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CASE REPORT

Traumatic bone cyst: a clinical case report

Rafaela Riboli[1], Carolina Telles Simioni[2], Renato Sawazaki[3], Juliane Bervian[2]

Abstract:

The traumatic bone cyst is a benign, non-neoplastic, non-epithelial-lined intraosseous cavity, usually diagnosed incidentally during routine radiographic examinations, particularly in young patients. This article reports the case of a 12-year-old male patient in whom a radiolucent image was identified in the mandibular symphysis region during orthodontic assessment. The lesion was asymptomatic, presenting no significant clinical abnormalities, and pulp vitality of the mandibular incisors was confirmed. Surgical exploration revealed a cavity filled with a blood clot, and the diagnostic hypothesis was confirmed via histopathological examination. Treatment consisted of curettage of the bony walls to stimulate new bone formation - a method considered the gold standard. Radiographic follow-up showed favorable progression of tissue repair. This case underscores the importance of accurate differential diagnosis, surgical exploration for diagnostic confirmation, and postoperative monitoring - especially in the context of orthodontic planning - and tooth movement should only be initiated after complete bone healing radiographically confirmed.

Keywords: Panoramic radiography; Curettage; Traumatic bone cyst; Mandible; Case report.

Resumo:

O cisto ósseo traumático é uma cavidade intraóssea benigna, não neoplásica e sem revestimento epitelial, geralmente diagnosticada incidentalmente durante exames radiográficos de rotina, particularmente em pacientes jovens. Este artigo relata o caso de um paciente do sexo masculino, de 12 anos de idade, em quem uma imagem radiolúcida foi identificada na região da sínfise mandibular durante avaliação ortodôntica. A lesão era assintomática, não apresentava alterações clínicas significativas e a vitalidade pulpar dos incisivos inferiores estava preservada. A exploração cirúrgica revelou uma cavidade preenchida por coágulo sanguíneo, e a hipótese diagnóstica foi de cisto ósseo traumático. O tratamento consistiu na curetagem das paredes ósseas para estimular a neoformação óssea — método considerado padrão-ouro. O acompanhamento radiográfico demonstrou uma evolução favorável do reparo tecidual. Este caso ressalta a importância de um diagnóstico diferencial preciso, da exploração cirúrgica para confirmação diagnóstica e do monitoramento pós-operatório — especialmente no contexto do planejamento ortodôntico —, sendo que a movimentação dentária deve ser iniciada apenas após a completa cicatrização óssea confirmada radiograficamente.

Palavras-chave: Radiografia panorâmica; Curetagem; Cisto ósseo traumático; Mandíbula; Relato de caso.

INTRODUCTION

Traumatic bone cyst is a benign, non-neoplastic intraosseous cavity lacking an epithelial lining - thus classified as a pseudocyst - that appears radiographically as a well-defined radiolucent lesion, with a predilection for the mandibular symphysis region[1,2]. It is generally identified as an incidental radiographic finding, as the

Statement of Clinical Relevance
This report highlights the importance of adjunctive examinations during orthodontic assessment for the early diagnosis of asymptomatic bone lesions. The case also underscores the challenges of interdisciplinary decision-making, reinforcing that evidence-based diagnosis can prevent unnecessary endodontic treatments on teeth that test positive for vitality.

[1]University of Passo Fundo, Graduate Program in Dentistry – Passo Fundo (RS), Brazil.
[2]University of Passo Fundo – Passo Fundo (RS), Brazil.
[3]University of Passo Fundo, Oral and Maxillofacial Surgery and Traumatology Residency Program – Passo Fundo (RS), Brazil.
***Correspondence to:** E-mail: rafa_riboli@hotmail.com
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lesion is typically asymptomatic[3]. Since it is not of odontogenic origin, it does not compromise the dental pulp; consequently, associated teeth tend to remain vital. Prevalence is higher in males, accounting for approximately 60% of cases, and it occurs primarily during the second decade of life, between the ages of 12 and 15 years[3,4].

Diagnosis is established, in most cases, through surgical exploration combined with histopathological examination[1,2]. Despite its suggestive radiographic features, the differential diagnosis must include other radiolucent lesions of the jaws, particularly odontogenic keratocyst, unicystic ameloblastoma, and vascular lesions[1,3,4].

Treatment is considered minimally invasive and consists of surgical exploration followed by curettage of the cavity walls, aiming to induce local bleeding and stimulate new bone formation[2]. The prognosis is generally favorable, showing evidence of progressive bone repair and complete regeneration of the affected area during the follow-up period, typically ranging from 12 to 24 months[5,6].

This article aims to report a case of a traumatic bone cyst located in the mandibular symphysis region of a young patient. Its relevance lies in the incidental identification of the lesion during an orthodontic assessment, highlighting the importance of complementary imaging and an appropriate differential diagnosis for radiolucent lesions of the jaws. The case also highlights the need for a careful assessment of pulp vitality to avoid unnecessary endodontic interventions, as well as for radiographic monitoring of new bone formation prior to the initiation of orthodontic movement. This report was prepared in accordance with the recommendations of the CARE (CAse REport) guidelines[7].

CASE REPORT

A 12-year-old male patient presented to the dental clinic for orthodontic evaluation. Medical history revealed no relevant systemic conditions, and the patient had an unremarkable general health history, with no comorbidities, continuous medication use, or family history relevant to the condition presented. Regarding oral health, the patient was in the permanent dentition stage and exhibited hypomineralization of the permanent molars, with no active carious lesions. Analysis of routine radiographs revealed a radiolucent area in the mental region. The patient reported no associated symptoms or history of local trauma. Intraoral clinical examination showed no mobility of the associated teeth, periodontal changes, mucosal abnormalities, cortical expansion, or facial asymmetries. For a more detailed analysis, cone-beam computed tomography (CBCT) scan was requested, which revealed a well-defined, circular radiolucent lesion located between the mandibular incisors (teeth 31, 32, 41, and 42), measuring approximately 14.56 mm in diameter (Figure 1). Endodontic evaluation, performed to rule out pulpal involvement and odontogenic origin, confirmed the vitality of the four mandibular incisors. Initial diagnostic hypotheses included odontogenic keratocyst, unicystic ameloblastoma, and traumatic bone cyst.

Given the clinical presentation, surgical exploration was chosen to obtain a definitive diagnosis via histopathological examination. Following intra- and extraoral antisepsis, local anesthesia was administered using two cartridges of 2% lidocaine with 1:100,000 epinephrine in the premolar region - targeting the mental nerve - supplemented by infiltrations in the gingival sulcus. Surgical access was achieved via intraoral approach in the mucosa region below the mandibular incisors (teeth 32, 31, 42, and 41) using a linear incision approximately 16 mm in length made with an electrosurgical scalpel (Figure 2). Following mucoperiosteal flap elevation, a purplish-colored bone area was observed (Figure 3). Aspiration of the lesion was then performed, yielding no liquid or bloody content (Figure 3). Subsequently, a bone window measuring approximately 15 mm was created using a piezosurgical device (Figure 3). After removing the bone window and accessing the cavity, a blood clot was found. Active curettage of the lesion was performed until fresh bleeding was induced, aiming to stimulate the bone repair process (Figure 4). The removed specimens were placed in a vial containing 10% formalin, and the surgical wounds were sutured with absorbable polyglactin 910 suture material. At the end of the procedure, the patient received postoperative instructions, and a medication regimen comprising an analgesic, an anti-inflammatory, and a mouthwash was prescribed to manage symptoms and maintain surgical site hygiene. Follow-up appointments took place at 15 and 30 days, and at 6 and 12 months. No signs of postoperative complications were observed; the wounds were healing well with no signs of infection, and the patient remained in good general health. Histopathological examination revealed bone tissue fragments containing mature bone trabeculae and sparse fibrous connective tissue, associated with areas of hemorrhage. Absence of epithelial lining and significant inflammatory infiltrate was observed - findings consistent with diagnosis of traumatic bone cyst or traumatic bone defect. Postoperative imaging showed complete healing of the lesion within 12 months (Figure 5). At that

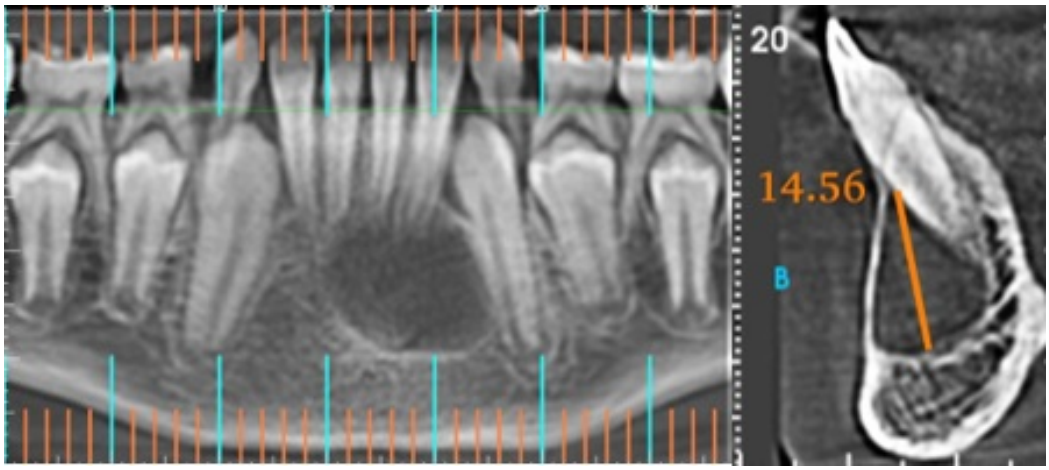


Figure 1. Cone-beam computed tomography revealed a well-defined, circular, radiolucent lesion located between the mandibular incisors, measuring approximately 14.56 mm in diameter.



Figure 2. Surgical access was achieved via an intraoral approach in the attached gingiva region below the mandibular incisors, using an electrosurgical scalpel.



Figure 3. Following mucoperiosteal flap elevation, a purplish-colored bone area was observed. Fine-needle aspiration was performed, yielding a negative result. Subsequently, a bony window was created using piezosurgery.

point, the patient was discharged and began orthodontic treatment. Written informed consent for the publication of clinical images was obtained from the legal guardian.

DISCUSSION

The literature describes the traumatic bone cyst as accounting for approximately 1% of cystic lesions of the jaws, predominantly affecting children and adolescents and being frequently discovered incidentally during routine radiographic examinations[5]. Although its etiology remains uncertain, the most widely accepted theory involves intramedullary trauma followed by local hemorrhage, even in cases where the patient reports no apparent traumatic event[6]. As seen in the present case, the absence of trauma does not rule out the diagnosis,

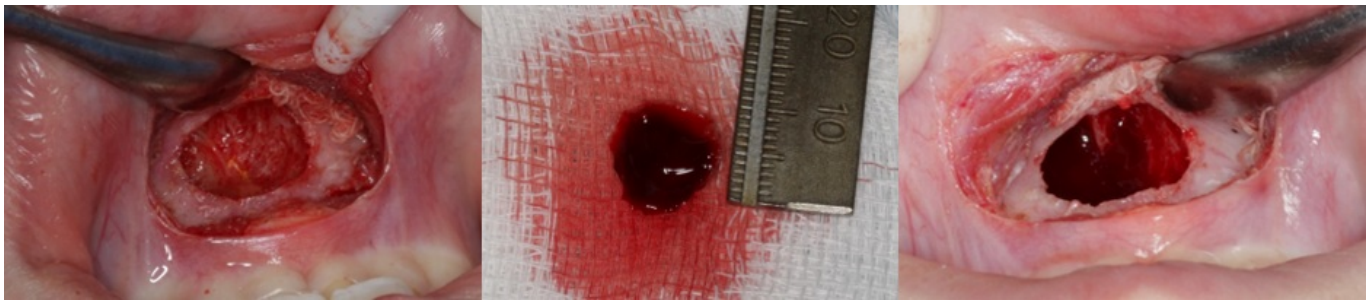


Figure 4. Upon accessing the cavity, a blood clot was found. Active curettage of the lesion was performed until fresh hemorrhagic infiltration was obtained.

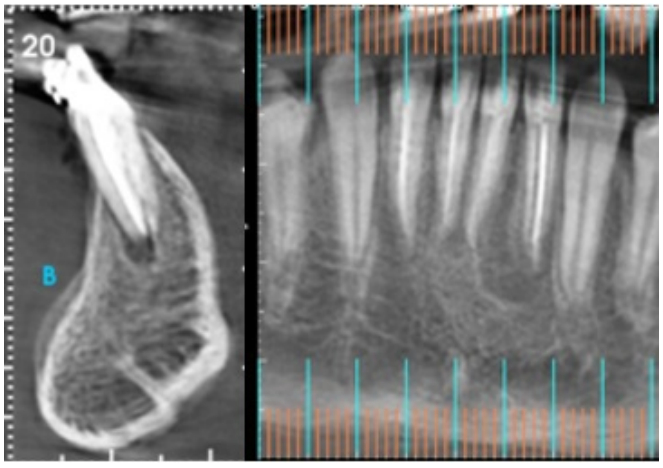


Figure 5. Histological section showed a recent clot composed of fibrin, platelets, circulating leukocytes, and blood cells.

given that unnoticed microtraumas or subclinical intramedullary events are frequently cited in literature[2].

Radiographically, this lesion appears as a uniloc-ular radiolucent area with scalloped margins extending between dental roots; however, variations in this pattern are common, such as the presence of multiloculation, association with impacted teeth, and multiple occurrences in the same patient[6]. Consequently, a definitive diagnosis can only be established through surgical exploration combined with histopathological examination, while tomographic or radiographic findings although suggestive, are not pathognomonic and may overlap with the differential diagnosis of other lesions, such as odontogenic keratocysts, unicystic ameloblastomas, and vascular lesions[8,9].

Teeth associated with traumatic bone cysts generally retain pulp vitality and show no mobility or root resorption, as the lesion is neither odontogenic in origin nor directly related to pulp necrosis[10]. In the present case, sensitivity tests confirmed the vitality of the four mandibular incisors, with no clinical abnormalities upon palpation or percussion. Subsequently, the patient was evaluated by a specialist selected by the family who was not part of the team responsible for the diagnosis and surgical procedure. Despite the preserved vitality, the professional and the family opted for endodontic treatment of the incisors prior to surgery. However, in the absence of signs of pulpal involvement, this approach is not routinely indicated and may constitute overtreatment, as there is no evidence of additional benefits regarding the lesion prognosis or bone repair. Thus, assessing pulp vitality is crucial for preserving teeth and distinguishing traumatic bone cyst from inflammatory periapical lesions[11,12].

Traumatic bone cysts are predominantly located in the mandible - specifically in the body and ramus - although the lesion can also manifest in the symphysis region. Occurrence in the maxilla is uncommon, but despite its rarity, it should not be entirely ruled out[13]. The marked prevalence in the mandible may be related to biomechanical and structural factors involved in the lesion pathogenesis. The greater cortical thickness, lower elasticity, and relatively reduced vascularization of this bone compared to the maxilla may limit local repair capacity and support the trauma-hemorrhage hypothesis as the most plausible etiological mechanism. The location observed in the present case has been described in recent literature reports and reviews, particularly in young patients and with a slight male predominance[14-16].

The treatment of choice for traumatic bone cysts consists of surgical exploration followed by curettage of the bony walls, a procedure effective in inducing local bleeding and stimulating new bone formation[17]. This approach offers a favorable prognosis, with complete bone remodeling typically observed between 6 and 12 months after intervention[18-20]. Conventionally, access to the cavity is performed using a micromotor and rotary burs, which allow for faster osteotomy, but offer less cutting selectivity and present higher risk of mechanical or thermal injury to adjacent structures. In the present case, piezosurgery was selected as a minimally invasive technique that

enables selective cutting of mineralized tissue, greater surgical precision, and reduced risk of soft-tissue damage, albeit potentially requiring longer operating time. Studies also suggest alternative treatments such as the use of gelatin sponge combined with platelet-rich plasma, intralesional blood infusions, porous hydroxyapatite, and bone fragments; however, further evidence is required before these approaches can be considered the gold standard[21].

Given the asymptomatic nature of the condition and the risk - albeit low- of recurrence, postoperative follow-up via serial radiographic examinations is essential to monitor new bone formation and ensure the complete restoration of the mandibular architecture. Literature indicates that bone regeneration generally occurs between 6 and 12 months[18-20,22]; therefore, it is recommended that orthodontic movement in a previously affected bone area begin only after radiographic confirmation of complete healing - usually from the sixth month onwards - although this timeframe may vary depending on the individual's biological response and the initial extent of the lesion[12].

CONCLUSION

This case reinforces the fundamental role of imaging exams in orthodontic planning, as they can reveal asymptomatic abnormalities capable of altering the therapeutic approach. Even without being a Stomatology specialist, the dentist must be competent to evaluate these exams carefully and recognize findings that require further investigation or specialist referral. Furthermore, the case highlights that the diagnosis, treatment, and monitoring of certain conditions may require a multidisciplinary approach - integrating different specialties – in order to ensure safety, predictability, and long-term stability of results.

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AUTHORS' CONTRIBUTIONS

RR: Conceptualization, Investigation, Methodology, Project administration, Visualization, Writing – original draft, Writing – review & editing. CTS: Investigation, Writing – original draft, Writing – review & editing. RS: Validation, Writing – review & editing. JB: Project administration, Supervision, Validation, Writing – review & editing.

CONFLICT OF INTEREST STATEMENT

Funding: This manuscript was produced with the support from the National Council for Scientific and Technological Development (CNPq/Brasil). The funding agency did not participate in the study design, data collection or analysis, or the report preparation.

Competing interests: The authors declare no conflicts of interest.

Ethical approval: The project was submitted to and approved by the Research Ethics Committee (CEP) of the University of Passo Fundo (UPF) under number 8.306.425. This study was conducted in accordance with the guidelines of Resolution No. 466/12 of the National Health Council and the Code of Dental Ethics, meeting the following ethical aspects: participants voluntarily authorized their participation in the study by signing the Informed Consent Form (ICF), with the guaranteed right to withdraw their authorization at any stage of the process without any penalty. The researchers commit to maintaining the confidentiality of the collected data and the privacy of their content.

DATA AVAILABILITY STATEMENT

The data supporting the findings of this case report are contained within the article. Additional data are not publicly available to protect patient privacy and confidentiality.

REFERENCES

1. Neville BW, Damm DD, Allen CM, Bouquot JE. Oral and maxillofacial pathology. 3rd ed. Rio de Janeiro: Elsevier; 2009.
2. Torreão PA, de Farisas JG, Câncio AV, Mascarenhas ACM, de Jesus JMB, de Oliveira GP, et al. Cisto ósseo traumático em criança: relato de caso clínico. J Multidiscip Dent. 2025;12(2):139-44. https://doi.org/10.46875/jmd.v12i2.1109
3. Martins JGZ, Louzada VG, Calegari ACZ, de Souza HO, Sakima VT, Sousa YTCS, et al. Exérese de cisto ósseo traumático em região anterior de mandíbula através da técnica de marsupialização: relato de caso clínico. Braz J Implantol Health Sci. 2024;6(12):1048-63. https://doi.org/10.36557/2674-8169.2024v6n12p1048-1063
4. Garcia Lopez G, Teixeira RG. Traumatic bone cyst: clinical case report. Res Soc Dev. 2021;10(8):e16210816952. https://doi.org/10.33448/rsd-v10i8.16952

5. Santos EC. Os impactos da falta de acompanhamento odontológico na saúde bucal infantil a longo prazo. Rev Ibero-Am Humanid Cienc Educ. 2025;11(11):4906-16. https://doi.org/10.51891/rease.v11i11.22428
6. Santana AM, da Silva MLF, Rodrigues RD, Santos RM, dos Santos JN, Carneiro Júnior B. Cisto ósseo traumático em corpo mandibular: relato de dois casos. Rev Patol Tocantins. 2022;9(2):26-30. https://doi.org/10.20873/uft.2446-6492.2022v9n2p26
7. Gagnier JJ, Kienle G, Altman DG, Moher D, Sox H, Riley DS; CARE Group. The CARE guidelines: consensus-based clinical case reporting guideline development. J Clin Epidemiol. 2014;67(1):46-51. https://doi.org/10.1016/j.jclinepi.2013.08.003
8. Cortell-Ballester I, Figueiredo R, Berini-Aytés L, Gay-Escoda C. Traumatic bone cyst: a retrospective study of 21 cases. Med Oral Patol Oral Cir Bucal. 2009;14(5):E239-43. PMID: 19218905.
9. Ko DE, Kim BC, Yoon JH, Yeom HG. Simple bone cyst with severe root resorption: a case report. BMC Oral Health. 2025;25(1):311. https://doi.org/10.1186/s12903-025-05648-5
10. Vale DS, Lopes HP, Freitas GP, Araujo NP, Rosa FG, Nunes Júnior F. Atypical traumatic bone cyst involving impacted lower third molar: report of case. Rev Gaúch Odontol. 2023(71). https://doi.org/10.1590/1981-86372023001120210149
11. Roma LG, Lopes CB, Santos Netto JN, Miranda AMMA, Pires FR. Idiopathic Bone Cavity: Clinicopathologic Features from a Case Series with Emphasis on Differential Diagnosis of Chronic Apical Periodontitis. J Endod. 2021;47(2):221-5. https://doi.org/10.1016/j.joen.2020.11.004
12. Razmara F, Ghoncheh Z, Shabankare G. Traumatic bone cyst of mandible: a case series. J Med Case Rep. 2019;13(1):300. https://doi.org/10.1186/s13256-019-2220-7
13. Chaarani Y, Bouzoubaa S, Ben Yahya I. The contribution of three-dimensional radiography in the diagnosis of solitary bone cyst: systematic review. J Med Sci Res. 2025;11(3). https://doi.org/10.46327/msrjg.1.000000000000265
14. Martins-Filho PRS, Santos TS, Araújo VLC, Santos JS, Andrade ESS, Silva LCF. Traumatic bone cyst of the mandible: a review of 26 cases. Braz J Otorhinolaryngol. 2012;78(2):16-21. https://doi.org/10.1590/S1808-86942012000200004
15. Oliveira LRA, Bagestão PS, Lima TT, Leal OHS. Cisto ósseo traumático: revisão de literatura. Rev FT. 2023;27(128). https://doi.org/10.5281/zenodo.10160208
16. Lima BL, Medrado ARAP. Cisto ósseo simples: estado da arte. Rev Fac Odontol Univ Fed Bahia. 2021;51(2). https://doi.org/10.9771/revfo.v51i2.44797
17. Bindra S, Jadaun G, Jois HS, Sen P. Traumatic bone cyst of mandible: a case report of rare entity and review of literature. Contemp Clin Dent. 2019;10(1):3-8. https://doi.org/10.4103/ccd.ccd_489_18
18. Xindi J, Gang L, Xinhong W, Linlin C, Xing K, Zhen T, Yu L. Simple bone cyst of the jaw: a retrospective study of 11 cases. Hua Xi Kou Qiang Yi Xue Za Zhi. 2016;34(3):272-6. https://doi.org/10.7518/hxkq.2016.03.011
19. Pérez-Iglesias B, Sandoval-Gutiérrez J, García-Freire C, Mareque-Bueno J, Hernández-Alfaro F. Simple bone cyst: a case report. J Clin Exp Dent. 2021;13(2):e207-10. https://doi.org/10.4317/jced.57580
20. Wang Y, Wu S, Zhang C, Yang B, Jing W. Therapeutic approach of simple bone cyst of the jaw: a retrospective study of 72 patients. Oral Surg Oral Med Oral Pathol Oral Radiol. 2026;142(1):e1-e10. https://doi.org/10.1016/j.oooo.2026.02.003
21. de Almeida HCR, de Farias ZBBM, dos Santos BPN, dos Santos RTN, de Azevedo LPM, Álvares PR, et al. Traumatic Bone Cyst – Case report. Res Soc Dev. 2021;10(7):e39710716814. https://doi.org/10.33448/rsd-v10i7.16814
22. Yucesoy MT, Tepe RD, Tekkesin MS, Karabas HC. Radiographic and histopathologic characteristics of simple bone cysts: a retrospective study of 46 cases. BMC Oral Health. 2025;26(1):125. https://doi.org/10.1186/s12903-025-07511-z