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A case report of incidental finding of concrescence teeth on a panoramic radiograph as a complication of impacted maxillary third molar

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ABSTRACT

Objectives: Concrescence is a rare dental developmental anomaly where two fully formed teeth are fused by cementum. It often occurs in the maxillary posterior region and may lead to tooth impaction. This case report presents an incidental radiographic finding of a concrescence related to maxillary third molar (M3) impaction.

root of tooth 27.

Conclusion: Concrescence is a rare case of anomaly and can occur in an impacted M3 tooth, and Concrescence is suspected as the main cause of the tooth not being erupted/impacted.

Case Report: A 72-year-old woman presented with a panoramic radiograph referral for mandibular denture placement with a clinical diagnosis of missing teeth in the right and left mandibular regions. On the panoramic radiograph, the impacted root of tooth 28 was seen, fused with the

Keywords: Concrescence, maxillary molar tooth impaction, panoramic radiography

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INTRODUCTION

An impacted tooth is a tooth that is partially or completely not erupted properly or does not reach the position of the tooth in general. This condition can be caused by the position being covered by other teeth, bone, or surrounding soft tissue that obstructs and prevents the tooth from erupting further.^{1,2} The prevalence of impacted teeth, especially third molar teeth (M3), occurs in 73% of all young adult populations in Europe, and generally occurs in the age group of 17 to 21 years.^{3,4} The prevalence of this incident from several studies is said to depend on several things, including race, population diet, chewing techniques, and genetics.^{5,6,7}

The cause of impaction in M3, based on some literature, is said to be that the size of the jaw, in this case the maxilla and mandible, is too small so that it cannot accommodate the number of existing teeth.⁸ The reduction in the long dimension of the jaw, based on research conducted in Europe, England, Ireland, the US and Canada, explained that the provision and type of infant food, eating habits and chewing methods that develop during childhood, the type of sweet foods that are often consumed during childhood and adolescence result in a smaller proportion of the jaw than the

proportion of humans in the previous period.⁹ Other studies also explain that the cause of impaction of the third molar can be local factors.^{10,11} Local factors referred to here are in the form of other conditions, such as the presence of dental anomalies or lesions around the teeth that are not erupted.¹¹

Dental anomalies are conditions where there is a discrepancy from what is known as normal. Epithelial and mesenchymal disorders are the main causes of these abnormalities, which alter normal odontogenesis, leading to dental anomalies. Dental anomalies depend on the stage of development.^{12,13} Dental developmental anomalies are classified according to their abnormalities in number, shape, color, structure, texture, eruption, exfoliation, and position.¹³ Generally, dental anomalies cause aesthetic problems and functional disturbances in the jaws.^{14,15} Disturbances during tooth development can cause variations in the number of teeth, such as agenesis/supernumerary teeth, their size and shape, and changes in tooth position.^{16,17} Anomalies can be congenital, developmental, or acquired. Congenital abnormalities can be genetically inherited, and developmental abnormalities occur during the formation of the

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dentition. In contrast, acquired abnormalities result from tooth changes after normal formation.¹⁸

Concrescence is a rare developmental anomaly where two fully formed teeth are fused along the root surface by cementum. Concrescence is formed due to atrophy of the periodontal ligament tissue, which makes the position of the tooth very close to the bone or other teeth. This situation is common in unerupted teeth. The absence of interdental bone and reduced functional stimulus from the periodontal tissue can lead to fusion of the cementitious appositional layer between the roots of the teeth.¹⁹ The incidence of concrescence is reported to be highest in asymptomatic maxillary posterior teeth.²⁰ The main radiologic feature of concrescence is the absence of periodontal ligament space in adjacent teeth.²¹

The purpose of this case report is to report the incidental finding of a concrescence causing impaction of tooth M3 in the maxilla.

CASE REPORT

A 72-year-old female patient was referred to

the Radiology Department of RSGM Padjadjaran University, Bandung, for panoramic imaging as part of a pre-denture assessment. Clinical examination revealed no intraoral abnormalities. On intraoral examination, tooth 28 was clinically missing, yet the patient denied any history of extraction in that region.

Radiographic evaluation showed that tooth 28 was horizontally impacted in the maxillary arch, with its crown pointing distally and its root approximated toward the mesial aspect. Tooth 27 exhibited normal morphology and alignment, but radiographically, the distal root of tooth 27 appeared to be fused with the mesial root of tooth 28 via a continuous periodontal membrane, suggestive of concrescence. The lack of a clear periodontal ligament space between the roots confirmed the radiologic diagnosis. There was no evidence of sinus approximation or periapical pathology associated with either tooth. The mandibular arch revealed generalized anodontia, with the exception of teeth 41 and 32.

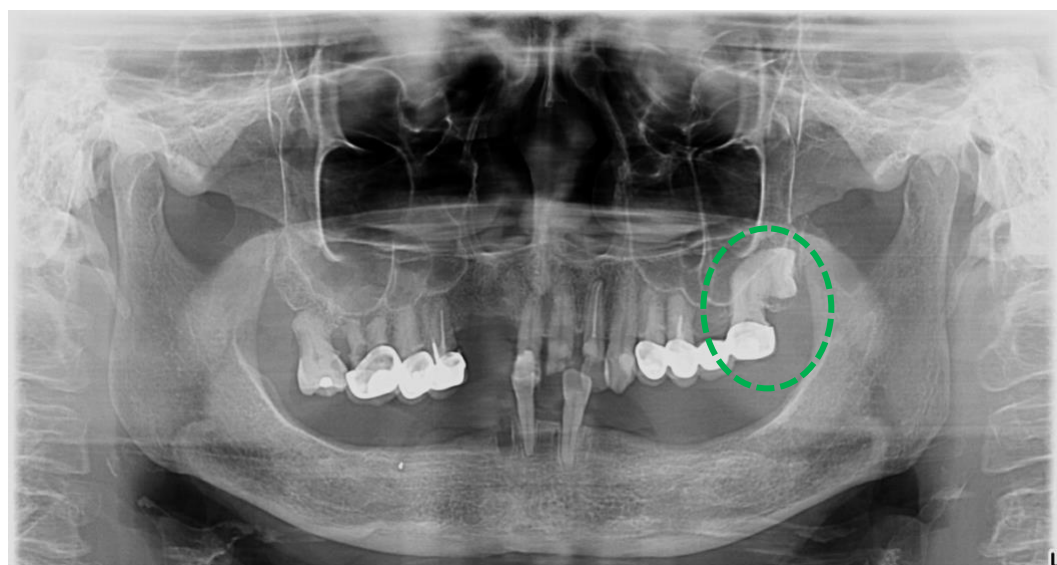


Figure 1. Incidental finding of concrescence on a panoramic radiograph involving the impaction of tooth 28. The root of tooth 28 appears to be fused with the root of tooth 27 (dashed green circle)

DISCUSSION

Altered morphology of teeth can be caused by genetic disturbances in the process of odontogenesis. Developmental alteration in a variety of shape anomalies, one of which is concrescence.²²

Concrescence is a rare developmental anomaly in which two fully formed teeth are fused along the root surface by cementum, without dentin meeting. Concrescence may occur in teeth that were originally separated, where cementum deposition spans two teeth whose roots are in close proximity.²³ Concrescence is classified as true concrescence when it occurs during tooth development and as acquired concrescence when it occurs after tooth formation is complete and forms between two fully formed teeth.²⁴

The pattern of concrescence development often involves the maxillary second molar (M2), where the root is adjacent to the maxillary third molar (M3) impaction tooth.²⁵ In this case, it appears that the root of tooth 27 (M2) is adjacent to the root of tooth 28 (M3), consistent with the report by Vishal et al. (2017), who described a concrescence between a fully erupted M2 and an impacted M3, where the root of the impacted M3 was perpendicular to the root of the M2.²⁶ Several studies have reported that the highest prevalence of concrescence occurs in the posterior maxilla, particularly involving the maxillary molars (M2 and M3).²⁷

Concrescence is often discovered as an incidental finding during radiographic examinations, particularly in asymptomatic cases without clinical signs.^{21,27} Dargue (2017) and Palermo et al. (2016)

also reported cases where concrescence was only identified through panoramic radiographs, without clinical suspicion.^{22,27} This highlights the diagnostic challenges of concrescence and the importance of radiographic imaging in early detection and treatment planning.

The etiology of concrescence is still "unknown," but several studies revealed that there are several strong suspicions of concrescence, influenced by crowding of the dental arch, chronic irritation due to caries, movement of the orthodontic process, rapid and excessive, and trauma, causing resorption of interdental-alveolar bone between two fully formed teeth and fusion due to cementum layer deposition.^{28,29}

Detection of concrescence is very important, but detecting concrescence clinically is almost impossible.^{3,11} and imaging examination also has major limitations, namely, not always being able to distinguish between concrescence and adjacent teeth/superimpose and overlap.¹⁸ When concrescence is suspected radiographically, additional projections in different angles can be made in order to distinguish between these conditions, as well as for the purpose of confirming the diagnosis to obtain more effective treatment planning.¹⁸ The use of CBCT in determining the diagnosis of concrescence is better than plain radiographs.²² This is in line with a case reported by Ali Zakir Syed (2016), a case of concrescence involving mandibular tooth M3, using CBCT as an imaging modality in diagnosis, where CBCT is effective in capturing 3D images so that it can consider the approximation of concrescence to the inferior canalis alveolaris.³⁰

Radiographically, the pulp chamber and root canal of a concrescence tooth appear separated, which may occur during or after root formation.²⁸ A typical radiographic feature of concrescence is the absence of periodontal ligament space in adjacent teeth.²²

CONCLUSION

This case highlights an incidental finding of concrescence as a complication of maxillary third molar (M3) impaction, identified via panoramic radiograph. Concrecence, a rare developmental anomaly involving cemental fusion of adjacent tooth roots, can prevent normal eruption and contribute to impaction. In this case, concrescence between tooth 27 (M2) and the horizontally impacted tooth 28 (M3) was detected radiographically without any clinical symptoms.

Panoramic imaging played a key role in identifying this condition incidentally, underlining its importance as a diagnostic tool in pre-prosthetic assessments. Recognition of such dental anomalies is essential for planning appropriate treatment and avoiding complications during extractions or prosthodontic procedures. Clinicians should consider concrescence as a differential diagnosis in cases of unerupted maxillary molars and be aware of the radiographic indicators, such as loss of the periodontal ligament space between roots.

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FOOTNOTES

All authors have no potential conflict of interest to declare for this article. All procedures conducted were in accordance with the ethical standards.

REFERENCES

1. Santosh P. Impacted mandibular third molars: Review of literature and a proposal of a combined clinical and radiological classification. *Ann Med Health Sci Res.* 2015;5(4):229-234. <https://doi.org/10.4103/2141-9248.160177> [PMID: 26229709]
2. Janakiraman EN, Alexander M, Sanjay P. Prospective analysis of frequency and contributing factors of nerve injuries following third-molar surgery. *J Craniofac Surg.* 2010;21(3):784-6. <https://doi.org/10.1097/SCS.0b013e3181d7f29a> [PMID: 20485048]
3. Matsuyama J, Kinoshita-Kawano S, Hayashi-Sakai S, Mitomi T, Sano-Asahito T. Severe impaction of the primary mandibular second molar accompanied by displacement of the permanent second premolar. *Case Rep Dent.* 2015;2015:582462. <https://doi.org/10.1155/2015/582462>. [PMID: 25810929; PMCID: PMC4355565.]
4. Abu-Hussein M, Nezar W. Prevalence of impacted mandibular third molars in population of Arab Israeli: a retrospective study. *IOSR J Dent Med Sci.* 2016 Jan;15(1):80-9. <https://doi.org/10.9790/0853-15178089>
5. Carvalho RWF, do Egito Vasconcelos BC. Assessment of factors associated with surgical difficulty during removal of impacted lower third molars. *J Oral Maxillofac Surg.* 2011 Nov;69(11):2714-21. <https://doi.org/10.1016/j.joms.2011.02.097>. [PMID: 21752507.]
6. Hashemipour MA, Tahmasbi-Arashlow M, Fahimi-Hanzaei F. Incidence of impacted mandibular and maxillary third molars: a radiographic study in a Southeast Iran population. *Med Oral Patol Oral Cir Bucal.* 2013 Jan 1;18(1):e140-5. <https://doi.org/10.4317/medoral.18028>. [PMID: 23229243; PMCID: PMC3548666.]
7. Kumar VR, Yadav P, Kahsu E, Girkar F, Chakraborty R. Prevalence and pattern of mandibular third molar impaction in Eritrean population: a retrospective study. *J Contemp Dent Pract.* 2017 Feb 1;18(2):100-6. <https://doi.org/10.5005/jp-journals-10024-1998>. [PMID: 28174361.]
8. Nagaraj T, Balraj L, Irugu K, Rajashekamurthy S, Sreelakshmi. Radiographic assessment of distribution of mandibular third molar impaction: a retrospective study. *J Indian Acad Oral Med Radiol.* 2016 Apr-Jun;28(2):145-9. <https://doi.org/10.4103/0972-1363.191525>.
9. Ajith SD, Shetty S, Hussain H, Nagaraj T, Srinath M. Management of multiple impacted teeth: a case report and review. *J Int Oral Health.* 2014 Jun;6(3):93-8. [PMID: 25083041; PMCID: PMC4109248.]
10. Szubert P, Jankowski M, Krajczyk M, Jankowska-Wikl J, Sokalski J. Analysis of predisposing factors for complications after surgical removal of mandibular wisdom teeth. *Dent Forum.* 2015;43(1):45-51
11. Sigron GR, Pourmand PP, Mache B, Stadlinger B, Locher MC. The most common complications after wisdom-tooth removal: part 1: a retrospective study of 1,199 cases in the mandible. *Swiss Dent J.* 2014;124(10):1042-56. <https://doi.org/10.61872/sdj-2014-10-01> [PMID: 25342545.]
12. Sella Tunis T, Sarne O, Hershkovitz I, Finkelstein T, Pavlidi AM, Shapira Y, Davidovitch M, Shpack N. Dental anomalies' characteristics. *Diagnostics (Basel).* 2021 Jun 25;11(7):1161. <https://doi.org/10.3390/diagnostics11071161>. [PMID: 34202064; PMCID: PMC8304734.]
13. Fekonja A. Prevalence of dental developmental anomalies of permanent teeth in children and their influence on esthetics. *J Esthet Restor Dent.* 2017 Jul;29(4):276-83. <https://doi.org/10.1111/jerd.12302>. [PMID: 28509361.]
14. Jahanmoghadam F. Dental anomalies: an update. *Adv Hum*

- Biol. 2016;6(3):112. <https://doi.org/10.4103/2321-8568.195316>
15. Mohapatra A, Prabhakar AR, Raju OS. An unusual triplication of primary teeth – a rare case report. *Quintessence Int.* 2010 Nov-Dec;41(10):815-20. [PMID: 20927417.]
 16. Kapdan A, Kustarci A, Buldur B, Arslan D, Kapdan A. Dental anomalies in the primary dentition of Turkish children. *Eur J Dent.* 2012 Apr;6(2):178-83. <https://doi.org/10.1055/s-0039-1698948>. [PMID: 22509107; PMCID: PMC3317294.]
 17. Shilpa G, Gokhale N, Mallineni SK, Nuvvula S. Prevalence of dental anomalies in deciduous dentition and its association with succedaneous dentition: a cross-sectional study of 4180 South Indian children. *J Indian Soc Pedod Prev Dent.* 2017 Jan-Mar;35(1):56-62. <https://doi.org/10.4103/0970-4388.199228>. [PMID: 28217542.]
 18. Mohan B. Hypercementosis and concrescence of maxillary second molar with third molar: a case report and review of literature. *Oral Health Dent Manag.* 2014 Jun;13(2):558-61. [PMID: 24984682.]
 19. Consolaro A, Hadaya O, Miranda DAO, Consolaro RB. Concrecence: can the teeth involved be moved or separated?. *Dental Press J Orthod.* 2020 Jan-Feb;25(1):20-5. <https://doi.org/10.1590/2177-6709.25.1.020-026.oim>. [PMID: 32215473; PMCID: PMC7077949.]
 20. Meisha DE. Coincidence of fusion and concrecence in mandibular deciduous incisors: a case report. *J Contemp Dent Pract.* 2019 Dec 1;20(12):1466-1469. <https://doi.org/10.5005/jp-journals-10024-2695>. [PMID: 32381851].
 21. Puttaswamy S, Prasad D, Shameer MCP. Concrecence of teeth: cemented union between the permanent central incisors and associated gingival biotype: a case report. *IOSR J Dent Med Sci.* 2018;17(6):19-21. <https://doi.org/10.9790/0853-1706121921>.
 22. Palermo D, Davies-House A. Unusual finding of concrecence. *BMJ Case Rep.* 2016 Mar 23;2016:bcr2016244597. <https://doi.org/10.1136/bcr-2016-214597>. [PMID: 27009135; PMCID: PMC4823527]
 23. Neville BW, Damm DD, Allen CM, Chi AC. *Oral and maxillofacial pathology.* 4th ed. St. Louis: Saunders; 2015
 24. Tapadiya V, Ramanojam S, Gelada K, Sethi S, Oswal N. Concrecence of erupted second molar and impacted third molar: a rare case report. *IOSR J Dent Med Sci.* 2017;16(4):74-6. <https://doi.org/10.9790/0853-1604067476>.
 25. White SC, Pharoah MJ. *Oral radiology: principles and interpretation.* 7th ed. St. Louis: Elsevier Health Sciences; 2014. p. 582, 588.
 26. Langthasa M, Das SJ, Khandelwal P. Concrecence: an enigma of root anomaly. *Int J Curr Res.* 2020;12(7):12705-7 <https://doi.org/10.24941/ijcr.39195.07.2020>
 27. Dargue A. "Acquired" concrecence causing surgical complications – a report of two cases. *Oral Surg.* 2017;10(4):e92-e97. <https://doi.org/10.1111/ors.12288>
 28. Meisha DE. Coincidence of Fusion and Concrecence in Mandibular Deciduous Incisors: A Case Report. *J Contemp Dent Pract.* 2019;20(12):1466-9. <https://doi.org/10.5005/jp-journals-10024-2695>
 29. Ghom AG, Ghom SA. *Textbook of Oral Radiology.* 2nd ed. Elsevier; 2016. p.570-1.
 30. Syed AZ, Alluri LC, Mallela D, Frazee T. Concrecence: Cone-Beam Computed Tomography Imaging Perspective. *Case Rep Dent.* 2016;2016:8597872. <https://doi.org/10.1155/2016/8597872>