Ameloblastoma: A Common Benign Odontogenic Tumour with Multiple Manifestations

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Abstract

A myriad of odontogenic cysts and tumours both benign and malignant are seen in the maxilla and the mandible. One of the most frequently encountered odontogenic tumour is ameloblastoma and has different clinical and histologic variants which dictate the treatment plan. It has a properly documented inclination towards a local infiltration and tendency of recurrence. Ameloblastoma is a benign intraosseous odontogenic epithelial tumour which is locally invasive and locally destructive, non-functional, intermittent in growth, anatomically benign and clinically persistent. The tumour arises from the epithelial cell rest of malassez, from the walls of odontogenic cyst and from the basal cells.

Keywords: *Ameloblastoma, locally destructive, odontogenic neoplasm.*

Introduction

Ameloblastoma is a gradually progressing but locally infiltrating benign neoplasm of odontogenic origin affecting the jaw bones, more frequently the posterior mandible. It has high recurrence rate and was first explained in 1827 by Cusack.[1] It has been called by a variety of names including ''cystosarcoma,'' ''adamantine epithelioma,'' and ''adamantinoma''. Ameloblastoma is coined from French "amel,'' meaning enamel, Greek ''blastos,'' meaning germ or bud.[2] It is one of the most common odontogenic tumours probably second only to odontomas. Since the lesion is slow growing and asymptomatic, the patient reports only with facial asymmetry due to swelling in the maxilla or mandible, often growing to large sizes by the time of diagnosis thus jeopardizing the treatment plan and increasing chances of recurrence especially true in cases of maxillary ameloblastomas invading the base of the skull.[3]

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Case report

A27-year-old male patient reported to the dental hospital with the complaint of large swelling in the right side of the face and discomfort on mastication for 6 years.

History revealed that six years back the patient had noticed a small swelling in the right side of the mandible in the region of third molar. It was painless swelling and was growing slowly for the past six years and attained the present size. The patient gave a history that during this period sometimes the growth was remaining as it was for some time and started growing again. No history of any numbness in the lip or pain and bleeding in the swelling. The swelling was a fresh swelling and not a recurrent swelling. Similar swelling was not found anywhere in the body. No history of any disturbances in the teeth like pain, mobility etc., Past medical history was not relevant to any disease.

Extraoral examination revealed a single large irregular shaped elevated swelling on the right side of the face involving the mandibular body on the

right side and extending downward along the lower border of the mandible. The swelling was large with well-defined borders and boundaries. (Figure 1) The swelling extended superiorly to the maxillary region and infraorbital region posteriorly 1cm in front of the auricle, medially it extended to the midline of mandible, inferiorly to submandibular region. The skin over the swelling was smooth and shiny but not stretched and no secondary changes like ulceration was seen.No visible pulsations or pigmentation was seen over the swelling. On palpation the swelling was lobulated, firm in consistency, not warm, not tender. The skin over the swelling was pinchable. The swelling was not reducible or compressible. No fluctuation was present. The mass was not movable and was fixed to the mandible.

Intraorally, the right side of the mandible was enlarged buccaly and Lingually. And the buccal extension appeared in the form of a swelling and extended from the midline to the retromolar area obliterating the sulcus (figure 2 and 3) The mucosa over the swelling was normal and the teeth were irregularly arranged with tilting. The lingual extension of the swelling was mild. On palpation the swelling was firm in consistency and in certain areas it yielded on pressure but no compressibility or reducibility. The swelling was fixed to the bone. The teeth were slightly shaky and tender. No mucosal involvement and tongue movements were normal. In the right-side floor of the oral cavity was partially filled with expansion of the swelling.

Since the swelling had developed after the mandible was fully formed, only 6 years back, growing very slowly intermittently without any inflammatory signs for the past 6 years, the swelling was a benign neoplasm. Further the swelling grew both intraorally and extra orally, was fixed to the mandible, firm in consistency and hence this benign neoplasm was a benign neoplasm of the bone. Since no fluctuation was present the question of a cystic swelling was ruled out. A differential diagnosis of Ameloblastoma and Ossifying fibroma were considered. Since the tumour had grown for the long time with intermittent growth and had enlarged to a very large swelling which appeared as multinodular and intraorally the swelling extended to a large area of mandible with areas of softness the condition may be provisionally clinically diagnosed as ameloblastoma.

Skull radiographs revealed that the right side of the mandible was destroyed up to the ramus. Lower border was irregular and destroyed. Areas of radiolucency and opacity were seen.(figure 4) In the panoramic radiograph a large radiolucency was seen on the right side from midline to the anterior border of ramus (figure 5) The normal bone pattern was destroyed. The radiolucency had a multilocular appearance with areas of opacity. The lower border was enlarged. Right lower third molar was floating in a mass.

Biopsy was taken in 46, 47 region. Histological features showed the mass consisted of connective tissue. The epithelium was in the form of follicles bounded by palisading ameloblastic cells with nucleus in the periphery enclosing stellate reticulum like cells. The connective tissue was fibrous with minimal vascularity. The histological picture suggests follicular ameloblastoma as the tissue contains follicle cells lined by ameloblastic cells. (figure 6)

In view of history, clinical findings, radiographic findings and histological appearance the condition was diagnosed as follicular ameloblastoma.

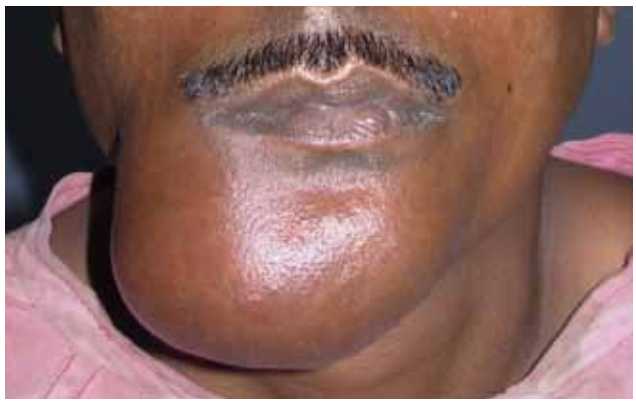

Figure 1: Facial asymmetry and huge diffuse swelling in the right side of the mandible.

Figure 2: Diffuse intra-oral swelling in the mandible obliterating the buccal sulcus, extending from 33 to 47 region mediolaterally.

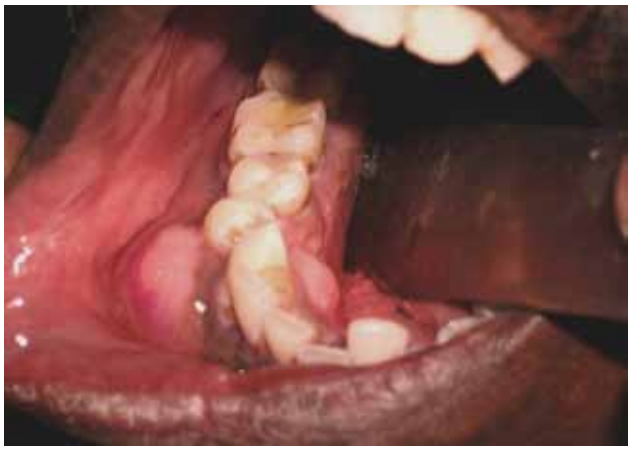

Figure 3: Bicortical expansion in the mandible with lobulations.

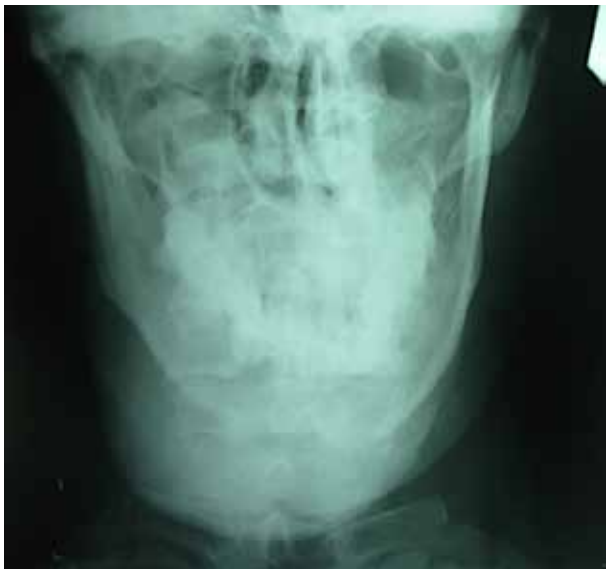

Figure 4: Postero-anterior view of the mandible showing multilocular radiolucency extending from 47 to 35 region, crossing the midline, there are radiopaque septae present in the radiolucency.

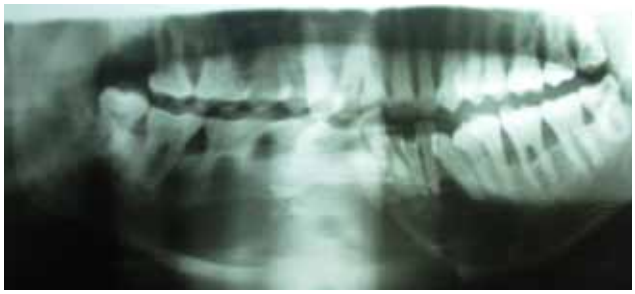

Figure 5: Panoramic radiograph reveals a multilocular radiolucency extending from 47 to 35 region, crossing the midline, there are radiopaque septae present in the radiolucency. Root resorption in 46 with displacement of 44, 43, 31, 33, 34, and 35. There is generalized alveolar bone loss.

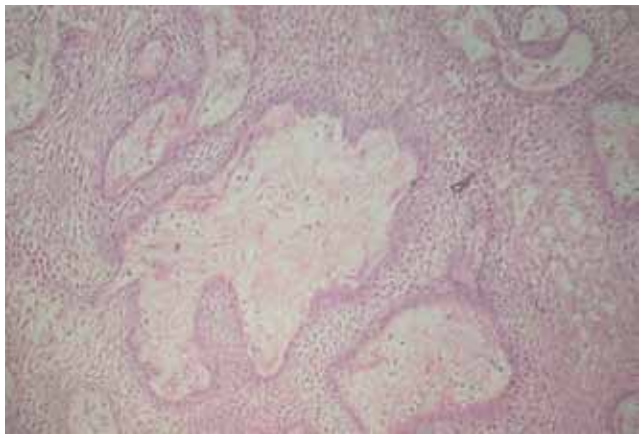

Figure 6: H&E stained section showing odontogenic epithelium showing peripheral columnar cells with reversal of polarity and central stellate reticulum like cells, in the form of strands and follicles within the connective tissue stroma with large areas of cystic degeneration associated with few areas of squamous metaplasia.

Discussion

The jaw bones have three tissues 1) odontogenic tissue – the tissue that is responsible for tooth formation 2) osteogenic tissue– the tissues responsible for bone formation 3) soft tissues within the jaw bone - blood vessels, nerves, ectopic salivary glands etc,. Tumoursare either benign or malignant and can develop from any one of the tissues.[4] Odontogenic tumours are the tumours that develop in jaws from odontogenic tissue- oral epithelium in tooth germ, enamel organ, dental papilla, reduced enamel epithelium, remnants of Hertwig's root sheath etc.,[5] This type of tumour doesn't develop in any other bone. The most common odontogenic tumour is ameloblastoma.

Ameloblastoma is a benign intraosseous odontogenic epithelial tumour which is locally invasive and locally destructive, non-functional, intermittent in growth, anatomically benign and clinically persistent. The tumour arises from the epithelial cell rest of malassez, from the walls of odontogenic cyst and from the basal cells. The proliferating epithelial cells are not ameloblasts but ameloblasts like cells with characteristics of short columnar cells with nucleus placed in the periphery. [4.5]

Clinically, the tumour develops in both males and females from 3rd decade onwards. It starts slowly, sometime stops in growth and recurs. The slow growth of tumour takes place over several years and can reach up to huge sizes invading and infiltrating locally. The

tumour expands both buccally and lingually and the teeth are irregularly arranged. [7]

Clinically the tumour is lobulated and hard in consistency and lower border is expanded. The tumour mass expands within the periosteal covering and it won't perforate the periosteum. Ameloblastoma may be monocystic or polycystic.[8] If it is monocystic it is a large cystic cavity. If it is polycystic it has a multilocular appearance with interlocular bony septa.[9]

Radiologically, ameloblastoma will appear as unicystic or multilocular (honeycomb or soap bubble appearance) and must be differentiated from other odontogenic and non-odontogenic tumours in the jaws. [9,10,11] Histologically ameloblastoma will have two components epithelial and connective tissue. The epithelial cells are arranged in alveoli which are separated by connective tissue. [12] The alveoli look like stellate reticulum and the peripheral cells appear as short columnar cells with nucleus placed away from the basement membrane and the cells look like ameloblasts. Histologically, follicular ameloblastoma, plexiform ameloblastoma, acanthomatousameloblastoma, squamous ameloblastomaand desmoplastic ameloblastoma are common varieties. [13]

Treatment varies from simple enucleation for uni-cystic amelobalstomas to resection for the multi-cystic ones. Reconstruction is also required to prevent gross facial deformity. [14]

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Ethical Permission: Approved

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