

AMELOBLASTOMAS — SEVEN YEARS CLINICAL AUDIT

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ABSTRACT

To determine the pattern and presentations of ameloblastoma in patients reporting to Armed Forces Institute of Dentistry (AFID), a descriptive study was undertaken from June 2002 to June 2009. A total number of 34 Ameloblastoma patients who were treated at the institute were analyzed. Their mode of presentation, site involved, various age groups and gender distributions, histological patterns, clinical and radiological features, treatment offered and follow up was recorded.

The age range was from 15 to 65 years with mean age of 37.6 years. Out of 34 patients, 24 (70.6%) were males and 10 (29.4%) were females. Majority of tumours, 28 (82.3%) were present in mandible and the most common site was angle of the mandible 13 (38.2%). Clinically most common feature was swelling without pain and was experienced by 19 (55.9%) patients. Radiographically, there were 19 (55.9%) patients with multilocular radiolucency and 11 (32.4%) patients with unicystic appearance while 4 (11.8%) patients had typical honeycomb appearance. The most common histological pattern was follicular, seen in 21 (61.8%) patients. Enucleation with curettage was carried out in most of the cases 11 (32.4%), marginal resection was done in 10 (29.4%) cases, segmental resection was performed in 7 (20.6%) patients and radical resection with reconstruction was done in 6 (17.6%) patients.

Ameloblastoma is one of the most common odontogenic tumour mostly occur in lower jaw. It is locally invasive and have high rate of recurrence therefore early diagnosis, complete excision with safe margins followed by reconstruction and long term follow up is required for psychological and emotional well being of the patient.

Key words: Ameloblastoma, Seven years audit, Head and neck tumours, Hemimandibulectomy

INTRODUCTION

Ameloblastoma is an odontogenic tumour of epithelial origin and is composed of ameloblast like cell.¹ It is a benign locally invasive tumour with tendency to infiltrate beyond observed radiographic and clinical margins.²

It was first described by Falkson in 1879. Later on, Mallasez introduced the term “adamantinoma” and Churchill finally named it as ameloblastoma in 1934.³ It represents 1% of all the tumours of mandibular and maxillary region and approximately 10% of all odontogenic mandibular tumours.⁴

Several causative factors have been proposed, including non specific irritating factors such as extraction, caries, trauma, infection, inflammation or tooth eruption, nutritional deficiencies disorders and viral pathogenesis.⁵

It occurs in all age groups but the lesion is most commonly diagnosed in the third and fourth decades of life.⁶ Both sexes are equally affected. The mandible to maxilla ratio is 5:1, and most frequently occurs in the molar region of the mandible.⁷

Clinically, ameloblastoma usually presents as slowly growing painless swelling (Fig 1). It causes severe expansion of both cortical plates and may perforate

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them and infiltrate the soft tissues. It may also cause loosening and displacement of teeth and cause resorption of teeth apices.⁸ The tumor may cause other symptoms such as pain, malocclusion, loosening of teeth, or ulceration.⁶ Radiographically, ameloblastoma appears as well demarcated unilocular or multilocular radiolucent area surrounded by radiopaque border.⁸ The most common radiographic feature is that of a multilocular radiolucent lesion, often described as having soap bubble or honeycomb appearance (Fig 2). Buccal and lingual cortical expansion is frequently present. On histological basis ameloblastoma is divided into 6 types as follicular, plexiform, acanthomatous, granular cells, basal cell and desmoplastic.³

Ameloblastomas have been categorized broadly into 3 variants as cystic (unicystic), solid or multicystic and peripheral or extraosseous. Unicystic ameloblastomas are classified into 3 histologic subsets. Group 1 (Luminal) consisted of a cystic lesion lined by simple odontogenic epithelium, group 2 (Intraluminal) consisted of a cystic lesion showing intraluminal plexiform proliferation of the epithelial lining, and group 3 (Mural) consisted of a cystic lesion with epithelial invasion of the supporting connective tissue in either a follicular or plexiform pattern.⁹

The treatment modalities of ameloblastoma include chemotherapy, electrosurgery, radiotherapy, sclerosing agents, simple enucleation and curettage, marginal resection sparing lower border, segmental resection with healthy margins with or without reconstruction and radical resection with immediate reconstruction.^{1,8} (Fig 3 and 4)

It has a strong tendency to recur after inadequate treatment. Ameloblastoma has been reported to recur 10 to 30 years after the initial management. Recurrence is more common when therapy consists of enucleation and curettage, as high as 90% in mandible and 100% in maxilla while 5% to 15% in case of radical resections. Recurrence may be due to inadequate excision of involved bone, overlying soft tissues and spreading of residual bone fragments containing tumour tissue.¹⁰ The correlation between recurrence and the treatment method or histopathological type is significant. The follicular, granular cell and acanthomatous types have a relatively high likelihood of recurrence, and require more radical treatment and close observation. The desmoplastic, peripheral, plexiform and unicystic types show a relatively low potential for recurrence.¹¹

Malignant (metastasizing) ameloblastoma is extremely rare. Malignant transformation occurs in 2% of all benign ameloblastomas. Most malignant ameloblastomas are of the plexiform pattern. Distant metastasis are mostly seen in the lung (75%), followed by cervical lymph nodes and spine (each almost 15%). Other locations, such as liver, skull, brain, kidney and small bowel, have also been reported.⁷

This study should help to determine how the different patterns and treatment modalities of ameloblastoma affects the subsequent recurrence potential and the long term follow up in our population.

METHODOLOGY

Present study was carried out at Oral and Maxillofacial Surgery Department of Armed Forces Institute of Dentistry, Rawalpindi (AFID) between June 2002 and June 2009. The purpose of the study was to find the occurrence of the tumour in relation to age, sex, sites, histopathological types, clinical and radiological presentation, treatment modalities provided and recurrence. Histopathologically diagnosed cases of ameloblastoma were included in the study while all other odontogenic tumours were excluded, non operable cases were also excluded. The patients were treated conservatively (enucleation and curettage or both) or radically (partial or complete jaw resection) depending on clinical and radiological examination and extension of tumours. Descriptive statistics were used to measure frequencies and percentages. Data analysis was made by the physical check of the record of the patients kept in the institute. Regular follow up of these patients is carried out.

Data had been entered and analyzed using SPSS version 10. Descriptive statistics i.e. mean \pm SD for numeric variables and frequency alongwith percentages for categorical variables were used to describe the data.

RESULTS

The age of the patients varied from 15 to 65 with mean age being 37.6 years. Most of the patients were in third and fourth decades of life. Fig 1 shows the age distribution of patients treated for ameloblastoma during the course of study.

There were 24 males (70.6%) and 10 females (29.4%). The male patients dominated in this study. The male to female ratio was 2.4 to 1.



Fig 1: Painless swelling typical of ameloblastoma



Fig 2: Multilocular radiographic appearance of ameloblastoma

Table 1 shows the site distribution of the tumour. Out of 34 patients 13 (38.2%) patients had lesion in the angle region of mandible, 9 (26.5%) patients had tumour in mandibular body while 6 (17.6%) patients were treated for ameloblastoma in the ramus region. 4 (11.8%) patients with maxillary ameloblastoma were managed in this study. 2 (5.9%) patients showed the lesions which were of peripheral types. No lesion was present in anterior region of the mandible in this study. Most of the lesions were found in the angle region of mandible.

Table 2 shows the distribution of cases on the basis of histopathological pattern. Out of 34 cases, 21 (61.8%) were of follicular type, 12 (35.3%) were of plexiform type and one (2.9%) case was of granular pattern. Acanthomatous, desmoplastic and basal cell types were not encountered in this study. Majority of the tumours were of follicular pattern.

Table 3 shows that swelling without pain was the most common clinical finding experienced by 19 (55.9%) patients. Other presenting features included swelling with pain (14.7%), discharge from lesion (5.9%), tooth



Fig 3: Radical resection of maxillary ameloblastoma

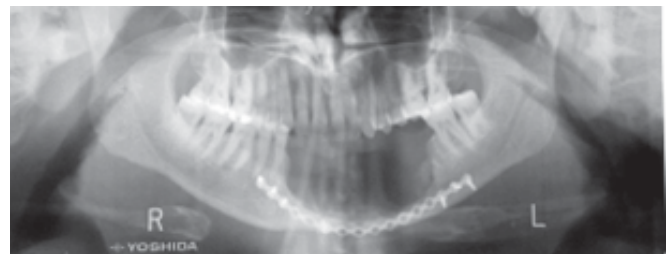


Fig 4: Resection followed by immediate reconstruction

mobility (8.8%) and disturbed occlusion (2.9%). Three (8.8%) patients were diagnosed on routine radiographic examination.

Radiographically, 19 (55.9%) cases out of 34 were multilocular whereas 11 (32.4%) cases were unilocular in appearance. 4 (11.8%) patients had typical honeycomb appearance. Table 4 shows the different radiological patterns of ameloblastoma with high incidence of multilocular lesions.

Table 5 shows the treatment given to 34 patients of ameloblastoma. Out of 34 cases enucleation along with curettage was performed in 11 (32.4%) patients. Marginal resection with preservation of lower border was done in 10 (29.4%) patients. Segmental resection was carried out in 7 (20.6%) patients while radical resection with reconstruction was done in 6 (17.6%) cases.

During follow up period 5 (14.7%) patients out of 34 showed signs of recurrence. Recurrence was seen in 3 (8.8%) cases initially managed through enucleation and curettage while one (2.9%) case of recurrence was seen each in patient managed by marginal and segmental resection. No recurrence was noticed so far in patients treated by radical resection.

TABLE 1: SITE INVOLVEMENT OF AMELOBLASTOMAS

Site	No of patients	Per-centage
Mandible body	9	26.5
Angle	13	38.2
Ramus	6	17.6
Symphysis (crossing midline)	0	0
Maxilla	4	11.8
Peripheral	2	5.9

TABLE 2: HISTOLOGICAL VARIANTS OF AMELOBLASTOMAS

Histological pattern	No of patients	Per-centage
Follicular	21	61.8
Plexiform	12	35.3
Acanthomatous	0	0
Granular	1	2.9
Desmoplastic	0	0
Basal cell	0	0

TABLE 3: CLINICAL FEATURES ASSOCIATED WITH AMELOBLASTOMAS IN PATIENTS REPORTED TO AFID

Clinical features	No of patients	Per-centage
Accidental finding	3	8.8
Swelling without pain	19	55.9
Swelling with pain	5	14.7
Pain and paresthesia	1	2.9
Swelling and prulent discharge	2	5.9
Tooth mobility	3	8.8
Disturbed occlusion	1	2.9

TABLE 4: RADIOLOGICAL PRESENTATIONS OF AMELOBLASTOMAS REPORTED TO AFID

Radiological appearance	No of patients	Per-centage
Unilocular	11	32.4
Multilocular	19	55.9
Honey comb	4	11.8

TABLE 5: TREATMENT CARRIED OUT FOR AMELOBLASTOMAS

Type of treatment	No of patients	Per-centage
Enucleation plus curettage	11	32.4
Marginal resection	10	29.4
Segmental resection	7	20.6
Radical resection with reconstruction	6	17.6

TABLE 6: TYPE OF TREATMENT AND RECURRENCE

Type of treatment	No of patients with recurrence	Per-centage
Enucleation & curettage	3	8.8
Marginal resection	1	2.9
Segmental resection	1	2.9
Radical resection	0	0

DISCUSSION

Ameloblastomas are considered locally invasive odontogenic tumours with a strong tendency to recur.¹² There are problems to determine incidence, management or recurrence rate. Every ameloblastoma does not have the same destructive potential or recurrence tendency.¹³

In this study, ameloblastoma was found most commonly between 20 – 30 years of age with mean age of 37.6 years which is close to the mean age reported by Reichart et al.¹⁴ In this study there was male predominance this is in accordance with the study of Kim and Jang.⁵

Ameloblastoma has a marked predilection for mandible.¹⁵ In the present study most of tumours were found in mandible and the most common site was the angle of the mandible which is similar to that reported by Bataineh.⁸ Follicular pattern of ameloblastoma was the most common in this study while plexiform pattern was most prevalent in the study carried out by Kim and Jang and Bataineh,^{5,8} but Waldron and El-Mofty reported that follicular pattern was the most common pattern of intraosseous ameloblastomas.¹⁶

Patients who were diagnosed by chance on routine radiographic examination showed lesser clinical mani-

festations. Swelling without pain accounted for 55.9% of the symptoms and was the most common complaint of the patient in the study as was seen in patients studied by Ansari et al and Kim and Jang.^{1,5} On radiographs, multilocular appearance (55.9 %) was more prevalent in this series which is in contrast to the study of Kim and Jang while in harmony with the study of Bataineh.^{5,8}

Ameloblastomas are treated by curettage only, enucleation and curettage or radical surgery.⁵ Ameloblastoma of the maxilla should be treated aggressively as it causes considerable problems because of its thin cortical plate and proximity to the base of skull and vital structures.^{5,17} In this institute ameloblastomas were managed both conservatively and radically depending upon the age of patient, type, site and extent of tumour. Reconstruction was mainly done through reconstruction plates and iliac crest bone grafts.

Recurrence of ameloblastomas is related to inadequate surgical treatment, incomplete removal of the tumour or when the treatment consists of enucleation and curettage.¹⁸ In this study the recurrence was 14.7% and most of recurrences occurred (8.8%) after enucleation and curettage.

CONCLUSION

Ameloblastoma is a benign odontogenic tumour but it is locally invasive, having high recurrence potential and also causing considerable facial asymmetry. So the management of ameloblastoma should be designed in such a manner to completely eradicate the tumour, prevent recurrence and to do reconstruction to restore aesthetic form and optimal function, followed by long term follow up.

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