

# Premaxillary predicament: managing a rare case of triple impacted supernumerary teeth

*By Sarah Ibrahim Albabtain*

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### **Abstract**

An 11-year-old boy presented with missing permanent front teeth (#11 and #21) and a history of multiple extractions. Intraoral examination revealed mild gum inflammation and caries in multiple teeth. Radiographic examination showed three impacted supernumerary teeth, which were causing the failure of eruption of #11 and #21. Consultation with maxillofacial surgery recommended <sup>11</sup> a cone beam computed tomography (CBCT) scan. After discussion with the parents, it was decided to perform the necessary extractions under general anesthesia due to the extent of the procedure. Regular clinical and radiographic follow-up is important to assess the eruption of the normal incisors.

## **Introduction**

Supernumerary teeth, defined as developmental abnormalities involving the presence of extra teeth beyond the normal count, can manifest in various forms and locations within the dental arch [1]. These anomalies may occur in both deciduous and permanent dentition, exhibiting diverse characteristics such as being unilateral or bilateral, solitary or multiple, and affecting either jaw [2]. Mesiodens, found in the incisal region, represents the most common type of supernumerary tooth, with a prevalence of 0.15%–1.9% in the population, affecting males more frequently than females [3]. The classification of mesiodens can be based on its appearance in permanent (rudimentary) or primary (supplementary) dentition, as well as its morphology, categorized as conical, tuberculous, or molar [4]. Asymptomatic impacted supernumerary teeth are often incidentally discovered during routine radiographic examinations, and complications may include asymmetry in the eruption pattern, incisor retention, displacement, rotation, midline diastasis, and abnormalities such as root resorption and cyst formation [5,6]. Diagnosis of supernumerary teeth involves the use of panoramic, occlusal, and periapical radiographs. While panoramic X-rays aid in detection and provide information on associated missing or supernumerary teeth, cone-beam computed tomography (CBCT) offers a three-dimensional view, aiding in precise localization and shape assessment of mesiodens [7,8]. The etiology of supernumerary teeth remains elusive, with various theories attempting to explain their origin. The atavism theory suggests a phylogenetic link to our ape ancestors, while the abnormal division theory attributes supernumerary teeth to the unequal division of the tooth germ [9]. The tooth layer hyperactivity theory posits hyperactive changes in the tooth layer during early dentition as a cause. The prevailing theory emphasizes a multifactorial origin involving genetic, environmental, and familial factors. Tooth development, a complex process influenced by genetic, systemic, and local factors, is susceptible to anomalies. Genetic

control of dental growth and development can be categorized into enamel and dentin formation processes, as well as the regulation of tooth shape, size, and location. Mutations in genes responsible for early tooth placement and development contribute to various developmental abnormalities [7]. The growth process of teeth, spanning several years, is divided into stages such as formation, proliferation, histomorphological differentiation, mineralization, eruption, and resorption. Developmental abnormalities can occur at any stage due to environmental or genetic factors, leading to irregularities in tooth eruption, number, size, shape, position, color, and structure [10]. Hyperdontia, characterized by an increase in the number of teeth, includes supernumerary teeth, which are more prevalent in permanent dentition (1% to 3.5%). These additional teeth often manifest in the anterior region of the maxilla, with maxillary lateral incisors, mesiodens, central incisors, and premolars being common locations. Prevalence rates of supernumerary teeth vary by type and location, with maxillary lateral incisors accounting for 50%, mesiodens for 36%, central incisors for 11%, and premolars for 3%. Single supernumerary teeth represent 76% to 86% of cases, double supernumerary teeth account for 12% to 23%, and multiple supernumerary teeth constitute less than 1% of cases [11]. Historically, Tomes et al. and Bush et al. proposed classifications for numeric dental anomalies. Tomes differentiated between supplemental teeth, characterized by similarities to adjacent teeth, and supernumerary teeth, distinguished by atypical anatomical forms. Bush further classified supernumerary teeth into conic and tuberculate based on morphology [12].

## **Case Presentation**

An 11-year-old medically fit male patient without the presence of permanent anterior teeth #11 and #21 as shown in Figure 1. Transferred from the Primary Health Care (PHC) clinic with a chief complaint as reported by the father: “My child is 11 years old, and his permanent teeth are not coming in.” There was no associated history of trauma or pain. Family medical history was non-contributory. The dental history was restorations and multiple extractions done during the last two years, the primary #51 and #61 were badly decayed and extracted at PHC when he was 7 years old. Extraoral examinations were done, and all were within normal limits (WNL), there were no signs of any syndrome. Intraoral examination-soft tissue examination showed generalized mild marginal plaque-induced gingivitis. The tongue, floor of the mouth soft & and hard palate, oropharynx, and buccal & and labial mucosa are all WNL. Intraoral examination- hard tissue examination showed that the patient is in the late mixed dentition stage with multiple occlusal and proximal carious teeth, teeth #11 and #21 not erupting and he has U-shaped upper and lower arches. Figure 2 The Occlusion examination was done according to ANGLE's classification of malocclusion. Showed class II 1st permanent molar relationship on the right side and class I 1st permanent molar relationship on the left side, primary canine relationship was not applicable. Radiographs were obtained according to the American Academy of Pediatric Dentistry AAPD in prescribing dental radiographs for a new patient being evaluated for dental diseases and dental development for a child in a mixed dentition stage: Individualized radiographic exam consisting of posterior bitewings BW with panoramic exam OPG or posterior bitewings and selected periapical images. Therefore, the following were taken: OPG Figure 3 and 2 posterior BW with upper periapical radiograph Figure 4. OPG examination showed that his dental age matches his chronological age. No pathologies or abnormalities were detected except for the presence of supernumerary teeth. The upper periapical radiograph showed 3 impacted supernumerary teeth with failure of eruption of teeth #11 and #21.

BW's examination showed multiple dental caries affecting primary teeth. Consultation with maxillofacial surgery was done and they requested to obtain cone beam computed tomography CBCT for further <sup>14</sup> information about the location of the impacted supernumerary teeth. CBCT axial cut showed that all 3 supernumerary teeth were palatally located. Figure 5 A discussion with the parents was done regarding the different options in which the treatment can be carried out: on a dental chair, under sedation, or general anesthesia (GA) and it was decided to be under GA since there are multiple extractions (impacted supernumerary and 5 deciduous teeth). Orthodontic consultation was obtained regarding the need for surgical exposure of teeth #11 and #21 during the operation and they advised to wait and evaluate every 6 months. Pre-anesthesia assessment and hematological investigations were done and evaluated by the anesthesiologist before the operation. <sup>5</sup> The patient was taken to the operating room and following induction of general anesthesia, all three impacted supernumerary teeth and 5 deciduous teeth were removed. Figure 6 Postoperative photos and x-rays were obtained 2 weeks after the operation day Figure 7 and after 3 months Figure 8. We found a progress of eruption of tooth #11 and #21. The patient then will be under follow-up every 3-6 months to check the progress. <sup>10</sup> The likelihood of spontaneous eruption of impacted permanent teeth in the anterior part of the maxilla after surgical removal of the supernumerary tooth is more than 65.5%. waiting for the tooth to erupt for a period of 12-36 months, depending on the patient's age. To find out if the regular incisor is erupting, clinical and radiological follow-up are recommended following the removal of the supernumerary teeth. Orthodontic extrusion and surgical exposure may be necessary if, after six to twelve months, there is no eruption and adequate space.

## Discussion

Children frequently show abnormalities in the maxillary incisors' typical growth pattern. Parents are sometimes irritated by irregular teething patterns because of the position of the maxillary incisors. This frustration often prompts parents to seek therapy in order to avoid the psychological effects of anterior maxillary abnormalities. In order to address displaced maxillary incisors promptly, the clinician must be knowledgeable about the aetiology, categorization, and treatment technique for these patients. Female ectopic toothing is widespread, although little evidence of predicting sex exists, according to Huber [13]. Additionally, no female gender predictor for ectopic illness was discovered in this case group. Ectopia typically manifests unilaterally in the upper jaw; the present case series confirms this. After trauma to the primary incisors, asymmetrical growth, root-treated primary incisors, retained primary teeth, and extra teeth can all be signs of misplaced permanent incisors [14,15]. Some misplaced permanent incisors heal on their own after removal of the causative agent, but others persist or even deteriorate [15,16]. It has been reported that when supernumerary teeth are classified according to position, they most commonly occur in the maxillary incisor region, followed by the maxillary region, then the mandibular region. The prevalence of supernumeraries in the maxillary incisor's region can lead to various clinical challenges, impacting eruption patterns and dental alignment. Their occurrence in the maxillary and mandibular regions further underscores the need for careful diagnostic evaluation to address potential complications in both primary and permanent dentitions [17], and mesiodentes (extra teeth in the lower incisors region). commonly encountered in routine clinical practice. Many causes have been proposed, including over proliferation or prolonged survival of the palatal epithelial cells and cleavage of the lamina [3,18], but the main cause is the body of mesiodentes is uncertain. The male-to-female ratio of people who develop mesiodentes is 2: 1, and they are usually between the ages of 10 and 20 [3], which is suitable for the



period of eruption and replacement of the mandibular incisors. X-rays are taken to screen for slow-growing teeth and teeth that are rotated, misaligned, and lost, and often detect proximal teeth.

Currently, impacted central maxillary supernumerary teeth are diagnosed using panoramic and intraoral radiography. The maxillary anterior teeth are difficult to examine with panoramic radiographs due to cervical vertebrae. Although intraoral radiographs, which have been used in the past, have a high resolution, it is difficult to observe patients with overlapping permanent and occlusal teeth, and there are issues with interpreting the spatial relationships between the nasopharynx and the nasal lumen. It has recently been shown that X-ray computed tomography can be helpful for imaging teeth that are impacted more than once [1,19–21]. We use panoramic imaging and/or intraoral radiography to diagnose maxillary central supernumerary teeth and to guide appropriate treatment decisions [7]. The dental lamina hyperactivity idea is the most well acknowledged of the many theories that have been proposed to explain how and why they arise [4,22,23]. But according to a study of the research done between November 2021 and April 2022, inheritance is a major factor in the development of extra teeth. Additional research validated our case circumstances and demonstrated non-syndromic maxillary mesiodens in individuals without pertinent family medical history [24,25].

## **Conclusion**

Children often experience deviations in the normal growth pattern of maxillary incisors, prompting parental concern and a desire for intervention to address psychological implications associated with anterior maxillary irregularities. Clinicians managing misplaced maxillary incisors must comprehend the etiology, classification, and treatment modalities for timely intervention. While ectopic teeth are more common in girls, this case series found no gender predictive evidence for ectopic disease, often presenting unilaterally in the upper jaw. Causes of misplaced permanent incisors include trauma to primary incisors, root-treated primary incisors, retained primary teeth, asymmetrical growth, and

supernumerary teeth. Supernumerary teeth, frequently found in the maxillary incisor region, remain challenging to diagnose. Panoramic and intraoral radiographs are commonly used, with X-ray computed tomography emerging as a useful tool. Despite evolving knowledge, the etiology of mesiodens remains uncertain, with heredity playing a significant role, as evidenced by <sup>17</sup> non-syndromic maxillary mesiodens in subjects from the same family.

### **Figure Legends**

Figure 1. A male patient without the presence of permanent anterior teeth #11 and #21.

Figure 2. CBCT axial cut showed that all 3 supernumerary teeth were palatally located.

Figure 3. After removing all three impacted supernumerary teeth and 5 deciduous teeth.

## References

1. Universidad del Valle, Villavicencio J, Hernández J, Universidad del Valle, Medina S, Universidad del Valle: Variaciones clínicas de los mesodientes dobles: revisión y reporte de casos. *Rev Fac Odontol Univ Antioq.* 2015, 27:.. 10.17533/udea.rfo.v27n1a11
2. Mallineni SK: Supernumerary Teeth: Review of the Literature with Recent Updates. *Conference Papers in Science.* 2014, 2014:1–6. 10.1155/2014/764050
3. Ata-Ali F, Ata-Ali J, Penarrocha-Oltra D, Penarrocha-Diago M: Prevalence, etiology, diagnosis, treatment and complications of supernumerary teeth. *J Clin Exp Dent.* 2014, e414-8. 10.4317/jced.51499
4. Wang X-X, Zhang J, Wei F-C: Autosomal dominant inherence of multiple supernumerary teeth. *International Journal of Oral and Maxillofacial Surgery.* 2007, 36:756–8. 10.1016/j.ijom.2007.01.017
5. Mathew JA, Kamble R, Das S, Nerurkar S: A Case of Supernumerary Incisors in a Young Male Child: A Rare Occurrence of Four Central Incisors in the Maxillary Anterior Region. *Cureus.* Published Online First: 16 February 2023. 10.7759/cureus.35047
6. Soni S, Pani P, Singh AK, Jaiswal D, Sidhartha R, Nishant F: Prevalence of Supernumerary Teeth and Its Associated Complications among School-going Children between the Ages of 6 and 15 Years of Jamshedpur, Jharkhand, India. *International Journal of Clinical Pediatric Dentistry.* 2023, 15:504–8. 10.5005/jp-journals-10005-2442
7. Khambete N, Kumar R: Genetics and presence of non-syndromic supernumerary teeth: A mystery case report and review of literature. *Contemp Clin Dent.* 2012, 3:499. 10.4103/0976-237X.107455
8. Schonberger S, Kadry R, Shapira Y, Finkelstein T: Permanent Tooth Agenesis and Associated Dental Anomalies among Orthodontically Treated Children. *Children.* 2023, 10:596. 10.3390/children10030596
9. Goksel S, Agirgol E, Karabas HC, Ozcan I: Evaluation of Prevalence and Positions of Mesiodens Using Cone-Beam Computed Tomography. *JOMR.* 2018, 9:.. 10.5037/jomr.2018.9401
10. Jangid K: Ectopic Supernumerary Tooth at the Anterior Nasal Spine- A Developmental Glitch. *JCDR.* Published Online First: 2015. 10.7860/JCDR/2015/13903.6733

11. Lu X, Yu F, Liu J, Cai W, Zhao Y, Zhao S, Liu S: The epidemiology of supernumerary teeth and the associated molecular mechanism. *Organogenesis*. 2017, 13:71–82. 10.1080/15476278.2017.1332554
12. Lo Giudice G, Nigrone V, Longo A, Cicciù M: Supernumerary and supplemental teeth: case report. *Eur J Paediatr Dent*. 2008, 9:97–101.
13. Kumar P, Suresh KS, Uma H, Nagarathna J: Management of Ectopically Erupting Maxillary Incisors: A Case Series. *International Journal of Clinical Pediatric Dentistry*. 2015, 8:227–33. 10.5005/jp-journals-10005-1319
14. Rai A, Jain A, Agrawal GD, Agrawal S: Non-syndromal multiple supernumerary and permanent impacted teeth in mother and her one child. *BMJ Case Rep*. 2020, 13:e236395. 10.1136/bcr-2020-236395
15. Russell KA, Folwarczna MA: Mesiodens--diagnosis and management of a common supernumerary tooth. *J Can Dent Assoc*. 2003, 69:362–6.
16. OECD. Accessed: January 7, 2024. <https://www.oecd.org/health/healthdata>.
17. Primosch RE: Anterior supernumerary teeth--assessment and surgical intervention in children. *Pediatr Dent*. 1981, 3:204–15.
18. Al-Sehaibany FS, Marzouk HM, Salama FS: Cone Beam Computed Tomography Evaluation of Inverted Mesiodentes. *J Dent Child (Chic)*. 2016, 83:88–93.
19. Koyama Y, Sugahara K, Koyachi M, et al.: Mixed reality for extraction of maxillary mesiodens. *Maxillofac Plast Reconstr Surg*. 2023, 45:1. 10.1186/s40902-022-00370-6
20. Peretz B, Gotler M, Kaffe I: Common Errors in Digital Panoramic Radiographs of Patients with Mixed Dentition and Patients with Permanent Dentition. *International Journal of Dentistry*. 2012, 2012:1–7. 10.1155/2012/584138
21. Department of Pedodontics, Faculty of Dental Medicine, Victor Babeş University of Medicine and Pharmacy, Timișoara, Romania, Ștefania D, Liana T, et al.: Radiographic methods for locating impacted maxillary canines. *Rom J Morphol Embryol*. 2023, 63:599–606. 10.47162/RJME.63.4.01
22. Lu X, Yu F, Liu J, Cai W, Zhao Y, Zhao S, Liu S: The epidemiology of supernumerary teeth and the associated molecular mechanism. *Organogenesis*. 2017, 13:71–82. 10.1080/15476278.2017.1332554

23. Gupta A: Hyperactive Dental Lamina in a 24-Year- old Female – A Case Report and Review of Literature. JCDR. Published Online First: 2015.  
10.7860/JCDR/2015/14671.6356
24. Alarcón J, Guzmán J, Masuko TS, Cáceres PN, Fuentes R: Non-Syndromic Familial Mesiodens: Presentation of Three Cases. Diagnostics. 2022, 12:1869.  
10.3390/diagnostics12081869
25. Gallas MM, García A: Retention of permanent incisors by mesiodens: a family affair. Br Dent J. 2000, 188:63–4. 10.1038/sj.bdj.4800390