ISSN 2689-8268 | Volume 8

American Journal of Surgery and Clinical Case Reports

Case Report Open Access

Simple Bone Cyst in The Condyle of The Temporomandibular Joint: Case Report

Alan F Polanco[1], Sergio R Mansilla[1], Beatriz C Gomez[2], Pablo Romero[1,3], Luis H Perez[1,3] and Martin A Sanchez[1,3]

[1]Department of Diagnostic and Surgical Sciences, Faculty of Dentistry, Universidad de los Andes, Santiago, Chile
[2]Oral and Maxillofacial Radiologist, Begmax Radiological Center. Santiago, Chile
[3]Maxillofacial Surgeon. Parroquial Hospital of San Bernardo. Santiago, Chile

***Corresponding Author:**
Pablo Romero, Department of Diagnostic and Surgical Sciences, Faculty of Dentistry, Universidad de los Andes, Santiago, Chile

Received: 20 May 2025
Accepted: 26 May 2025
Published: 01 Jun 2025
J Short Name: AJSCCR

Keywords: Simple Bone Cyst; Mandibular Condyle; Cyst

Citation: AF Polanco. Simple Bone Cyst in The Condyle of The Temporomandibular Joint: Case Report. Ame J Surg Clin Case Rep. 2025; 8(16): 1-4

1. Abstract

Simple bone cysts (SBC) are benign lesions typically found in the metaphyseal areas of long bones. Most of these lesions are asymptomatic and are detected during routine radiographic examinations. Occasionally, they can affect the maxillofacial region, primarily involving the mandibular bone; however, in rare cases, they may localize to the mandibular condyle. This case presents a 17-year-old patient with an intraosseous lesion located in the left mandibular condyle, which was observed during a routine radiographic examination. The treatment involved surgical exploration and curettage of the lesion. Histopathological analysis confirmed the definitive diagnosis of a SBC, leading to the decision not to perform a second intervention. Six months after the surgical intervention, follow-up imaging studies were requested, revealing adequate bone consolidation in the affected area.

2. Introduction

The SBC is a benign entity of unknown etiology described as an intraosseous cavity that lacks an epithelial lining [1]. In the maxillofacial region, its incidence is infrequent, representing approximately 1% of maxillary cysts [1,2]. Most lesions are asymptomatic and are detected in routine radiological examinations as a unilocular or multilocular osteolytic lesion located in the posterior mandibular region or mandibular symphysis. However, case reports describe atypical locations for this entity, including the mandibular condyle [2,3]. Treatment generally consists of surgical exploration combined with curettage of the bony walls, serving both as a diagnostic therapy, through tissue collection and subsequent histopathological analysis, and as definitive treatment [1]. In this study, we describe a large simple bone cyst located in the mandibular condyle of a young patient, which was visualized through a routine radiographic examination. The purpose of this case report is to describe the atypical manifestation of the entity and to emphasize the possible differential diagnoses, as well as the treatments related to these, which differ from those of the simple bone cyst.

2. Case Report

A 17-year-old female patient presented to the clinic due to odontalgia in tooth 3.6. She had no relevant medical history. During the intraoral evaluation, a deviation of the dental midline and a crown fracture of tooth 3.6 were noted, with the mucosal surfaces of the oral cavity appearing normal. A routine periapical radiograph and orthopantomogram (OPG) were requested. Upon analyzing the OPG, a radiolucent lesion in the left mandibular condyle was observed, leading to the indication for a cone beam computed tomography (CBCT) scan to complement the imaging study. The three-dimensional reconstruction obtained from the CBCT provided a more precise assessment of the osteolytic and slightly expansive nature of the lesion, with well-defined corticated borders, accompanied by thinning of the cortices and extension towards the superior end of the mandibular ramus, beneath the sigmoid notch (Figure 1). Based on the findings, we established differential diagnoses of simple bone cyst, ameloblastoma, keratocyst, and central giant cell granuloma. Surgical exploration and biopsy of the lesion were planned; however, due to the patient's economic reasons, the treatment was postponed for three years. After three years, the patient returned for the intervention. A CBCT was requested to assess the evolution of the lesion. A comparative analysis with the initially obtained CBCT revealed a marked reduction in the size of the lesion, primarily in the longitudinal or cranio-caudal direction, with the presence of new bone formation or intralesional bone apposition in the most caudal area of the lesion, at the level of the mandibular ramus (Figure 2). Regarding these findings, the initial differential diagnoses of simple bone cyst and odontogenic keratocyst were maintained, while the diagnosis of ameloblastoma and central giant cell granuloma were ruled out. In light of the above, the previously established therapeutic approach was carried out. The treatment was performed in the central operating room under general anesthesia. The localization and intervention of the affected condyle were carried out through an endaural surgical approach (Figure 3A). A conservative osteotomy was then performed in the central area of the condyle, where intralesional blood content was observed (Figure 3B). After thorough washing of the intraosseous cavity, curettage of the lesion walls was performed. The tissue obtained from the curettage was sent for histopathological analysis. Finally, the flap was repositioned in anatomical layers (Figure 3C).The histopathological report was consistent with normal compact bone accompanied by abundant fibrocellular content without atypia, confirming the diagnosis of a simple bone cyst. Therefore, the treatment plan was considered definitive.Six months after the surgical intervention, a new CBCT was requested, which showed

adequate apposition of bone tissue in the treated area (Figure 5). Additionally, the patient is asymptomatic and does not present any extraoral or intraoral sequel.

3. Discussion

The simple bone cysts, also known as unicameral bone cyst or traumatic bone cyst, is considered a dysplastic or reactive lesion that may contain serous fluid, blood, or air [1,4]. Although its etiology and pathogenesis remain unknown, the most accepted theory suggests a traumatic origin, where intramedullary hemorrhage occurs, followed by the breakdown of the hematoma due to enzymatic activity, leading to enlargement of the bone cavity. However, various cases of simple bone cysts have been observed without a history of trauma [6]. The diagnosis of this entity is more frequently made in male patients between their second and third decades of life. Its most common location is in the metaphyseal areas of long bones, especially in the proximal segments of the humerus and femur, although it can rarely occur in the maxillary bones, with a prevalence close to 1% [1,6]. In this regard, the simple bone cysts is considered an almost exclusive lesion of the mandible, preferentially affecting the posterior regions of the

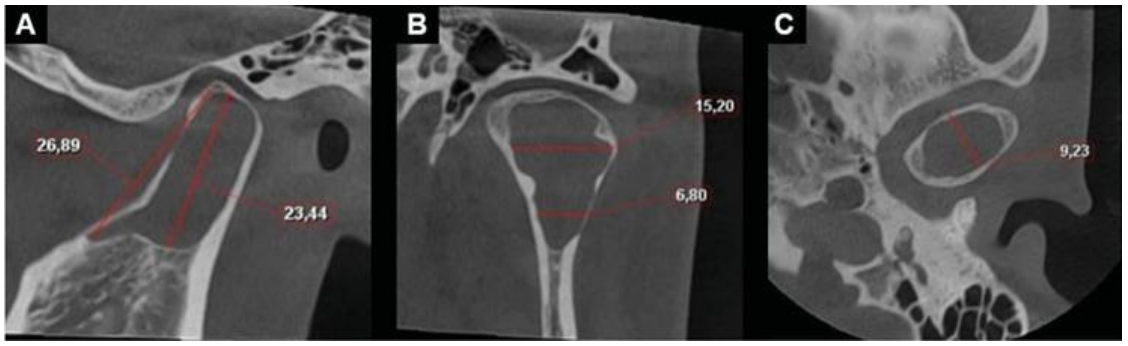

Figure 1: Initial CBCT of the left temporomandibular joint (TMJ) (T1). **A:** Oblique sagittal section of the mandibular condyle, showing extension of the lesion in a cranio-caudal direction. Involvement of the uppermost area of the mandibular ramus is observed. **B:** Oblique coronal section of the mandibular condyle with measurements of the lesion in a medio-lateral direction. **C:** Axial section of the mandibular condyle with measurements of the lesion in an antero-posterior direction.

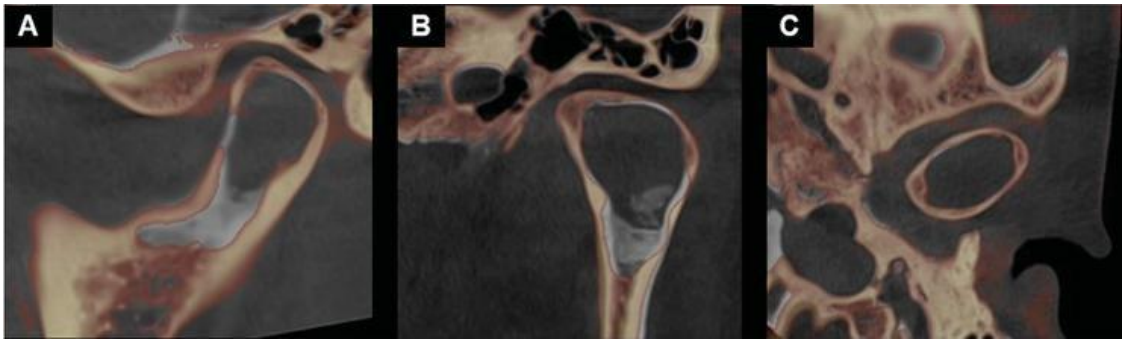

Figure 2: Comparative study using CBCT with a 3-year follow-up. The orange image corresponds to the initial tomography of the lesion (T1), and the gray area represents the follow-up (T2), with the comparison conducted using Romexis® 6 software. **A, B:** Oblique sagittal and coronal sections showing new bone formation or bone apposition. **C:** Axial section; no dimensional changes or signs of bone apposition are observed in the lesion at the level of the condylar head.

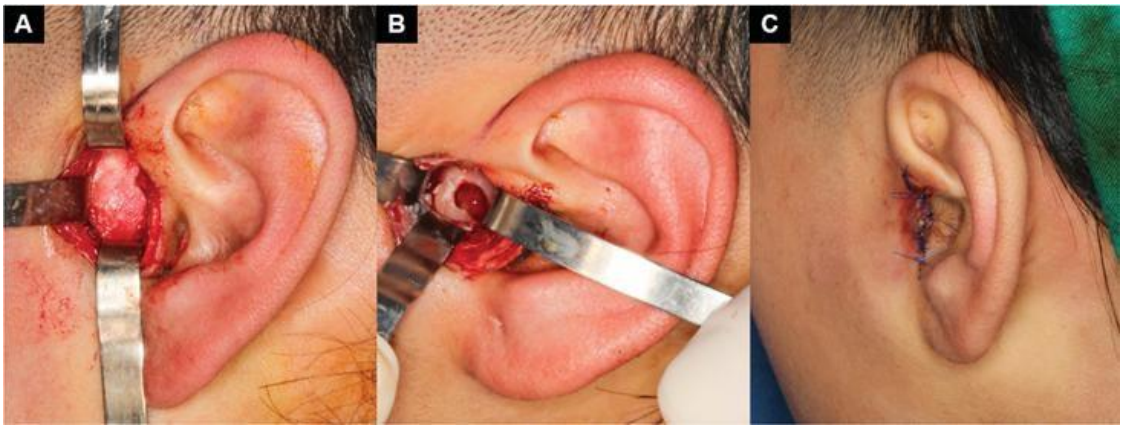

Figure 3: Surgical intervention for the left condylar lesion. A: Endaural surgical approach. B: Presence of intralesional hemorrhagic fluid content. C: Repositioning of the flap and suturing of the superficial layer using 5/0 prolene.

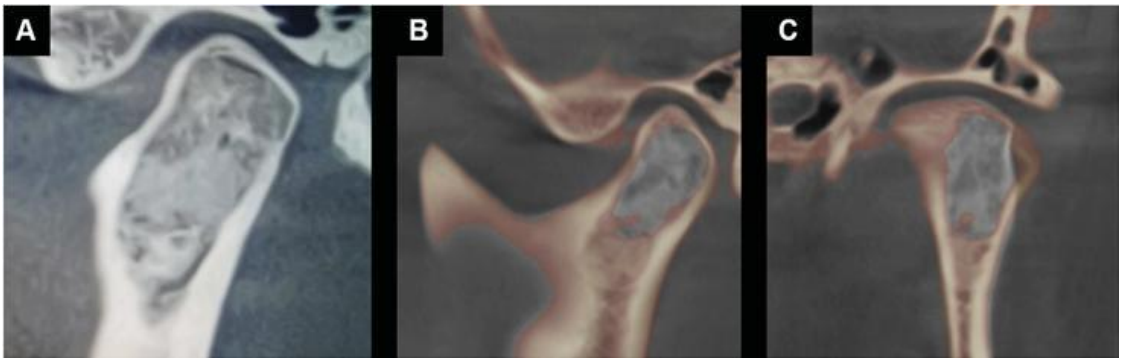

Figure 4: CBCT six months after the surgical intervention. **A:** Abundant apposition of bone tissue is observed with no morphological changes in the condylar process. **B** and **C:** Comparative study using CBCT with a six-month follow-up. The orange image corresponds to the second follow-up of the lesion (T2) pre-surgery, and the gray area represents the post-surgical follow-up (T3), with the comparison conducted using Romexis® 6 software.

body and the mandibular ramus. Its occurrence in the maxilla is uncommon, and condylar localization is infrequent, reported in only a few case studies in the literature [1,4,5,6]. Clinically, simple bone cysts are asymptomatic and are mainly detected during routine radiographic examinations [1], however, cases of simple bone cysts with associated symptoms such as pain, altered sensitivity, swelling, and joint noise have been identified [4,7,8]. In our case report, the entity was located in the left mandibular condyle and was identified through routine radiographic examinations. Upon identifying the lesion, a thorough questionnaire was conducted with the patient to identify any possible causal factors; however, the patient did not recall any history of trauma in the affected region. In this regard, it is possible that patients with simple bone cyst may have experienced an episode of trauma in the affected region during childhood, and due to the age of the trauma, it is not remembered as a relevant antecedent. Therefore, the diagnosis of Simple bone cyst should not be dismissed as a potential differential diagnosis.The typical radiographic appearance is of a well-defined unilocular radiolucent lesion in the posterior portion of the mandible, extending between the roots of the teeth, with little to no cortical expansion [1,9], as seen in our case. Nevertheless, cases of multifocal and multilocular lesions have been reported [8]. Regarding the radiographic characteristics of the lesion, it is important to establish a differential diagnosis with pathologies that have similar features, such as keratocyst, ameloblastoma, central giant cell granuloma, among others with lower incidence rates [10]. This is crucial as the treatment differs among the mentioned pathologies, ranging from conservative treatments like enucleation for keratocysts to aggressive treatments like resection of the affected anatomical structure in the case of ameloblastomas and central giant cell granulomas. Interestingly, in the reported case, a reduction in the size of the lesion was observed during the radiographic follow-up after three years from the initial diagnosis, indicating the non-aggressive nature of the lesion, excluding the diagnosis of aggressive lesions like ameloblastoma and central giant cell granuloma.The definitive diagnosis of simple bone cyst is made through surgical exploration and histopathological analysis [4,8]. Typically, the lesion is observed without an epithelial lining, surrounded by fibrocellular tissue with no atypia, as well as trabecular bone or vital reactive compact bone, and occasionally, hemorrhagic focus. [1,8]. In our case, we observed vital compact bone accompanied by normal morphology fibrocellular tissue and the absence of an epithelial lining, leading us to rule out the diagnosis of central giant cell granuloma due to the absence of abnormal osteoclasts, as well as the diagnoses of keratocyst and ameloblastoma due to the lack of an epithelial lining.The treatment of choice for simple bone cyst consists of surgical exploration and curettage of the lesion [1,2,5]. Conservative therapeutic alternatives have been described using an endoscopic approach; however, skilled personnel are required to perform the technique. Post-surgical complications from curettage of the lesion are rare, with high short-term success rates [1]. The recurrence rate is infrequent and is associated with the presence of additional pathologies adjacent to the simple bone cyst [5]. In this report, the entity was treated through exploration and curettage, and to date, no recurrence of the lesion has been observed.Although the presence of lytic lesions in the mandibular condyle is uncommon, the differential diagnosis for these lesions is varied. Among the associated pathologies, the simple bone cyst exhibits low aggressiveness, making curettage of the cystic cavity the treatment of choice. It is important to confirm the diagnosis through histopathological analysis and to rule out more aggressive pathologies, as treatment differs for these conditions and may require more morbid postoperative therapies.

4. Ethical Statements

All procedures were carried out with the patient's proper understanding and written consent.

References

1. LimaLB, de Freitas Filho SA, Barbosa de Paulo LF. Simple bone cyst: description of 60 cases seen at a Brazilian School of Dentistry and review of international literature. Medicina oral, patologia oral y cirugiabuccal. 2020; 25(5): e616-e625.
2. Xindi J, Gang L, Xinhong W, Linlin C, Xing K. Simple bone cyst of the jaw: a retrospective study of 11 cases. West China Journal of Stomatology. 2016; 34(3): 272-276.
3. Rapaport BH, Heggie AA. Simple bone cyst of the mandibular condyle. Annals of maxillofacial surgery. 2016; 6(2): 314-315.
4. Thelekka Y, BasheerSA. Traumatic bone cyst in the mandibular ramus - A diagnostic dilemma. Nigerian journal of clinical practice. 2022; 25(8): 1382-1385.

5. Martins-Filho PR, Santos TdeS, Araujo VL. Traumatic bone cyst of the mandible: a review of 26 cases. Brazilian journal of otorhinolaryngology. 2012; 78(2): 16-21.
6. Sabino-Bezerra JR, Santos-Silva AR, Jorge J. Atypical presentations of simple bone cysts of the mandible: a case series and review of literature. Journal of cranio-maxillo-facial surgery: official publication of the European Association for Cranio-Maxillo-Facial Surgery. 2013; 41(5): 391-396.
7. Saia G, Fusetti S, Emanuelli E, Ferronato G, ProcopioO. Intraoral endoscopic enucleation of a solitary bone cyst of the mandibular condyle. International journal of oral and maxillofacial surgery. 2012; 41(3): 317-320.
8. Kim KA, Koh KJ. Recurrent simple bone cyst of the mandibular condyle: a case report. Imaging science in dentistry. 2013; 43(1): 49-53.
9. Sabino-BezerraJR, Santos-Silva AR, Jorge J, Jr Gouvea. Atypical presentations of simple bone cysts of the mandible: a case series and review of literature. Journal of cranio-maxillo-facial surgery: official publication of the European Association for Cranio-Maxillo-Facial Surgery. 2013; 41(5): 391-396.
10. Kitisubkanchana J, Reduwan NH, Poomsawat S. Odontogenic keratocyst and ameloblastoma: radiographic evaluation. Oral radiology. 2021; 37(1): 55-65.