;2)
9. Langberg BJ, Peck S: Tooth-size reduction associated with occurrence of palatal displacement of canines . *Angle Orthod*. 2000, 70:126-8. [10.1043/0003-3219\(2000\)070<0126:TSRAWO>2.0.CO;2](https://doi.org/10.1043/0003-3219(2000)070<0126:TSRAWO>2.0.CO;2)
10. Jacoby H: The etiology of maxillary canine impactions . *Am J Orthod*. 1983, 84:125-32. [10.1016/0002-9416\(83\)90176-8](https://doi.org/10.1016/0002-9416(83)90176-8)
11. Thilander B, Jakobsson SO: Local factors in impaction of maxillary canines . *Acta Odontol Scand*. 1968, 26:145-68. [10.3109/00016356809004587](https://doi.org/10.3109/00016356809004587)
12. Becker A, Smith P, Behar R: The incidence of anomalous maxillary lateral incisors in relation to palatally-displaced cuspids. *Angle Orthod*. 1981, 51:24-9. [10.1043/0003-3219\(1981\)051<0024:TIOAML>2.0.CO;2](https://doi.org/10.1043/0003-3219(1981)051<0024:TIOAML>2.0.CO;2)
13. Lin HK, Pan YH, Salamanca E, Lin YT, Chang WJ: Prevention of bone resorption by Ha/β-TCP + collagen

- composite after tooth extraction: a case series. *Int J Environ Res Public Health*. 2019, 16:4616. [10.3390/ijerph16234616](https://doi.org/10.3390/ijerph16234616)
14. Jindal G, Kumar D: Developmental malformation of primary and permanent dentition: a rare sequel of trauma. *J Contemp Dent Pract*. 2013, 14:944-7. [10.5005/jp-journals-10024-1430](https://doi.org/10.5005/jp-journals-10024-1430)
 15. Mustafa AB: Prevalence of impacted pre-molar teeth in College of Dentistry, King Khalid University, Abha, Kingdom of Saudi Arabia. *J Int Oral Health*. 2015, 7:1-3.