TREATMENT MODALITIES OF MANDIBULAR AMELOBLASTOMA - A STUDY

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ABSTRACT

The purpose of the study was to find the occurrence of the tumour in the mandible in relation to age, sex, site, clinical, radiological presentation and to compare treatment modalities and their success.

The study was carried out on 32 patients with Ameloblastoma of mandible during the period 1996 to 2003, who reported at the Maxillo Facial unit of Khyber College of Dentistry, University Campus Peshawar. A proforma was designed to record information about these patients with Ameloblastoma of mandible in relation to age, sex, site, clinical and radiological findings. The diagnosis was confirmed by histopathology in each case. The treatment was decided and done depending on clinical and radiological findings and extension of tumour. Patients were followed up to nine years and on every review clinical and radiological examination was done and any recurrences found were treated accordingly.

The age range was from 10 years to greater than 51 years with mean age 33.9 years. There were 8 males (25%) and 24 females (75%) with male to female ratio of 1:3. The most common site was premolar to ramus region 28.1% (9) where as tumour extending from molar to ramus region was in 21.8% (7). Clinically 15 (46.8%) patients presented with swelling without pain. In 10 (31.1%) patients there was swelling along with loosening ofteeth. Five patients (15.6%) had swelling and pain together. There were 2 (6.2%) patients who had a chance finding on x-ray. Radiologically there were 19 (59.3%) patients with multi locular radiolucency and 9 (28.1%) patients with uni cystic appearance. Four patients (12.5%) had the typical honeycomb appearance. Excision of the tumour along with bone skimming was done in 14(43.7%) patients. Wide excision of the tumour along with healthy bone margins sparing lower mandibular border was done in 8 (25%) patients. Segmental resection with reconstruction was done in only 4 (12.5%) patients. Hemimandibulectomy with reconstruction was done in 6 (18.7%) patients. In review and follow up only 25 patients out of 32 patients came regularly.

There were 3 (9.3%) patients with recurrence were in the group where only excision and bone skimming was done. There were also 2 (6.2%) patients who had recurrence and belonged to the group of treatment where wide excision along with healthy margins was made but lower mandibular border was spared.

It is concluded from our study that whatever the size of tumour its complete excision is necessary. Key words: Ameloblastoma, segmental resection, hemimandibulectomy

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INTRODUCTION

Ameloblastoma is a tumour of odontogenic epithelial origin and is composed of ameloblast like cells[1,2,3,4]. It is only found in the jaws and is locally invasive and destructive. Once known as Adamantinoma [5] but replaced by the name of Ameloblastoma on histological basis by Churchill[6]. The benign and malignant nature of the tumour is still controversia1[1,2,7]. It is not benign because it is non encapsulated and has been reported in distant sites like lungs and cranium[1,8]. It is not truly malignant because it is only locally invasive and its metastasis through blood and lymphatics are rare and doubtful[8,9,10]. It is a rare tumour of about one percent of all the tumours of the jaws[3]. It can occur at any age but most frequently found in patients between 20 and 50 years with mean age 40 years'. No sex predilection has been noted that is both sexes are equally affected[5]. Eighty percent of the lesions are found in the mandible, in which 70% are in the molar region, angle and ascending ramus, 20% in the canine region and 10% in the incisor region[3]. The remaining 30 % of these lesions are reported in Maxilla. Since Ameloblastoma originates centrally within the bone therefore early symptoms are usually absent or minima1[8,9,10]. These tumours develop very slowly. Being painless growth therefore the patients do not seek any treatment and it may reach enormous size, involving both buccal and lingual plates, growing in the least resistant way[1,2,3,7]. On palpation egg shell crackling may be noticed in advanced cases[9] and on aspiration usually nothing comes out in typical cases of Ameloblastoma.

Radiological examination shows a characteristic cystic radiolucency with well-demarcated margins, which appears as either uni-locular or multi-locular cysts or radiolucency. Uni-locular radiolucency may simulate follicular cyst if embedding a tooth[9]. In multi locular and extensive cases there is displacement and typical resorbtion of roots of standing teeth[9].

Histologically Ameloblastomas have different types but have no effect on clinical behavior and treatment modalities[10, 11].

The surgical management of Ameloblastoma depending on clinical features and radiological appearance ranges from (1) Simple enucleation plus curettage or bone skimming, (2) Segmental resection sparing lower border of mandible, (3) Wide resection with healthy margins with or without reconstruction or (4) Radical resection (hemimandibulectomy) with immediate reconstruction. If neighboring soft tissues are also confirmed to be infiltrated they have to be excised including healthy boundaries[3,7,8,11,12.]

If the tumour remains untreated for a long time, it may reach a large size, compress and infiltrate the neighboring soft tissues, obstruct the air way, affecting nutrition by interfering mastication and swallowing, erode major arteries and reach distant parts of body or by aspiration or inhalation may deposit in the lungs.[4,11,12]

MATERIALS AND METHODS

The present study was carried out at Oral and Maxillo facial Surgical Unit of Khyber College of Dentistry, Peshawar between 1996 and 2003. The purpose of the study was to find the occurrence of the tumour in mandible in relation to age, sex, sites, clinical, radiological presentation and the treatment modalities provided were compared and followed for their success. The clinical criterion to judge the success rate was recurrence of the tumour. For this purpose a proforma was designed to collect the informations. X-rays used were orthpanthomo grams, PA face and Occlusal views. First incisional biopsy was taken to confirm the histological diagnosis. Pre and post follow up x-rays were taken during review period. Depending on the clinical features and x-ray findings that is where lingual cortical plate was intact, radiolucency was uni locular and well circumscribed and not much extended antero posteriorly, excision of the tumour with bone skimming was done and advised regular long term follow up. In those cases where lingual bone plate was eroded as noted and radio graphically and extended antero posteriorly premolar to ramus region (but ramus was not much involved and lower border seemed to be saved, wide excision with normal healthy margins was done and lower mandibular border was spared. But in those cases where lower mandibular border could not be saved, segmental resection with immediate or late reconstruction was done. In those cases where lesion was multi locular, anterioposteriorly extending to symphysis or crossing the midline and also involving condyle and coronoid and clinically both buccal and lingual cortical plates were eroded with egg crackling, radical excision or hemimandibulectomy was done

with reconstruction by autogenous graft, most preferably rib with costochondral end in the glenoid fossa to act as condyle. The patients were followed for nine years. In those patients where recurrence was noted, were treated by segmental resection with immediate or late reconstruction by rib graft.

RESULTS

Age

Fig. 1 shows that youngest patient was about the age of 10 years and the oldest was greater than 51 years. The mean age was (33.9) years. Most patients lie in the first and second decade of life.

Sex

Fig 2 shows that there were 8 males (25%) and 24 females (75%). The female patients predominated in our study.

Site

Table 1 shows the site distribution of the tumour of mandible. Ten patients (31.2%) had the lesion in premolar to ramus region while 9 patients (28.1%) had crossed the mid line (symphysis). Six (18.7%) patients have lesion only in the molar region where as lesion extending from molar to ramus region was in 7(21.8%) patients.

Clinical findings

Table 2 shows that 15 (46.8%) patients presented with swelling without pain. In 10 (31.1%) patients there was swelling along with loosening of teeth. Five patients (15.6%) had swelling and pain together. We had 2 (6.2%) patients by chance finding.

Radiological findings

Table 3 shows that there was a high incidence of multi-cystic lesion that is there were 19 (59.3%) patients with multi locular radiolucency. There were 9 (28.1%) patients who presented with uni-cystic appearance. Four patients (12.5%) had the typical honeycomb appearance. The different radiological presentations are shown in Fig 3 to 5.

Treatment modalities

The table 4 shows the treatment given in 32 patients with Ameloblastoma of mandible. Excision of the tumour along with skimming was performed in 14(43.7%) patients. Wide excision of the tumour along with healthy bone margins sparing lower mandibular border was done in 8 (25%) patients. Segmental resection with reconstruction was carried out in 4 (12.5%)

TABLE 1: SITE DISTRIBUTION

Site	Patients	%age
Body/Molar region	6	18.7
Molar/Ramus region	7	21.8
Premolar/Molar/Ramus region	10	31.2
Symphysis/Ramus region/Crossing midline	9	28.1

TABLE 2: CLINICAL FINDINGS

Clinical Features	Patients	%age
CHANCE FINDING (On X-ray)	2	6.2
SWELLING (Without pain)	15	46.8
SWELLING (with pain)	5	15.6
SWELLING (With loose teeth)	10	31.2

TABLE 3: RADIOLOGICAL CATEGORIES

Radiological Appearance	Patients	%age
UNILOCULAR	9	28.1
MULTILOCULAR	19	59.3
HONEYCOMB	4	2.5

TABLE 4: TREATMENT MODALITIES

Type of Treatment	Patients	%age
EXCISION (plus bone skimming),	14.43.7	
WIDE EXCISION (with healthy margins sparing lower mand. Border)	8	25
SEGMENTAL RESECTION (with or with out Reconstruction)	4	12.5
RADICAL RESECTION (Hemimandibulectomy with reconstruction)	6	18.7

TABLE 5: REVIEW AND FOLLOW UP

Type of Treatment	Recurrence	%age
EXCISION (plus bone skimming)	3	9.3
WIDE EXCISION (with healthy margins sparing lower mand. Border)	2	6.2
SEGMENTAL RESECTION (with or with out Reconstruction)	NIL	0
RADICAL RESECTION (Hemimandibulectomy with reconstruction)	NIL	0

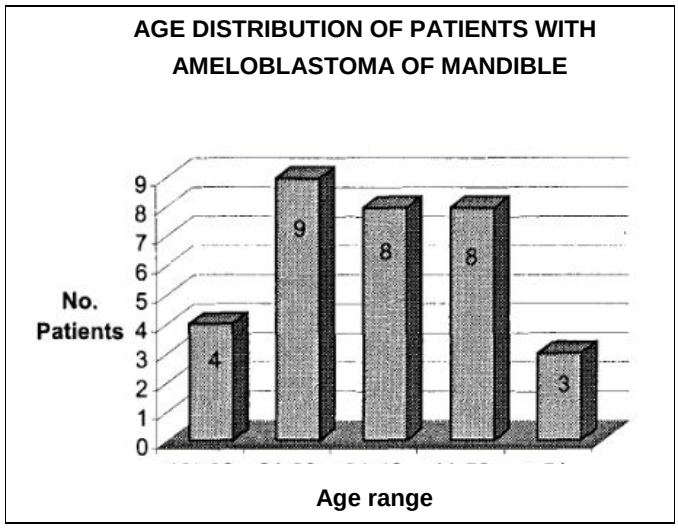

Fig 1. Bar chart showing age distribution of patients with Aeloblastoma of mandible

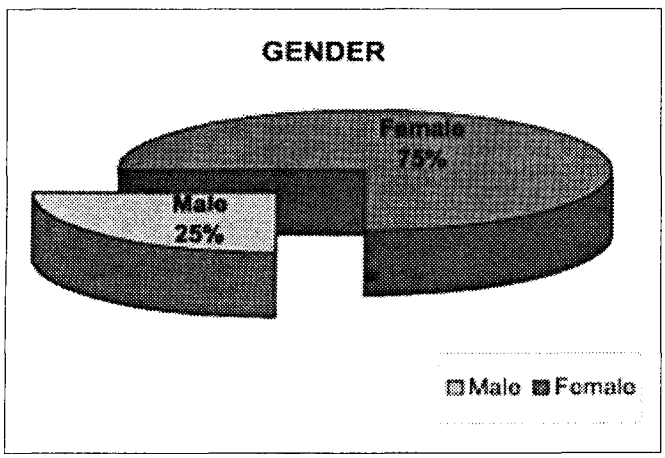

Fig 2. Pie chart showing sex distribution of patients with Ameloblastoma of mandible

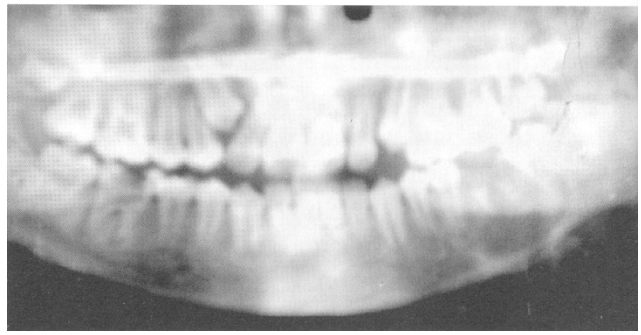

Fig 3. Radiograph showing Ameloblastoma Body/ Molar regio

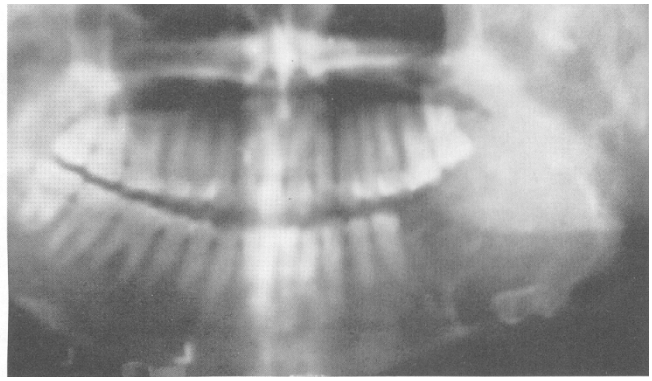

Fig 4. Radiograph showing Ameloblastoma premolar to ramus region

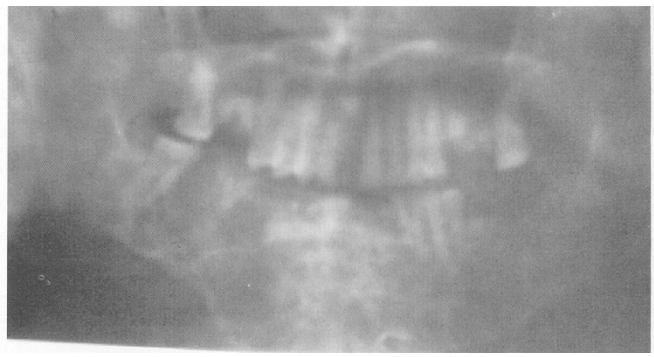

Fig 5. Radiograph showing Ameloblastoma extending Molar/Symphysis region and crossing midline

patients. Hemimandibulectomy with reconstruction was done in 6 (18.7%) patients.

Review and follow up

The patients were advised for a long term follow up. Only 25 patients out of 32 patients came regularly. Both clinical and radiological examination was done on review. Table 5 shows that there were 3 (9.3%) patients with recurrence in the group where only excision and

bone skimming was done. There were also 2 (6.2%) patients who had recurrence and belonged to the group of treatment where wide excision along with healthy margins was done but lower mandibular border was attempted to save.

DISCUSSION

In our study we found that Ameloblastoma can occur most commonly between 20-30 years of age and this is in agreement with the study of Small and Waldron" who found the peak incidence at 33 years of age. In our study the females predominated the males while in Din QU[4] male showed preponderance with a male to female ratio 1.3:1 in the same center. As far as site of the mandible is concerned the majority occurred in premolar, molar and ramus region (31.2%) and agreed with other studies[4]. Akinosi and Williams" in a series of 76 patients in Nigeria showed 74% of Ameloblastoma occurred in the symphyseal region of mandible whereas in our study 28.1% Ameloblastoma presented in symphyseal region. As far as clinical and radiological presentation are concerned they are similar as found by others1[1],12 Many studies have been carried out all over the world on the management of Ameloblastoma and they have suggested different treatment options from conservative to radical approach4,11,12,15. The main purpose of the study was to compare the different modes of treatment provided depending upon the clinical and the radiological basis after confirming the diagnosis by histopathology.

Those patients who were diagnosed by chance showed lesser clinical manifestations. They had swelling without pain or loose teeth and on palpation lingual cortical plate was found intact and x-ray findings showed a uni locular circumscribed radiolucency. Excision and bone skimming was done along with long term follow up. In a multi locular variety and extensive lesion a wide excision along with healthy bone margins and bone skimming and sparing inferior border of mandible was done. But a long term follow up was advised. In majority of the cases these treatment modalities proved well and fell in agreement with other studies[15,16,17]. In our study there were recurrences in few cases who required a repeated surgery. In uni or multi locular cases lower border of mandible was involved and both buccal and lingual cortical bone plates were eroded, whatever the size of lesion, segmental resection with early or delayed reconstruction with autogenous graft (rib) was done. Those cases where extension of the lesion up to coronoid and condyle and anteriorly extending to symphysis or crossing the midline were treated radically by hemimandibulectomy with immediate reconstruction with rib graft if involvement of soft tissue was not doubtful. There were no recurrences and patients are having normal jaw movements and masticatory function and enjoying normal social life. The complete removal of this tumour gives the cure and any thing less than this showed recurrence and this is in complete agreement with Srinivasan B and Cawson RA[12,16].

CONCLUSION

Ameloblastoma is locally invasive benign tumour so there are chances of its recurrence. Therefore in less extensive uni locular cases marginal resection with sparing lower border of the mandible is recommended. Radical resection with immediate reconstruction is the treatment of choice in case of multi locular mandibular Ameloblastoma. What ever the type of Ameloblastoma is, only curettage and bone skimming has no recommendation, so, that to avoid repeated surgeries for the poor patients of our community.

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