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A rare case of fusion between a third molar and a distomolar: case report

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Abstract

Fusion between a tooth and a supernumerary one that involves the union of two distinct tooth germs into a single with an enlarged dental structure. This case reports the endodontic treatment of a fusion involving a third molar and a supernumerary tooth (distomolar) in the left mandibular region of a 46-year-old female. This condition presented significant diagnostic and clinical challenges due to its atypical crown anatomy, two distinct pulp chambers, and morphological complexities that complicate traditional access and preparation. The diagnosis relied on comprehensive clinical examination and conventional radiographic analysis and the cone beam computed tomography, emphasizing the clinician's skill in interpreting subtle findings. Non-surgical endodontic therapy was planned, executed in two sessions, with the use of the Logic 2 (25.05) nickel-titanium rotary instruments and an extensive irrigation protocol using 5.25% sodium hypochlorite and 17% EDTA under active ultrasonic agitation. A key element of success was the consistent use of an operating microscope (20x magnification), which was instrumental in refining access, navigating complex anatomy, and ultimately confirming the presence of five distinct root canals. Tri-dimensional canal sealing was achieved with Tagger's Hybrid technique. This meticulous approach resulted in the functional maintenance of the tooth for over five years, showing that despite rare and complex morphological variations, advanced technological aids and thorough clinical expertise are paramount for achieving successful, long-term outcomes in endodontic treatment.

Keywords: fusion, gemination, dental anomalies, root canal treatment

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Редкий случай сращения третьего моляра и дистомоляра: описание клинического случая

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Резюме

Сращение зуба с сверхкомплектным зубом представляет собой объединение двух отдельных зачатков в единый, увеличенный зубной орган. В данном случае описан эндодонтический метод лечения сращения третьего моляра с сверхкомплектным зубом (дистомоляром) в левой нижней челюсти

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у 46-летней женщины. Эта патология создала значительные диагностические и клинические трудности из-за атипичной анатомии коронки, наличия двух отдельных пульпарных камер и морфологических особенностей, усложняющих традиционный доступ и подготовку. Диагностика основывалась на комплексном клиническом осмотре, конвенциональной рентгенографии и конусно-лучевой компьютерной томографии (СВСТ), что потребовало высокой квалификации врача в интерпретации тонких признаков. Планировалась несхирургическая эндодонтическая терапия, выполненная в два этапа с использованием никель-титановых вращающихся инструментов Logic 2 (25.05) и обширного протокола орошения 5,25% гипохлоритом натрия и 17% ЭДТА под активным ультразвуковым воздействием. Ключевым элементом успеха стало постоянное использование операционного микроскопа (увеличение $\times 20$), что позволило уточнить доступ, навигацию по сложной анатомии и подтвердить наличие пяти отдельных корневых каналов. Трехмерное пломбирование каналов было выполнено по гибридной технике Тэггера. Такой тщательный подход обеспечил функциональное сохранение зуба более пяти лет, демонстрируя, что при редких и сложных морфологических вариациях современные технологические средства и высокая клиническая квалификация являются решающими для достижения успешных долгосрочных результатов эндодонтического лечения.

Ключевые слова: сращения зубов, геминация, зубные аномалии, лечение корневых каналов

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INTRODUCTION

The success of endodontic therapy is directly related to a thorough understanding of dental anatomy and the proper execution of chemical-mechanical preparation, both of which are essential for achieving effective treatment [1; 2]. Geminated and fused teeth pose significant challenges for endodontists due to their anatomical variations and morphological complexities, which hinder access, preparation, and obturation of root canals. These conditions, although rare, have important clinical implications and demand a careful and detailed approach to ensure a favorable prognosis [1–4].

Fusion and gemination anomalies develop during the morphodifferentiation of odontogenesis, and their etiology remains unclear. Studies suggest that both hereditary and local factors may act as triggering agents [1; 3; 5]. Fusion is defined as the union of two distinct dental germs into a single tooth, resulting in a lower total tooth count in the arch, except in cases of fusion with supernumerary teeth. Conversely, gemination occurs as a partial or incomplete division of a single germ, typically forming an enlarged tooth with a bifid crown and shared canals or roots, without affecting the total tooth count in the arch [3].

Differentiating between fusion and gemination can be challenging, especially when fusion occurs between a normal tooth and a supernumerary tooth, since the total tooth count in the arch remains unchanged. In such cases, the use of radiographic exams to analyze root morphology, pulpal chamber, and root canals is essential for an accurate diagnosis [6; 7]. Studies report that these conditions are more commonly found in deciduous teeth of the anterior region, with posterior and permanent teeth being affected much more rarely [1; 4].

These anomalies can lead to clinical consequences, including plaque accumulation in irregular areas, increased risk of caries, pathological resorption, and

even occlusal issues, often resulting in severe dental crowding [8]. Thus, early diagnosis plays a critical role in prevention and treatment planning [2; 4; 5].

Finally, it is essential to emphasize that the operating microscope is a valuable tool for diagnosing and managing challenging cases like this, providing a detailed view and aiding in the identification of complex anatomical structures. The literature strengthens the importance of interdisciplinary management to minimize complications and deliver effective clinical outcomes for patients with dental anomalies of this magnitude [2; 4; 5].

Thus, the aim of the present case is to report the endodontic treatment of a fusion involving a third molar and a supernumerary tooth (distomolar), located in the left mandibular region, wherein all available endodontic resources were employed for achieve the successful treatment, restoring the tooth's health and function, and thereby contributing to the patient's quality of life.

CASE REPORT

A 46-year-old female patient visited the dental office for evaluation after consulting with three other professionals, complaining of pain and difficulty chewing on the left side of her dental arch. The patient reported that both complaints were associated with leakage in amalgam restorations caused by carious lesions in tooth 38. Clinical examination revealed an atypical crown anatomy in the affected tooth, characterized by an additional central groove extending from the cemento-enamel junction on the buccal surface, crossing the entire crown, and reaching the lingual surface. This feature gave the tooth the appearance of a distinct second crown (Fig. 1, A).

Cold sensitivity tests using refrigerant gas (Endo-Ice, Maringá, Brazil) and horizontal and vertical percussion tests were performed. Based on the results, necro-

sis in the affected tooth was confirmed. Radiographic analysis showed the presence of three wide root canals and two distinct pulp chambers, each corresponding to separate portions of the divided crown, highlighting the anatomical complexity of the case (Fig. 1, B).

Given the suspicion of a dental anomaly involving fusion, it was hypothesized that the anatomical division observed in tooth 38 may be associated with alterations during odontogenic development. After completing the clinical and radiographic evaluations, a diagnosis was made of fusion between a permanent tooth and a supernumerary tooth. Considering the patient's desire to preserve the tooth and its satisfactory clinical conditions, a conservative treatment plan was proposed, including non-surgical endodontic therapy, aided by operative microscopy, rotary instrumentation, thermoplastic gutta-percha obturation, restorative reconstruction, and periodical follow-ups. The two-session treatment plan was designed for greater efficacy and control.

First Session: Local anesthesia was administered with 4% articaine with 1:100,000 epinephrine (DFL, Rio de Janeiro, Brazil), followed by surgical access. Initially, all carious tissue was removed using a #4 spherical bur (Dentsply, Petrópolis, Brazil) at low speed. The pulp chamber was accessed with a 1557 bur (FKG Dentaire, La-Chaux-de-Fonds, Switzerland). During the procedure, a crown-lengthening surgery was required on the buccal and distal surfaces, with the buccal wall reconstruction with Z350 composite resin (3M, Sumaré, SP, Brazil). The tooth was then isolated, and access was refined using an operating microscope with 20x magnification (Aliance, São Paulo, SP, Brazil), an Endo-Z bur (Angelus, Londrina, PR, Brazil), and E2D ultrasonic tips

(Helse, São Paulo, SP, Brazil). The patient was instructed to return in 15 days for the completion of treatment.

Second Session: Instrumentation of the root canals was performed using the crown-down technique with nickel-titanium Logic 25.05 rotary instruments (Easy-Bassi, Belo Horizonte, Brazil). The irrigation protocol involved active ultrasonic agitation using EasyClean files (Easy-Bassi, Belo Horizonte, MG, Brazil) with the following sequence: three cycles of 5.25% sodium hypochlorite (NaOCl) activation for 20 seconds each, followed by three cycles of 17% EDTA activation for 20 seconds, and concluding with three additional cycles of NaOCl activation, totaling 120 mL of NaOCl and 20 mL of EDTA. Throughout the procedure, the root canal system was continuously assessed under the operating microscope, ensuring precision and safety (Fig. 2, A).

The anatomy, including the presence of five root canals, was confirmed through digital radiography, followed by the adaptation of gutta-percha cones (Fig. 2, B). Subsequently, the canal system was obturated using the thermoplastic gutta-percha hybrid technique by Tagger (Fig. 2, C). The tooth was temporarily sealed with glass ionomer cement (FGM, Joinville, SC, Brazil), and the completion of the endodontic treatment was documented with a final radiograph (Fig. 2, D).

The patient was informed of the importance of periodic dental checkups to monitor the case and prevent future complications, potentially involving an interdisciplinary approach when necessary. The unique anatomy of the affected tooth underscores the importance of clinical and technological expertise to handle uncommon yet clinically challenging cases.

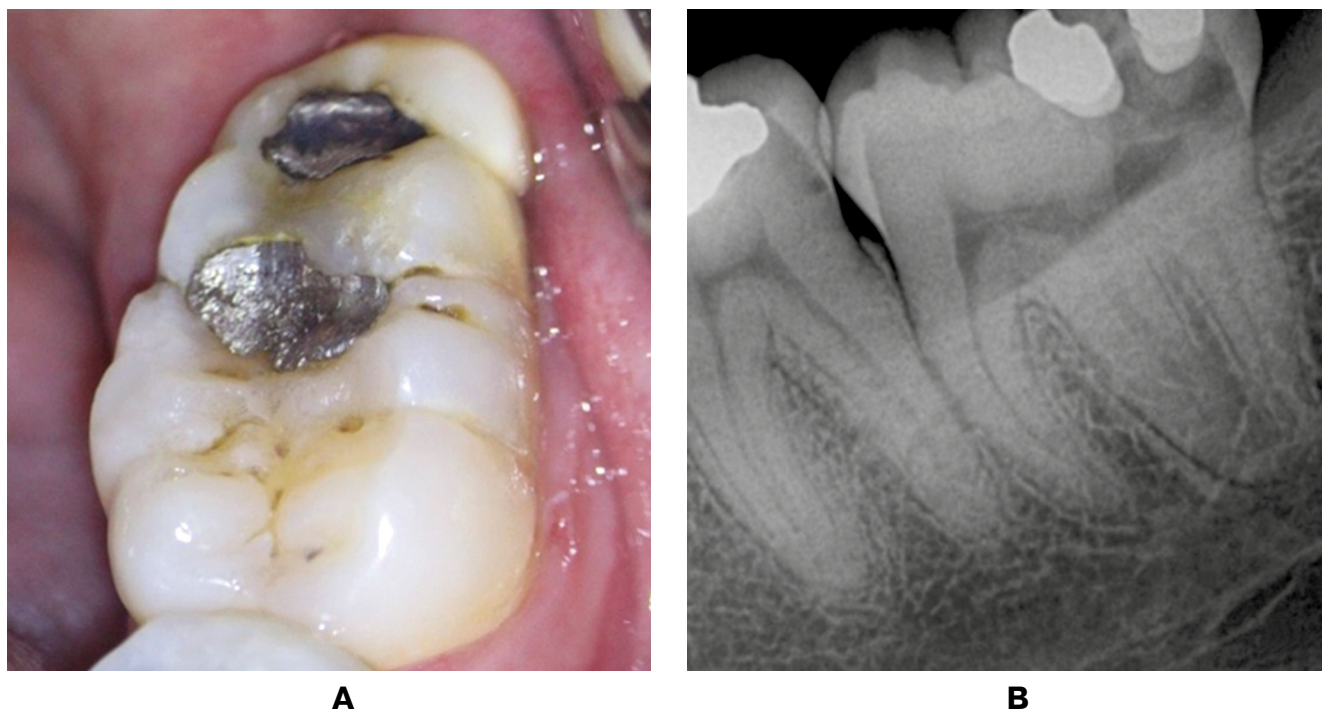


Fig. 1. Third molar and a supernumerary tooth (distomolar): A – clinical image; B – periapical radiograph

Рис. 1. Третий моляр с сверхкомплектным зубом (дистомоляром): А – клиническое изображение; В – прицельная рентгенограмма

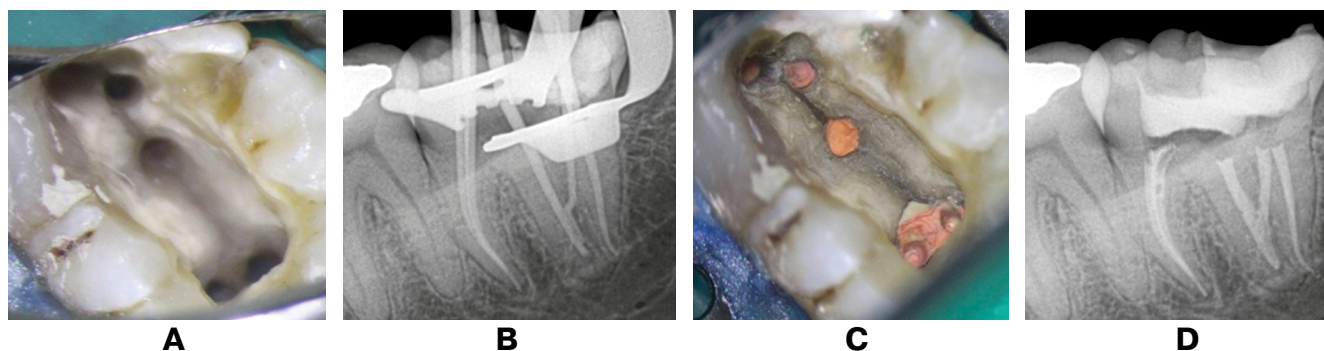


Fig. 2. Treatment stages: A – image of the interior of the pulp chamber using the operating microscope; B – cone fitting test showing the 5 root canals on the digital radiograph; C – thermoplastic obturation of the fused tooth; D – Final radiograph of the endodontic treatment

Рис. 2. Этапы лечения: А – изображение внутренней части пульповой камеры, полученное с помощью операционного микроскопа; В – тест на соответствие конуса, показывающий 5 корневых каналов на цифровом рентгеновском снимке; С – термопластическая obturation сросшегося зуба; D – заключительный рентгеновский снимок эндодонтического лечения

DISCUSSION

Dental developmental anomalies are multifaceted conditions resulting from complex interactions between hereditary factors and local influences during odontogenesis. These morphological variations, such as fusion and gemination, can occur in both primary and permanent dentition and are classified based on their stage of formation. Fusion, for instance, is characterized by the union of two contiguous tooth germs and may be categorized as complete, involving both the root and the crown, or incomplete, restricted to the crown only [2; 3; 5; 9; 10]. The diverse presentation of these anomalies requires in-depth understanding for accurate diagnosis and appropriate treatment planning, as their exact etiology remains unclear, with evidence pointing to a combination of genetic and environmental factors [1; 8].

The clinical differentiation between fusion and gemination, although these are distinct anomalies, often presents a challenge, particularly when fusion occurs between a permanent tooth and a supernumerary tooth since the normal tooth count in the arch remains unaltered. While gemination typically displays two crowns joined by a common root, dental fusion tends to present an enlarged crown, which may have one or two roots and distinct pulp chambers [2; 3; 5].

The presented case report describes a fusion between a third molar and a supernumerary tooth (distomolar), that validates the diagnostic difficulties highlighted in the literature. A detailed clinical evaluation, complemented by thorough imaging exams, was crucial for accurately differentiating these two anomalies and achieving a conclusive diagnosis [6; 7]. For this reason, radiographic analysis focusing on aspects such as the number and morphology of roots, the pulp chamber, and pulp horns becomes a fundamental pillar for diagnostic confirmation [1].

Failure to identify and delays in treating these anomalies can lead to severe complications in dental development, including plaque accumulation due to irregular morphology, a predisposition to carious lesions, and oc-

clusal alterations that result in dental crowding [1; 8]. The atypical morphology of these conditions creates niches that are difficult to access for oral hygiene, making the patient more vulnerable to inflammatory and infectious processes. In this context, cone-beam computed tomography (CBCT) emerges as a highly valuable diagnostic tool, providing detailed three-dimensional information that cannot be obtained with conventional radiography and is essential for precise treatment planning [2; 4; 5; 9]. However, in the reported case, the patient's financial constraints precluded the use of CBCT, and the diagnosis was established through conventional clinical and radiographic exams, highlighting the importance of the clinician's skill in interpreting less advanced findings.

The occurrence of fusion in molars is particularly rare, affecting between 0.5% and 1% of the general population and, even more specifically, only 0.05% to 0.2% of permanent teeth [11]. Such anomalous teeth may compromise esthetics, masticatory function, and lead to orthodontic and periodontal issues, emphasizing the relevance of this case report to the dental literature, as cases involving third molars fused with supernumerary teeth are even more unique. Endodontic management of teeth with morphological anomalies is inherently challenging, as their anatomical complexities can hinder access, proper chemical-mechanical preparation, and complete obturation of the root canal system [2; 4; 5; 12]. The variation in the number of canals, their atypical configurations, and the presence of isthmuses and branches demand refined techniques and the use of technologies that aid in visualization and instrumentation. However, efficient cleaning of the root canal system is directly proportional to the predictability and long-term success of the treatment.

The successful outcome in this challenging reported case of fusion underscores the integration of advanced technologies, particularly the operating microscope, proved instrumental from initial access refinement to the confirmation of five distinct root canals, a number often difficult to discern with conventional methods [2; 4; 5].



Fig. 3. Periapical radiograph showing the fused tooth after five years of treatment

Рис. 3. Периапикальный рентгеновский снимок, показывающий сросшийся зуб через пять лет после лечения

This enhanced visualization facilitated precise chemical-mechanical preparation using nickel-titanium rotary instruments via the Logic 2 25.05 crown-down technique, paramount for thorough debridement in atypical canal systems [1].

Furthermore, the robust irrigation protocol, featuring active ultrasonic agitation with 5.25% NaOCl and 17% EDTA, ensured comprehensive disinfection of the intricately shaped root canal system, mitigating risks associated with residual microbial load [12]. The thermoplastic gutta-percha hybrid technique by Tagger then provided dense, three-dimensional obturation, crucial for long-term sealing in aberrant anatomies. This comprehensive approach, combining high-magnification optics with sophisticated instrumentation and disinfection strategies, directly contributed to the tooth's functional maintenance over five years, validating its efficacy in preserving teeth with rare morphological alterations [5] (Fig. 3).

CONCLUSION

This case report highlights the complexity of endodontic treatment in a rare case of fusion involving a third molar and a supernumerary tooth. It is concluded that the management of morphologically complex dental anomalies requires careful planning and the use of advanced technology. Such approaches are essential to ensure clinical success and the long-term functional maintenance of the tooth.

REFERENCES / СПИСОК ЛИТЕРАТУРЫ

1. Pandya-Sharpe A., Puryer J. A geminated mandibular second molar – A case report. *Reports*. 2021;4(4):31. <https://doi.org/10.3390/reports4040031>
2. Wu W., Chen S., Chen P., Chen M., Yang Y., Gao Y. et al. Identification of Root canal morphology in fused-rooted mandibular second molars from X-ray images based on deep learning. *J Endod*. 2024;50(9):1289–1297.e1. <https://doi.org/10.1016/j.joen.2024.05.014>
3. Sandeep S., Kumar G.J., Potdar S., Bhanot R., Vathare A.S., Tiwari R.V.C., Harshitha B. Rare case of gemination of mandibular third molar – A case report. *J Family Med Prim Care*. 2020;9(5):2577–2579. https://doi.org/10.4103/jfmpc.jfmpc_117_20
4. Toplu D., Keleş A., Keskin C. Influence of root fusion on canal orifice configuration, lateral anatomy, isthmus formation, and apical morphology in maxillary second molars: a micro-CT analysis. *Odontology*. 2025. <https://doi.org/10.1007/s10266-025-01255-6>
5. Over L.M., Sadowsky S.J., LeMert S., Dryden M. Interdisciplinary treatment for an adolescent with fusion of the left maxillary lateral and central incisors: A clinical report. *J Prosthet Dent*. 2025;134(4):875–878. <https://doi.org/10.1016/j.prosdent.2023.11.013>
6. El Backly R.M., Kotry G.S., Moussa H. Multidisciplinary management of a fused maxillary incisor: Case report with 5-year follow-up. *Clin Case Rep*. 2020;9(2):775–786. <https://doi.org/10.1002/ccr3.3629>
7. Badole G.P., Shenoi P.R., Parlikar A. Endodontic management of central incisor associated with large periapical lesion and fused supernumerary root: a conservative approach. *Restor Dent Endod*. 2018;43(4):e44. <https://doi.org/10.5395/rde.2018.43.e44>
8. Nandini D.B., Deepak B.S., Singh D.N., Aparnadevi P. Bilateral gemination of permanent maxillary canine with labial and palatal talon's cusps: A rare entity. *J Oral Maxillofac Pathol*. 2021;25(Suppl. 1):S71–S75. https://doi.org/10.4103/jomfp.JOMFP_118_20
9. Godoy A.B., Maia I.M.S., Godoy E.P., Cruz R.K.S. Included third molar fused with supernumerary: Case report. *Res Soc Dev*. 2021;10(9):e52310918303. <https://doi.org/10.33448/rsd-v10i9.18303>
10. Pinto Resende M.A., de Almeida Francisquini I., Souza Picorelli Assis N.M., Salles Sotto-Maior B. Distomolar fusional a terceiro molar superior incluso: relato de caso clínico. *HU Rev*. 2020;46:1–6. <https://doi.org/10.34019/1982-8047.2020.v46.28918>
11. Syriac G., Joseph E., Rupesh S., Philip J., Cherian S.A., Mathew J. Prevalence, characteristics, and complications of supernumerary teeth in nonsyndromic pediatric population of South India: A clinical and radiographic study. *J Pharm Bioallied Sci*. 2017;9(Suppl. 1):S231–S236. https://doi.org/10.4103/jpbs.JPBS_154_17
12. Bhandi S., Mashyakhy M., Abumelha A.S., Alkahtany M.F., Jamal M., Chohan H. et al. Complete obturation-cold lateral condensation vs. thermoplastic techniques: a systematic review of Micro-CT Studies. *Materials*. 2021;14(14):4013. <https://doi.org/10.3390/ma14144013>

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