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NL Journal of Dentistry and Oral Sciences

(ISSN: 3049-1053)

Volume 3 Issue 1 February 2026

Research Article

# Aneurysmal Bone Cyst of the Jaws: A Review of Cases Treated in a Teaching Hospital Northwest Nigeria

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doi: 10.71168/NDO.03.01.142

**Received Date:** February 05- 2025 **Publication Date:** February 13- 2026

**Abstract:** Background Study: Aneurysmal bone cyst (ABC) are rare osteolytic lesions, commonly found in long bone. They are characterized by blood filled spaces within the bone, surrounded by fibrous septa. In the jaws plain radiograph of aneurysmal bone cyst appear as unilocular or multi-locular radiolucency, sometimes with soap bubbles or honeycomb appearance, this closely resembles ameloblastoma.

**Aim:** This study aimed to present the clinical and pathological features, and the management of cases of aneurysmal bone cyst of the jaws treated in our Centre.

**Materials and Methods:** It was a prospective observational study of jaw tumours that are filled with blood when aspirated, and the histology report were compiled. The study was done for two years from March 2023 to April 2025. Questionnaires was prepared and were filled by the researcher and assisted by resident doctors in the unit. The clinical findings were analyzed with respect to age, gender, anatomic location, size, clinical presentation, radiologic features, treatment methods, and recurrence rates. Radiographic descriptions were studied regarding the original location, border.

**Results:** A total of 7 patients, 5 males and 2 females, aged 13 to 52 years (mean age 32.5, SD 11.54 years), were included. Of the 7 lesions, 6 (85.71%) were located in the mandible and 1 (14.29%) in the maxilla. Radiological findings revealed unilocular in 2 (28.57%) multilocular radiolucencies in 5 (71.43%) cases. Body, angle of the mandible and ascending ramus were most affected. Histopathology report gave us the final diagnosis of aneurysmal bone cyst. No recurrence reported.

**Conclusion:** Aneurysmal bone is benign lesion that occurs more in the mandible than maxillae and treatment is enucleation, curettage, and resection of the affected bone depending on the level of bone destruction. It has good prognosis.

**Keywords:** Aneurysmal bone cyst, Jaw lesions, Mandible, Radiographic features, Surgical management.

## Introduction

An Aneurysmal Bone Cyst (ABC) of the jaws is a benign cystic lesion of bone, composed of blood-filled spaces separated by connective tissue septa (walls) containing fibroblasts, osteoclast-type giant cells and reactive woven bone. It is a pseudo-cyst lesion lacking an epithelial lining. It is a non-odontogenic cyst that is rapidly growing and destroy jawbone and characterized by replacement of the normal bone with fibro-osseous tissue containing blood-filled sinusoidal and cavernous spaces.

ABC's is found more frequently in the mandible than the maxilla [3,4]. It has predilection for the body, ramus and angle of the mandible, but few cases have been reported in the anterior mandible. It can affects any age group but commonly affects young age [5,6]. It has no gender predilection, but several studies reported males being more affected than females.4,6,8 Between 2-12% of ABC's is located at the head and neck region [5].

The aetiology of ABC's are unclear and controversial. Trauma have been suspected to contribute onset of this lesion, by causes by an inciting injury to periosteal vessels initiating the development of the ABC. Haemodynamics have also been implicated. This causes increased venous pressures and engorgement of the vascular bed in the transformed bone. Leading to resorption, and connective tissue replacement, with osteoid formation.

Also dilatation of local vascular network due to increased venous pressure caused by local circulatory abnormalities have been a contributory factor. Genetic predisposition had been proposed by several authors as a possible cause of ABC's. They have demonstrated that chromosomal translocation t(16:17) (q22:p13) is a cytogenic abnormality which could result in the development of ABCs [3,5,7,8,9].

The radiological features of ABC's in the jaws are quite varied. The bone is expanded, appears cystic resembling a honeycomb or soap bubble and is eccentrically ballooned. There may be destruction and perforation of the cortex and a periosteal reaction may be evident. It may appear radiolucent, raido-opaque or mixed. It could be unilocular or multilocular. Radiographic appearances are not enough to make a diagnosis because there are other jaw lesions having similar radiographic appearances, such lesions are: ameloblastoma, odontogenic myxoma, central giant cell granuloma, odontogenic cysts, traumatic bone cyst, globulo-maxillary cyst, brown tumour of hyperthyroidism, and central bone haemangioma. The histopathology of ABC is of numerous vascular spaces lined by endothelial cells and multinucleated giant cells in fibrous tissue. The diagnosis of ABC is through histopathology report. The treatment for ABC consisted surgical curettage, resection of the jaw and reconstruction when indicated. This study serves to report our experience in the management of cases of ABC's we encountered in our Centre.

## Materials and Methods

It was a prospective observational study of jaw tumours that are filled with blood when aspirated, and the histology report were compiled. Lesions with histopathology report of aneurysmal bone cyst were included in this study and haemagiomas were excluded. The study was done from March 2023 to April 2025. Questionnaires was prepared and were filled by the researcher and assisted by resident doctors in the unit. The clinical findings were analyzed with respect to age, gender, anatomic location, size, clinical presentation, radiologic features, treatment methods, and recurrence rates. Radiographic reports were studied.

## Results

A total of 7 patients, 5 males and 2 females, aged 13 to 52 years (mean age 32.5, SD 11.54 years), were included. Of the 7 lesions, 6 (85.71%) were located in the mandible and 1 (14.29 %) in the maxilla Radiological findings revealed unilocular in 2 (28.57%) multilocular radiolucencies in 5 (71.43%) cases. Histopathology report showed macroscopic view as fragments of tissue that aggregates at 40 X 40X 15mm and weigh 4grammes, cut section revealed cystic to solid dark brown areas. Microscopic showed a cystic lesion consisting of an attenuated epithelium. The walls is fibrocollagenized within which are occasional giant cells with fibroblast and telangiectic congested vasculature. This gives diagnosis of aneurysmal bone cyst (Fig. 3). No recurrence reported.

**Table 1:** Patients Demography, Radiological findings, Treatment giving.

| S/N | Age (Years) | Sex | Location of Tumour | Radiological Report |
|---|---|---|---|---|
| 1 | 13 | F | Left angle of mandible | Multilocular radiolucency |
| 2 | 18 | M | Left body–angle of mandible | Multilocular radiolucency |
| 3 | 24 | M | Left body of mandible | Multilocular radiolucency |
| 4 | 36 | M | Anterior maxilla | Unilocular radiolucency |
| 5 | 46 | M | Right body of mandible | Unilocular radiolucency |
| 6 | 48 | M | Anterior mandible | Multilocular radiolucency |
| 7 | 52 | F | Left body of mandible | Multilocular radiolucency |

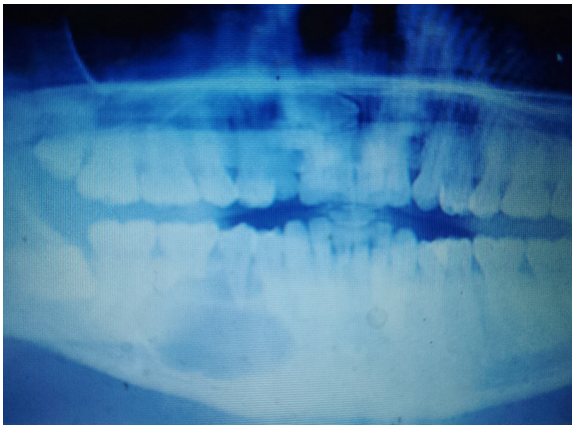

**Figure 1:** A plain radiograph showing unilocular radiolucency in the body of the mandible.

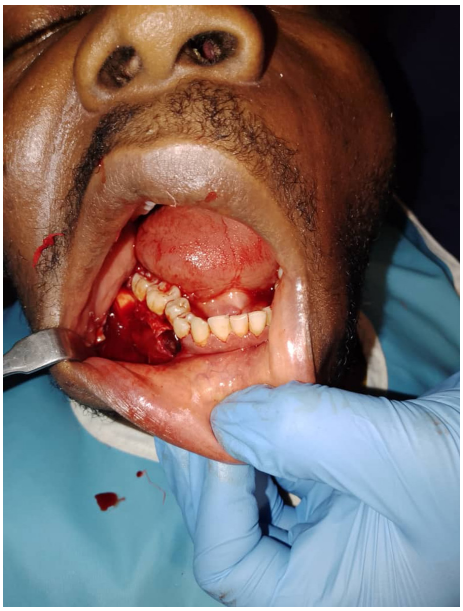

**Figure 2:** Intraoral view of the lesion being covered with bone from Figure 1. The bone was removed to expose the lesion.

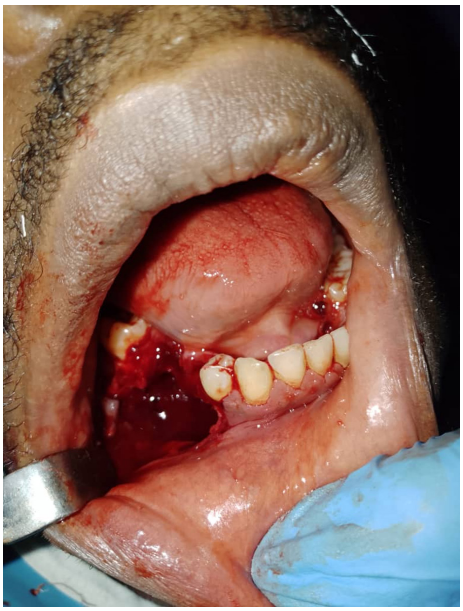

**Figure 3:** The expoxed leion before curretage.

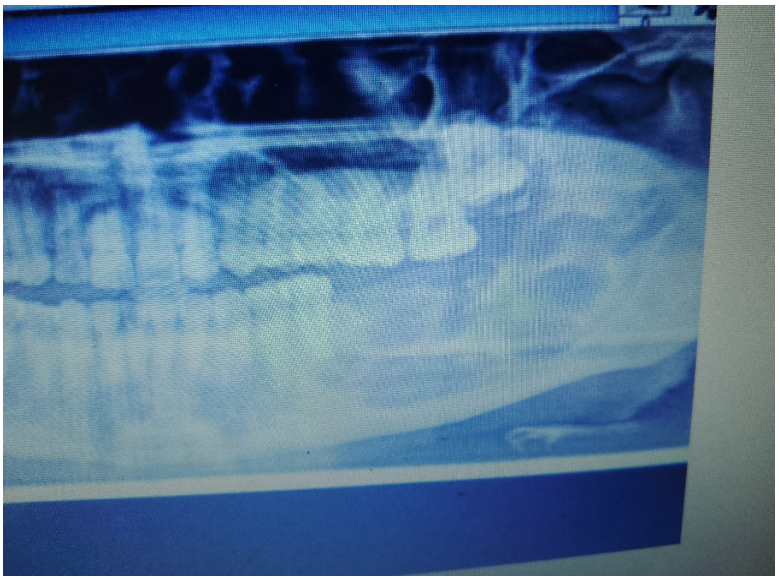

**Figure 4:** The expoxed leion before curretage.

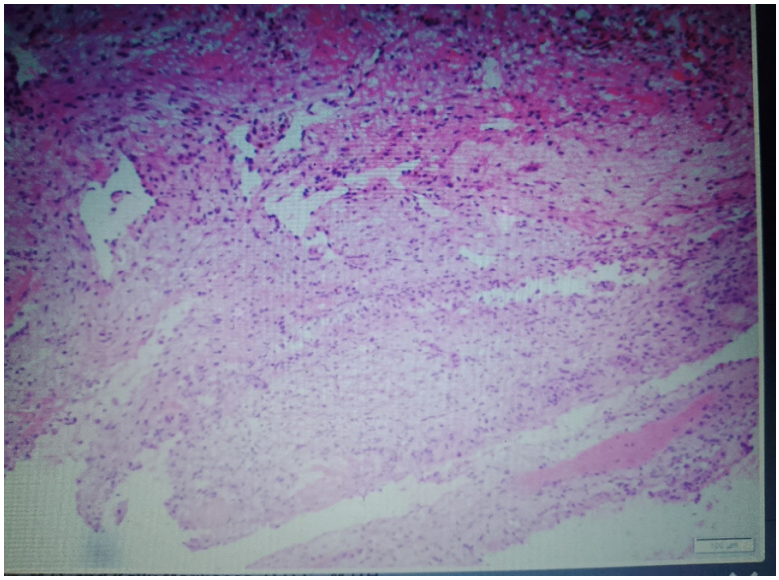

**Figure 5:** Histology of aneurysmal bone cyst showing vascular channels, multinucleated giant cells, and osteoid cells.

## Discussion

Aneurysmal Bone Cyst of the jaws (ABCJ) are benign osteolytic, blood filled lesion that affected the jaws. Primary ABCJ could be congenital or acquired and could originate from pre-existing vascular malformations. Several authors [7,9,11] have reported male preponderance. Many authors [8,10,12] have stated that it has no gender predilection, but this study reported males being more affected than the females at the ratio of 1.4:1. The mandible was more affected than maxillae at the ratio of 6:1. This study reported ABCJ occurred more in the body of the mandible and angle than any sites of the jaws (Figure 2 & 4). A case in the anterior mandible closely resembled apical periodontal cyst on the plain radiograph. Many authors [6,12,14,16] agreed that ABCJ can affects any age group, this is supported by our study as 13 years old girl was the youngest being reported while the oldest was a 52 years old woman (Table 1).

ABCJ can have considerably varied clinical features, ranging from asymptomatic lesions to a painful and rapidly expanding bone lesion. It may occasionally being discovered during routine plain radiograph of the jaws [15]. All our patients presented with complaints of pains and a growing lesion in the jaw. Clinical examination showed large to moderate spherical or ovoid swelling, which was bony hard on palpation. There were two lesions that were fluctuant. The overlying mucosa of all our cases were normal. All the lesions in this study were rapidly expanding with bony destruction. No case was diagnosed based on routine radiological findings. All our patients had bone pains and swellings. Lingual expansion was noticed in four cases. Buccal bone expansion was noticed in all our patients. Depending on its location, other signs and symptoms can be found such as headache, diplopia, loss of vision, proptosis, hearing loss and paraesthesia [2,3]. None of our cases exhibited those features but teeth mobility was common to all as the bone support of the affected teeth were lost to tumour resorption. Aspiration of it yielded blood filled lesion in six of the patients, the one yielded no aspirate.

Radiological features of our patients showed multilocular radiolucencies in five cases (Figure 4) and two cases had unilocular radiolucency (Figure 1). Two of the mandibular lesions showed unerupted teeth at the lower border of the mandible (Figure 5). Our differential diagnosis were ameloblastoma, odontogenic keratocyst, dentigerous cyst, ossifying fibroma, and apical periodontal cyst. The histopathology report showed channels and multi-loculated cyst-like spaces filled with blood and lined by fibrous septa that may or may not contain osteoclast-like giant cells, osteoid, woven bone and chandroid matrix material.

Several studies [12,14] confirmed that ABCJ could emerge as a primary lesion or secondary lesion which is derived from part of another bone lesion on. Reports of ABCJ occurring in association with ossifying fibroma, osteosarcoma and fibrous dysplasia had been documented. All our cases were primary lesions. Also few authors stated that ABCJ could be congenital or acquired. And it could be misdiagnosed for vascular tumours. This study reported acquired cases because all our patients were grown up (Table 1). The histopathology report gave us the final diagnosis of ABCJ.

However ABCJ can be classified into 3 types: conventional or vascular type which manifests as a rapidly growing, expansive, destructive lesion causing cortical perforation and soft tissue invasion, solid type may present as a small swelling, and mixed variant demonstrates features of both the vascular and solid types [18,19]. Six of our cases were vascular type while one was solid type.

Treatment of ABCJ is usually directed toward complete removal of the lesion. This may prove difficult at times since the lesion are often multi-locular and may be divided by multiple bony septae [22]. The treatment modalities include per-cutaneous sclerotherapy, embolisation, curettage, block resection and reconstruction, radiotherapy and systemic calcitionin therapy. In this study all our patients had surgical curettage, either two cases general anaesthesia and five cases under local anesthesia and intravenous sedation. All our patients presented with moderate swellings with limited bone destruction. It had been reported the ABCJ recurred following curettage [6] but no recurrence was reported in one year follow up of our cases.

## Conclusion

Aneurysmal bone cyst of the jaws is a benign lesion that need urgent treatment because it rapidly destroys bone. Its radiological features could be misleading, therefore, incision biopsy may be needed before planning of surgery.

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**Citation:** Olatunde Oluleke Omisakin. "Aneurysmal Bone Cyst of the Jaws: A Review of Cases Treated in a Teaching Hospital Northwest Nigeria". NL Journal of Dentistry and Oral Sciences 3.1 (2026): 11-16.