Unique case of a geminated supernumerary tooth with trifid crown

Amber Ather, Hunaiza Ather*, Sanket Milan Sheth, Vidya Saraswathi Muliya
Department of Conservative Dentistry and Endodontics, Manipal College of Dental Sciences, Manipal, India
*Department of Pedodontics and Preventive Dentistry, Manipal College of Dental Sciences, Manipal, India

ABSTRACT

Gemination, a relatively uncommon dental anomaly, is characterized by its peculiar representation as a tooth with a bifid crown and a common root and root canal. It usually occurs in primary dentition. To come across gemination in a supernumerary tooth is a rare phenomenon. The purpose of this paper is to present a unique case of hyperdontia wherein gemination in an impacted supernumerary tooth resulted in a trifid crown unlike the usual bifid crown. The role of conventional radiographs as well as computed tomography, to accurately determine the morphology and spatial location, and to arrive at a diagnosis, is also emphasized in this paper. (Imaging Sci Dent 2012; 42 : 197-200)

KEY WORDS: Tooth, Supernumerary; Radiography; Tooth, Impacted; Multidetector Computed Tomography

Case Report

A 19-year-old male patient of Malay ethnicity was referred to our department for the treatment of a decayed upper right second premolar (Fig. 1A). Initial periapical radiograph confirmed endodontic involvement of the offending tooth. Additionally, it revealed the presence of two radiopacities in the maxillary canine-premolar region (Fig. 1B). The first radiopacity was cast due to the presence of a paramolar, whereas the second radiopacity gave an image of a transversely positioned “Y” shaped structure, consisting of supernumerary crowns and a short root and root canal, suggestive of a geminated supernumerary tooth. A pericoronal radiolucency of approximately 2 mm surrounding the geminated crown was found.

Panoramic radiograph revealed the presence of supernumerary teeth in both the maxilla and mandible (Fig. 2). To gain further insight into the buccolingual positioning of the supernumeraries, maxillary and cross sectional mandibular occlusal radiographs were recommended (Fig. 3). After obtaining informed consent from the patient, computed tomographic (CT) examination was performed with a 64-slice multidetector computed tomography (MDCT) scanner (Brilliance CT 64-channel, Philips Healthcare, Andover, MA, USA) using the dental software program Den-taScan (GE Healthcare, Milwaukee, WI, USA). CT slices
of 0.7 mm thickness were obtained (Fig. 4) along with the 3D reconstructed images (Fig. 5) which revealed the precise internal and external morphology of the supernumeraries. The ‘Y’ shaped structure consisted of a common root and root canal for three crowns: a medially directed molariform crown with a slight widening of the pericoronal space and two partially separated “premolar-like” crowns directed inferiorly, thereby confirming the diagnosis of geminated supernumerary tooth with trifid crown. Loss of the cortical plate of the palatal vault was also evident in the axial slices.

Owing to the possibility of causing interference in the restorative treatment plan, the erupted maxillary paramolar was extracted, whereas the other impacted supernumerary teeth, except for their slight pericoronal radiolucency, displayed no associated pathology or danger to the adjacent vital structures. Hence, a decision was made to keep the patient under periodic follow-up evaluation.

Fig. 1. A. Intraoral examination shows a decayed maxillary right second premolar and a paramolar palatal to the right maxillary first molar. B. Periapical radiograph shows the presence of a paramolar and a “Y” shaped radiopacity depicting supernumerary crowns with a common root and root canal.

Fig. 2. Panoramic radiograph reveals the presence of hyperdontia.
Discussion

Variation in the form and number of teeth is not an uncommon finding in clinical practice; however, their simultaneous presentation is a rare phenomenon. This report shows the occurrence of gemination in a supernumerary tooth, which to our knowledge is extremely rare. On reviewing the literature, we came across only two reports of geminated supernumerary teeth. Liu et al9 first described the occurrence of gemination in a supernumerary tooth in the mandibular premolar region in 2007 and proposed a new morphologic class “geminated-premolar-like” for the same. Yang10 reported a case of a geminated supernumerary tooth with two crowns and one root in the maxillary premolar region in 2012.

Our case was unique in that gemination of the supernumerary resulted in the formation of three crowns with a common root and root canal. After a thorough review of the literature and conducting a PubMed search using the keywords “gemination” or “geminated supernumerary” or “trifid tooth” or “triple tooth”, we did not come across any report of a geminated supernumerary with three crowns. Interestingly, there was a similarity between this case and the one reported by Yang10 in terms of demographics of the patient, i.e. race (mongoloid) and gender (male). This could be a coincidental finding or might be an indication towards an increased prevalence of geminated supernumerary in this population, taking into account that supernumerary teeth tend to occur with high frequency in mongoloid males.11

As approximately 75% of supernumerary teeth are asymptomatic and remain impacted,12 they often present as an incidental finding on routine radiographic examination. Although conventional radiographs are usually able to provide sufficient details, they fail to provide definitive information concerning the 3-dimensional relationship of the supernumerary teeth and the surrounding structures for surgical planning.13 In our case, computed tomography (CT) was able to clearly reveal the intra-osseous location and morphology of the supernumerary teeth, as well as their proximity to the adjacent teeth, sinus, and cortical bone.

Fig. 3. Maxillary occlusal radiograph shows the buccolingual positioning of supernumerary teeth.

Fig. 4. A. Axial CT slice through maxilla shows the medially directed molariform crown of the geminated supernumerary tooth. B. Coronal CT slice shows the loss of the cortical plate around the geminated supernumerary tooth in the maxilla.
Although MDCT was taken in this case, cone beam computed tomography (CBCT) would be a superior alternative in terms of radiation exposure.\textsuperscript{14}

Surgical intervention for the removal of supernumerary teeth may be considered only if they pose a risk of cystic transformation and show a potential to cause local disturbances such as root resorption, rotation, and malformation of permanent teeth.\textsuperscript{15} In order to prevent future complications in cases of impacted supernumerary teeth, periodic follow-up evaluations are essential.

To conclude, geminated supernumerary teeth might often go undetected in routine dental practice, which can be attributed to their subtle presentation and the limitations of conventional radiography. Therefore, it seems worthwhile to draw more attention to gemination in supernumerary teeth and call for keen interest on the part of the dentist to recognise and report such cases with greater frequency.

### References

1. Chen RJ, Wang CC. Gemination of a maxillary premolar. Oral Surg Oral Med Oral Pathol 1990; 69 : 656.
2. Grover PS, Lorton L. Gemination and twinning in the permanent dentition. Oral Surg Oral Med Oral Pathol 1985; 59 : 313-8.
3. Duncan WK, Helpin ML. Bilateral fusion and gemination: a literature analysis and case report. Oral Surg Oral Med Oral Pathol 1987; 64 : 82-7.
4. Crawford NL, North S, Davidson LE. Double permanent incisor teeth: management of three cases. Dent Update 2006; 33 : 608-10.
5. Yague-Garcia J, Berini-Aytes L, Gay-Escoda C. Multiple supernumerary teeth not associated with complex syndromes: a retrospective study. Med Oral Patol Oral Cir Bucal 2009; 14 : E331-6.
6. Primosch RE. Anterior supernumerary teeth-assessment and surgical intervention in children. Pediatr Dent 1981; 3 : 204-15.
7. Nazif MM, Ruffalo RC, Zullo T. Impacted supernumerary teeth: a survey of 50 cases. J Am Dent Assoc 1983; 106 : 201-4.
8. King NM, Lee AM, Wan PK. Multiple supernumerary premolars: their occurrence in three patients. Aust Dent J 1993; 38 : 11-6.
9. Liu DG, Zhang WL, Zhang ZY, Wu YT, Ma XC. Three-dimensional evaluations of supernumerary teeth using cone-beam computed tomography for 487 cases. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2007; 103 : 403-11.
10. Yang G. Supernumerary teeth and gemination. Br J Oral Maxillofac Surg 2012; 50 : e15.
11. Davis PJ. Hypodontia and hyperdontia of permanent teeth in Hong Kong schoolchildren. Community Dent Oral Epidemiol 1987; 15 : 218-20.
12. Acikgoz A, Acikgoz G, Tunga U, Otan F. Characteristics and prevalence of non-syndrome multiple supernumerary teeth: a retrospective study. Dentomaxillofac Radiol 2006; 35 : 185-90.
13. Kim KD, Ruprecht A, Jeon KJ, Park CS. Personal computer-based three-dimensional computed tomographic images of the teeth for evaluating supernumerary or ectopically impacted teeth. Angle Orthod 2003; 73 : 614-21.
14. Yang Y, Xia X, Wang W, Qin M. Uncommon fusion of teeth and lateral periodontal cyst in a Chinese girl: a case report. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2011; 112 : e18-20.
15. Anthonappa RP, Omer RS, King NM. Characteristics of 283 supernumerary teeth in southern Chinese children. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2008; 105 : e48-54.