

Concrescence of an Erupted Maxillary Second Molar with an Impacted Third Molar: A Case Report

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Abstract The aim is to report a rare anomaly of a concrescent maxillary second molar with the adjacent impacted third molar discovered upon routine dental extraction and discussing the situation throughout the procedure, the possible complications, the considerations, and reviewing similar cases reported in the literature.

Keywords: *concrescence, fusion, second molar, third molar, wisdom teeth*

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1. Introduction

Concrescence is a dental anomaly where two fully formed teeth are fused with cementum. The incidence of concrescent teeth is highest in the posterior maxilla. The etiology of this phenomenon needs yet to be further investigated [1]. However, many studies show that chronic irritation such as that caused by long-standing carious lesions, may cause the deposition of cementum between the roots [2]. Additional factors that may cause concrescence include, secondary trauma and rapid orthodontic tooth movement.

It is difficult for clinicians to ascertain whether the roots are fused, overlapped, or merely in close proximity to one another based on a radiograph. Therefore, juxtaposed teeth pose a challenge in diagnosis and treatment planning [1].

An advanced search was conducted using the "Google Scholar" and "PubMed" electronic databases. Keywords such as "concrescence", "fusion", "maxillary second molars", "maxillary third molars" and "wisdom teeth" were used on "Google Scholar". From the 394 results, only 7 were eligible and presented similar clinical finding to this case. "Concrescence" was used on "PubMed" and 68 search results arose. Only 8 were selected based on "English" being the article language, year of publication (2000-2017), and similarity of clinical finding to this case. Due to the rarity of the anomaly, this case is important to document.

To our knowledge, this is the first case published with similar anomaly in Saudi Arabia and the Middle East that is showing a maxillary second molar fused with the neighboring impacted third molar.

2. Case Report

A sixty-year-old female patient presented at the dental clinic (King Abdul-Aziz University Dental Hospital)

complaining from a loose maxillary complete denture that she wishes to replace. Upon clinical examination, the maxillary arch exhibited a lone-standing left maxillary second molar, upon which the denture was clasped. It displayed active cervical caries palatally and distally, and an occlusal amalgam restoration. A horizontally impacted maxillary third molar in close proximity to the second molar was evident on a Panoramic radiograph (Figure 1). A clinical decision involving the extraction of the second molar and placement of a conventional complete denture was established.



Figure 1. Presurgical panoramic radiograph showing a horizontally impacted left maxillary third molar in close proximity to second molar

An informed consent was signed prior to the extraction. The patient was anesthetized with (Lidocaine 2% and Epinephrine 1:100k), and following complete anesthesia in this region, extraction was attempted using forceps with slow luxation and bimanual palpation of the alveolar ridge. Throughout the procedure, a moderate amount of resistance was encountered, and when the left maxillary second molar was extracted, the third molar was removed with it.

Subsequent to the extraction, it was apparent that the maxillary third molar root was fused to the second molar in the furcation area (Figure 2). The extraction socket was inspected carefully. The buccal plate of bone revealed a mild crack. The maxillary sinus was inspected to

determine sinus communication; however, no communication was noted. Irrigation using Normal Saline and pressure packs (sterile gauze) were utilized to achieve hemostasis. Furthermore, two packets of gelfoam (Surgicel®) were placed within the socket and held in place using a figure-of-eight suture. The patient was finally given post-operative instructions and analgesics. A radiograph was taken of the extracted teeth which suggested concrescence of these teeth (Figure 3).



Figure 2. Concrescent left maxillary second and third molar postextraction



Figure 3. Specimen radiograph showing concrescent second and third molars

3. Discussion

Concrescence is an uncommon clinical phenomenon that is most likely found in the posterior maxilla. It is difficult to detect radiographically since the roots are fused only by cementum [10]. Thus, juxtaposed teeth usually pose a challenge in diagnoses and treatment planning. Clinically, concrescence may be impossible to detect due to the lack of enamel involvement [13]. Radiographically, concrescent teeth may be misdiagnosed as superimposed teeth. The preoperative panoramic radiograph obtained in this case raised potential concern of a possible concrescence and hence difficult extraction. A diagnosis of concrescent maxillary left second and third molars was confirmed post-extraction. Several studies emphasize the necessity to use Cone-Beam Computed Tomography (CBCT) in the diagnosis of concrescent teeth to prevent considerable complications during treatment, however it is yet not justifiable as a routine pre-extraction

practice [3,5]. The use of Cone-Beam Computed Tomography eliminates limitations associated with 2D imaging, such as distortion and superimposition. Hence, it is a valuable resource in evaluating and accurately diagnosing confluent teeth [5].

Concrescence is the deposition of cementum either during root formation “true concrescence” or after root development is complete “acquired concrescence” [2]. If the anomaly was associated with the former, it is categorized as developmental and is most probably due to the close proximity of the developing roots [4]. On the other hand, if it occurs after radicular formation, it is categorized as post-inflammatory.

The literature shows a preponderance of this rare phenomenon occurring in the posterior maxilla (Appendix A). From the 13 summoned cases, only 2 were evident in the mandible. Both were cases of concrescence observed between a mandibular third molar and a supernumerary fourth molar. Nonetheless, this phenomenon is more frequently detected in maxillary molars [5,12]. Concrescence was manifested mainly in maxillary second molars in conjunction with impacted third molars. In addition, its prevalence was not affected by age, race or gender [10].

Several approaches can be considered with regards to treatment of concrescence. The treatment of choice, however, is determined by the patient’s needs. Multiple studies revealed that clinicians mostly resorted to extraction. This may be due to the inadvertent diagnosis of concrescent teeth both radiographically, and during tooth extraction [6,9]. However, Foran et. al describes a unique case that was treated by non-surgical root canal treatment (NSRCT) [7].

Potential complications may arise during treatment of concrescent teeth, such as extraction of an adjacent tooth, fracture of the maxillary tuberosity, or maxillary sinus communication [11]. Therefore, it is of utmost importance for clinicians to consider concrescence when planning extractions, especially when the roots of adjacent teeth are not distinguishable radiographically.

4. Conclusion

Clinicians should be aware of this infrequent anomaly to avoid unnecessary complications intra-operatively such as maxillary sinus communication & fracture of the tuberosity. Multiple radiographs should be taken prior to initiating treatment to modify the treatment plan if needed.

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Appendix A

Author	Publication	Gender	Age	Treatment proposed	Reasons for seeking care	Side
Ali Zakir Syed, Leela Subhashini, Choudary Alluri, Dhiraj Mallela, and Tro Frazee [5]	2016, USA	M	18-years old	Referral for appropriate treatment	Evaluation of erupting third molar	Left Mandibular erupting third molar with an impacted paramolar, supernumerary fourth molar
Shazli N, Almasri M.	2016, Saudi Arabia	F	60-years old	Extraction	Fabrication of a Complete Denture	Left erupted Maxillary second molar with an impacted third molar
Palermo D, Davies-House A [6]	2016, UK	F	83-years old	Extraction	Pain	Left erupted Maxillary first molar with an erupted maxillary second molar
Bhavya, Mohan [1]	2014, UK	F	30-years old	Extraction	Pain	Right erupted Maxillary second molar with an erupted, slightly infra-occluded third molar
Denise Foran, Takashi Komabay-ashi, and, Louis M. Lin [7]	2012, USA	F	35-years old	NSRCT (Non-surgical Root Canal Treatment)	Pain	Right erupted Maxillary second molar with an erupted third molar
Strecha J, Jurkovic R, Siebert T [8]	2012, Slovakia	M	53-years old	Extraction	Pain & request for extraction of an upper impacted third molar	Left erupted Maxillary second molar with an impacted third molar
Sagar Khanna, Simarpreet Virk Sandhu, Himanta Bansal, Vijaypal Khanna [9]	2011, India	F	47-years old	Extraction	Extraction & Fabrication of a complete denture	Left erupted Maxillary second molar with an impacted third molar
Sagar Khanna, Simarpreet Virk Sandhu, Himanta Bansal, Vijaypal Khanna [9]	2011, India	F	47-years old	Extraction	Extraction & Fabrication of a complete denture	Left erupted Maxillary second molar with an impacted third molar
V Bellapu, S Nagarakanti [4]	2009, India	F	35-years old	Extraction	Pain	Right erupted Maxillary second molar with an impacted third molar
Gernhofer KJ [10]	2009, USA	M	30-years old	Extraction	Request for extraction of wisdom teeth	Right erupted Maxillary second molar with an impacted third molar
Badjate SJ, Cariappa KM [11]	2008, India	M	39-years old	Extraction	Referred for extraction of a submerged and decayed maxillary left second molar	Left submerged Maxillary second molar with an impacted third molar
Gunduz K, Sumer M, Sumer AP, Gunhan O [12]	2006, Turkey	M	21-years old	Extraction	Pain	Right impacted Mandibular third molar with an impacted supernumerary fourth molar
Romito L [13]	2004, USA	M	62-years old	Extraction	Comprehensive dental care	Right erupted Maxillary second molar with an impacted third molar