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RESEARCH ARTICLE

INFILTRATION OF AMELOBLASTOMA OF THE MANDIBLE - A CLINICAL, RADIOLOGIC AND HISTOPATHOLOGIC STUDY

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ABSTRACT

Purpose: The Aims and Objectives of this study were to determine the infiltration of mandibular ameloblastoma beyond the radiographic margin and the aggressiveness of any histological varieties.
Patients and Methods: A total number of six patients with mandibular ameloblastoma were treated with resection of the mandible in this study. Out of six patients, four were females and the rest males. The resected mandible with at least 1cm clearance was then cut serially in the longitudinal axis with a uniform width of 1mm from the cut margin. The serial sections were decalcified, processed and microscopic examination was done to find out the infiltration.
Results: The extent of infiltration in mesial and distal side from the radiographic margin was calculated. The infiltration ameloblastoma beyond the radiographic margin ranges from 0.5mm to 8mm. The average infiltration is 4.63mm. The follicular and plexiform types showed the maximum infiltration whereas the unicystic mural type showed the minimum. This study shows that the multicystic ameloblastomas of the mandible should be treated by resection of the mandible with at least 1cm linear bony margin.

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INTRODUCTION

Ameloblastoma is a benign odontogenic tumor constituting about 10% of odontogenic tumors and 1-3% of all the cysts and tumors of the oral and maxillofacial region (Small and Waldron, 1955). Although this second most common odontogenic tumor (Shafer *et al*., 1997) is considered a benign tumor, its clinical behavior may be regarded as lying between benign and malignant. Robinson's (1937) description of the lesion as "usually unicentric, non functional, intermittent in growth, anatomically benign and clinically persistent" seems to adequately describe a tumor that is known to be locally aggressive. This tumor occurs most commonly in the mandible than maxilla and the molar-ramus area is the commonest site of occurrence (Mehlisch *et al*., 1972). It is characterized by slow but persistent growth and local infiltration into adjacent tissues. The treatment of ameloblastoma is a controversy all the time.

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Treatment, besides surgery includes cauterization, cryo-, radio and chemotherapy. Surgical resection with margins of 1-2 cm had the least rate of recurrence (Feinberg and Steinberg, 1996), despite the variant. This tumor is locally infiltrative, spreading in pathways of least resistance, through cancellous bone. Enlargement causes expansion and erosion of cortical bone. Because of this, treatment mandates removal of a margin of normal bone beyond the tumor margin. Ameloblastoma is a tumor with a well known propensity to recur. Several factors have been identified that may influence the rate of recurrence5. The first and probably the most important factor is the clinicopathologic variant of the tumor. It is generally accepted that there are three variants of the ameloblastoma, designated as solid or multicystic, unicystic and peripheral. The solid variety has the greatest propensity for local infiltration and therefore the highest potential for recurrence. Although it erodes cortical bone, it can also spread in the medullary space well beyond the radiographic margins. Therefore, to ensure complete removal, solid ameloblastoma requires surgical resection with atleast 1cm margin of normal bone and

overlying periosteum if cortical perforation has occurred. More conservative treatment modalities such as curettage, cryotherapy or enucleation have resulted in high recurrence rates. The ideal margin of resection has not been established. Marx *et al*. (1993) reported data showing that ameloblastoma extended from 2.3-8mm beyond the radiological margin. They advocated resection of at least 1 cm of normal-looking bone beyond the radiographic tumor margin. Others, such as MacIntosh (1991), recommend 2 cm or more as an appropriate margin. The extent of soft tissue removal, when cortical perforation and soft tissue infiltration have occurred, is to be considered during surgery. Microscopic examination shows some connective tissue interface between tumor and adjacent soft tissues, but this is not a capsule. Therefore, when bone has been perforated, adjacent soft tissue must be excised to the next anatomical boundary. Ideally, soft tissue borders should be confirmed by systematic examination of frozen sections, at the time of resection. The unicystic ameloblastomas (Stewart, 1984; Gardner and Russel, 1984; Gardner, 1996; Olaitan and Adekeye, 1997) are less aggressive in their growth characteristics, although they may reach a large size.

The histologic variant of the ameloblastoma has been suggested to be of prognostic significance in terms of recurrence. Several histologic variants of ameloblastoma have been described (acanthomatous, granular, plexiform, basal cell, spindle cell, clear cell, ghost cell, desmoplastic, follicular). The granular cell ameloblastoma (Carr and Halperin, 1968; Hoke and Harrelson, 1967) was thought to behave more aggressively, with a greater tendency to metastasize. This has been disputed by several authors, because no correlation has been found between histologic type and clinical behavior. Consensus is that histologic variant should not modify treatment. The histological classification of ameloblastoma will become routine in their morphologicalcharacterization. Regularuseofimmunohisto chemical procedures will in the future bring more reliable results for determining best surgical procedures for preventing recurrence of such tumors. The use of specimen radiographs and precise processing of the specimen has led to the recommendation for 1.0 to 1.5cm bony linear margins when performing resection of the mandible. This study is used to find out the clinical, radiologic and histopathological features of mandibular ameloblastomas and precisely find out the microscopic infiltration of the tumor beyond the tumor's demarcation on radiographs.

Aim and Objectives

The Aims and Objectives of this study were to determine the infiltrationof mandibular ameloblastoma beyond the radiographic margin and the aggressiveness of any histological varieties. These include;

1. To find out the average tumor extension histologic invasion of bony tissues beyond the tumor's demarcation on radiographs.
2. To find out the histopathologic variety and characteristics and to predict the aggressiveness of the tumor on histologic basis.
3. To substantiate the linear margin recommendation for surgical resection of 1cm

MATERIALS METHODS

Patients reported to the Department Of Oral and Maxillo Facial Surgery Govt. Dental College Thiruvananthapuram during the period 2004-2005 with a provisional diagnosis of Ameloblastoma were selected. A detailed history was obtained and careful clinical examination was performed. All patients underwent conventional radiological evaluation, which included Orthopantamogram, intraoral periapical radiographs and supplemented by axial and coronal views of CT scan. Presumptive diagnosis of ameloblastoma are made on clinical and radiological grounds and confirmed in all cases by preoperative incisional biopsies. After establishing the diagnosis and deciding on surgical resection of tumor and reconstruction of mandible, the treatment plan was explained to the patient and informed consent was obtained. The pre-operative evaluation included:

1. Blood investigation
2. Urine investigation
3. Chest radiograph
4. ECG
5. Other investigation considered necessary for individual patients.

The surgeries were done under General Anesthesia with nasotracheal intubation and intermittent positive pressure ventilation with nitrous oxide and oxygen.

Surgical Procedure

Following the induction of general anesthesia, face, neck and oral cavity were prepared with povidone iodine after which the patient was draped. Cases in which autogenous rib graft was taken for mandibular reconstruction, the chest was shaven and repared with povidone iodine solution standard Risdon Incision combined with lipsplit was used to gain access to the mandible. The skin and subcutaneous tissues were incised and dissected to allow wide exposure and visualization of the underlying platysma muscle and were dissected, elevated and cleanly sectioned. Surgical exploration done to identify the marginal mandibular nerve and preserved. Blunt dissection was performed to identify the facial vessels, dissected and ligated. A horizontal incision was made through the mucoperiosteum on the facial and lingual aspects of alveolar ridge. The masseter muscle was resected at the inferior border of the mandible and reflected from the ascending ramus. In case of any infiltration of the masseter muscle found out, it was excised along with the tumor mass. The medial pterygoid muscle was then reflected from the lingual surface of the ramus of the mandible. The lingual flap was retracted exposing the mylohyoid muscle which is then severed from its attachment on the lingual surface of the mandible. Using a gigli saw, a vertical cut was 'Node through the mandible anterior to the lesion with at least 1 clearance from the radiographic margin of the tumor. Posterior cut was made in the similar fashion with at least 1cm clearance from the tumor. But in case with condylar and coronoid involvement, a classical hemimandibulectomy was done. When bone was perforated, adjacent soft tissue was excised to the next anatomical boundary. In our cases the soft tissue borders could not confirmed by systematic examination of frozen sections at the time of resection due to non availability of this facility. Anyway soft tissue clearance was given to the next anatomical boundary without violating the tumor mass. In 3 out of 6 cases immediate reconstruction with autogenous rib graft was planned. Either 6th of 7th rib was harvested through an infra mammary approach. Mandibular reconstruction was done with the rib graft of sufficient length attached to a stainless steel or

titanium reconstruction plate. Wounds were closed in dyers after achieving hemostasis. In the post operative period all the patients were given parenteral antibiotics and analgesics for a period of 7 days. Post operative inter-maxillary fixation was given for a period of 6weeks to those patients whose mandibular reconstruction with rip graft was done. Anyway soft tissue clearance was given to the next anatomical boundary without violating the tumor mass. In 3 out of 6 cases immediate reconstruction with autogenous rib graft was planned. Either 6th of 7th rib was harvested through an infra mammary approach. Mandibular reconstruction was done with the rib graft of sufficient length attached to a stainless steel or titanium reconstruction plate. Wounds were closed in dyers after achieving hemostasis.

Postoperative and histopathoiogical methods

Specimen radiographs with a standard measuring scale were taken and the linear margins were confirmed. All post operative specimens preserved in 10 % formalin were submitted for histopathological examination. Serial sections of the resected specimens in the longitudinal axis were taken with the help of a stryker saw. In cases with condylar involvement the anterior sections were only taken. The sections were taken with a uniform width of l mm. It was measured with a Vernier caliper. The stryker saw blade had a width of 0.5mm. The sections were numbered from the cut margin serially as S1, S2, S3 etc. towards the lesion. So S4 was 4mm + 3 blade width from the cut margin towards the lesion. The radiographic margin of the tumor from the cut margin was insured by the standardized scale.

All these serial sections were kept in EDTA solution for decalcification.

The composition of EDTA solution for decalcification is,

EDTA -55gm
Formalin -100m1
Distilled water -900m1

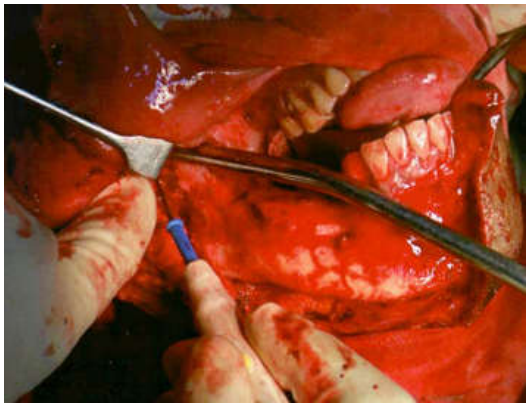
EDTA decalcification solution is versatile in that it produces minimum of artifacts and the sections can be stained by most of the staining agents. Periodic evaluations of the serial sections were done to monitor the decalcification. An average of 10 days elapsed for decalcification. The next process was to dehydrate the specimens. Dehydration of the specimens was done in alcohol in varying concentrations namely, 60%, 70%, 80%, 90% and in absolute alcohol for a period of 30 minutes (till90%) to one hour (absolute alcohol). Clearing was done in alcohol-xylene mixture and in pure xylene for one hour. The next step was impregnation with paraffin wax. The cleared specimens were impregnated overnight in hot paraffin wax. The processed specimens were finally embedded to a mould filled with molten paraffin wax. The embedded wax blocks were mounted on a microtome and sections were cut. The cut sections were flatten on a warm water bath and then were mounted on clean slides. The mounted sections were placed in an incubator before staining. Routine haematoxyline and eosin staining method was used. After staining the sections were covered with cover slip and ready for microscopic examination. In microscopic examination, if the sections from S4 (fourth cut from the cut margin) showed the ameloblastic infiltration, then the distance from the radiographic margin was calculated.

Calculation

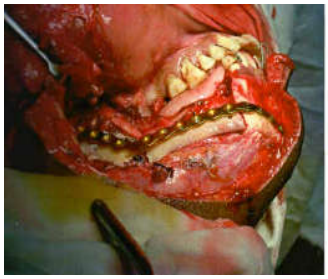
The blade width =0.5mm

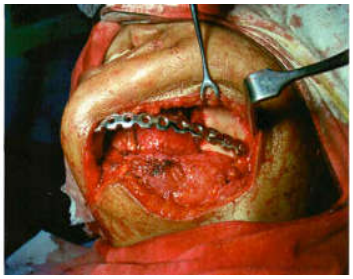
If the distance from the radiographic margin of the tumor to the cut margin is X and if the fourth cut (S4) exhibits infiltration, then the infiltration can be calculated as,

INFILTRATION = X-[Fourth cut (4mm)+3 bladewidth]
=X-[4 mm+(3X0.5)]
=X-(4+1.5) mm
=X-5.5mm



Intraoperative view of ameloblastoma



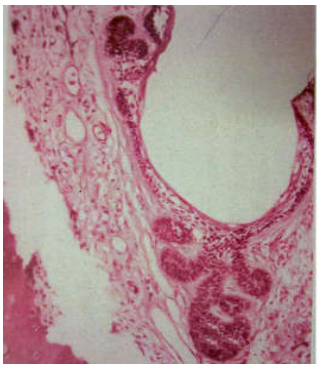


Reconstruction with graft **Reconstruction with stainless steel plate**

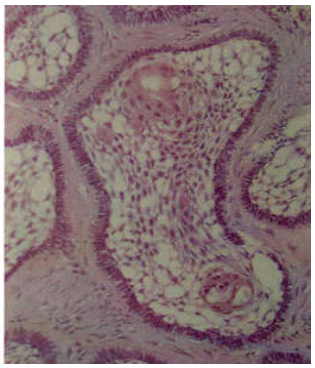
Resected specimens

Cutting the specimen **Measuring the specimen**

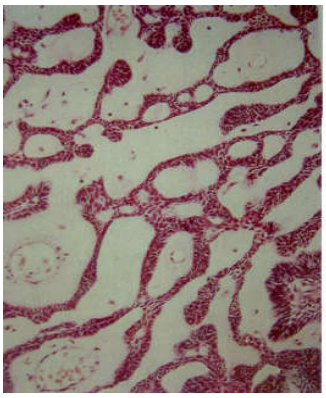
Serial section with uniform width



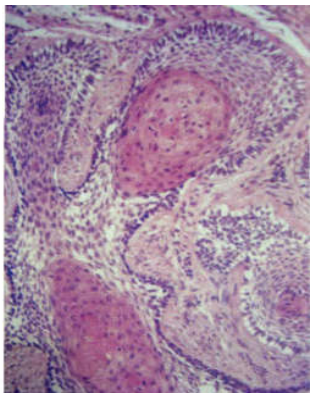
Unicystic mural ameloblastoma



Follicular ameloblastoma



Plexiform ameloblastoma



Acanthomatous ameloblastoma

RESULTS

A total number of six patients with mandibular ameloblastoma were treated with resection of the mandible in this study. Out of six patients, four were females and the rest males. The resected mandible with at least 1cm clearance was then cut serially in the longitudinal axis with a uniform width of 1mm from the cut margin. The serial sections were decalcified, processed and microscopic examination was done to find out the infiltration. The various aspects of the study which were noted pre-operatively and during histopathological examination are shown in tables I to IV. Table I shows the age and sex of the patient, location of the lesion and presenting complaints with relevant history. For all the cases, the presenting complaint was progressive swelling at some region of the lower jaw. The duration of the swelling varied from 4 months to 2.5 years. Pain was a feature in only one case. In one case there was a history of previous surgical treatment for the same lesion, which was not curative. Table II outlines the clinical features, radiographic features, the histopathological types and the microscopic features of the lesions encountered in this study. Firm, non tender swelling in the mandible was noted in five cases and in only one case tenderness was noted. Buccal cortical expansion was noted in all cases but lingual cortical expansion was noted only in four cases. The radiographic pictures presented by the lesions were multilocular radiolucency in five cases andunilocular radiolucency in one case. Expansion and thinning of the cortical plates were present in all cases. Resorption of roots in the immediate area was also seen in most of the cases. The histopathological types detected in the study were plexiform, follicular, acanthomatous and unicystic mural type. Two cases were of plexiform type and two were of acanthomatous type. In one case, follicular type predominated and the other was diagnosed as unicystic mural type.

Table III outlines the radiographic distance from the lesion to the resected margin, the serial section in which the infiltration was positive and the extent of infiltration from the radiographic margin.

Table IV depicts the infiltration of ameloblastoma detected in the various histopathological types. The infiltration ranges between 0.5 to 8mm.The average infiltration is 4.63mm. The follicular and plexiform types showed maximum infiltration as compared to the other types. The unicystic mural type showed the least infiltration and it is excluded from calculating the average.

DISCUSSION

Ameloblastoma, the second most common odontogenic tumor is considered as a benign tumor. Because of its clinical behavior, it may be considered as a tumor between benign and malignant. Robinson's description of the lesion as "usually unicentric, non functional, intermittent in growth, anatomically benign and clinically persistent" seems to adequately describe a tumor that is known to be locally aggressive. This tumor occurs most commonly in the mandible than maxilla and, the molar-ramus area is the commonest site of occurrences (Cohen *et al*., 1972). Mehlisch *et al*. (1972) suggested that the tumor is most commonly found in persons between the ages of 20 and 50 years. They also reported 78% incidence of the tumor in the mandible. Cohen *et al*. (1972) and others have reported 80 % to 90% incidence in the mandible. Sehdev *et al*. (1974) also reported 78% incidence of the tumors in the mandible. Small and Waldron1 suggested that the average patient age on discovery of the lesion is 32.7 years. In our series of six patients, the age ranges between 26 to 48 years and the average age was 37.5 years.

Considering the etiology of the tumor, although the stimulus for proliferation of epithelium is unknown, the source of the epithelium is suggested to be from 2

1. Cell rests of the enamel organ, either remants of the dental lamina or remnants of Hertwig's sheath, the epithelial rests of Malassez.
2. The developing enamel organ
3. Basal cells of the surface epithelium of the jaws.
4. Heterotrophic epithelium in other parts of the body, especially the pituitary gland.
5. Epithelium of odontogenic cysts particularly the dentigerous cysts and odontomes.

Table 1. Age andsex of patients

Age	Presenting complaints	Relevant history
26/F	Progressive swelling in the left lower jaw- 5 months duration	Pain started 1 month back and consulted a dentist
32/F	Progressive swelling in the left lower jaw- 10 months duration	Patient was pregnant at the time of detection of the disease and waited till parturition
33/M	Progressive painless swelling -Right lower jaw 2.5 years duration.	History of surgery done 1.5 years back and Swelling again started 3 months back without any tenderness.
40/M	Progressive painless swelling in the Right lower jaw - 5 months duration	NIL
46/F	Progressive painless swelling in the Left lower jaw -4 months duration.	NIL
48/F	Progressive painless swelling in the Right lower jaw -4 months duration	NIL

Table 2. Clinical features, radiographic features, the histopathological types and the microscopic features of the lesions

Age/sex	Clinical features	Radiographic features	Histologic types	Microscopic features
26/M	Firm tender swelling in the left body of the mandible extending from region to the third molar region. Buccal cortical expansion was noted. pre molar	Multilocular radiolucency of left mandible extending from second premolar region to the third molar first and second region. Root resorption of molar and thinning of lower border of the mandible were noted.	Plexiform	Section shows Ameloblast like cells arranged in irregular masses or as network of interconnecting strands of cells. The masses surrounded by a layer of columnar cells and between the layers stellate reticulum like cells were seen.
32/F	Firm and non tender swelling in the left mandible extending from second molar ascending region to the ramus. Buccal and lingual cortical expansion was noted.	Multilocular radiolucency of left mandible extending from second molar region to1cm below the condyle. Rot resorption of third molar thinning of lower border and posterior border of the mandible were noted.	Follicular	Section shows islands of epithelium with central portion con taming a loose network of polyhedral cells, resembling stellate reticulum. At the periphery a single layer of tall, columnar cells with polarized nuclei which strongly resemble ameloblasts.
33/M	Firm, non tender swelling in the right body of the mandible extending from first molar region to the ascending border of the ramus. Buccal and lingual cortical expansion was noted	Multilocular radiolucency of right mandible extending from first molar region to1cm below the condyle	Plexiform	Section shows Ameloblast like cells arranged in irregular masses or as network of interconnecting strands of cells.the masses surrounded by a layer of columnar cells and between the layersstellate reticulum like cells were seen.
40/M	Firm and non tender swelling Firm and non right in the Mandible extending from first premolar region to the region. Only second molar buccal cortical expansion was noted.	Unilocular radiolucency of right mandible extending from first premolar region to the distal aspect of second molar. Root resorption of the first molar noted	Unicystic Mural	The fibrous wall of the cyst is infiltrated by typical plexiform ameloblastoma like cells.
46/F	Firm and non tender swelling in the left mandible extending from the central incisor region to first molar region. Buccal and lingual expansion was noted. cortical	Multilocular radiolucency of left mandible extending from central incisor to first molar region.	Acanthomatous	Section shows discrete islands of tumor cells with columnar cells, having polarized cells at the periphery which resemble ameloblasts. Cells in the central portion resembling stellate reticulum shows squamous metaplasia.
48/F	Firm and non tender swelling in the right mandible extending from the central incisor region to first molar region. Only buccal cortical expansion was noted	Multilocular radiolucency of extending from right mandible the central incisor region to first molar region with thinning of cortical plates.	Accanthomatous	Section shows discrete islands of tumor cells with columnar cells, having polarized cells at the periphery which resemble ameloblasts. Cells in the central portion resembling stellate reticulum shows squamous metaplasia

Table 3. The radiographic distance from the lesion to the resected margin, the serial section in which the infiltration was positive and the extent of infiltration from the radiographic margin

Age/Sex	Radiographic distance from the lesion to the cut margin	Serial Section in which the infiltration was positive	Extent of infiltration from the radiographic margin
26/F	a.Mesial-13mm	Fifth section	6mm
	b.Distal-11mm	Fifth section	4mm
32/F	18mm	Seventh section	8mm
33/M	15mm	Sixth section	6.5mm
40/M	a.Mesial-10.5mm	Seventh section	0.5mm
	b.Distal-10mm	Sixth section	1.5mm
46/F	a.Mesial-12mm	Seventh section	2mm
	b.Distal-10mm	Sixth section	1.5mm
48/F	a.Mesial-10mm	Fourth section	4.5mm
	b.Distal-10mm	Fourth section	4.5mm

Table IV Infiltration of ameloblastoma detected in the various histopathological types

Age/ sex	Extend of infiltration from the radiographic margin	Histopathologic type
26/F	Mesial- 6mm Distal- 4mm	Plexiform
32/F	8mm	Follicular
33/M	6.5mm	Plexiform
40/M	Mesial-0.5 mm Distal- 1.5 mm	Unicystic mural
46/F	Mesial- 2mm Distal- 1.5 mm	Acanthomatous
48/F	Mesial- 4.5mm Distal- 4.5mm	Acanthomatous

Ameloblastoma occur in three different clinico radiographic situations, these are

1. Conventional solid or multicystic (about 86%)
2. Unicystic (about 13%)
3. Peripheral (extra osseous) (about1%)

In this study, out of six tumors of the mandible, five were of multicystic type and one was unicystic type.

Radiographic features of the ameloblastoma depend to a large extent on the nature and local bone reaction to the particular tumor (Laskin, 1985). In comparing the radiographic differences between the ameloblastoma, cysts and other benign tumors of the jaws, it was reported that the former exhibits scalloped cortical margins, a multilocular appearance and root resorption without severe displacement of teeth much more frequently than do cysts and other benign tumors. Radiographic features of the tumors in our study were predominantly multilocular radiolucency and in one case a unilocular one. Buccal and lingual cortical expansion, root resorption and thinning of lower border of the mandible were noted. Computed Tomography and Magnetic Resonance Imaging have revolutionized the art of diagnosis by noninvasive techniques CT scan and MRI scan has assisted greatly in appraising the mediolateral extent of the tumor and the soft tissue spread is more accurately assessed with CT or MRI. CT scan was taken in all the six cases but MRI was not taken in any of the case. Pandya and Stute Ville (1972) discussed the various treatment methods for ameloblastoma. They stated that when a positive diagnosis for ameloblastoma was obtained, the treatment must be aggressive and radical. They advised at least 2cm margin of uninvolved bone around the tumor. The treatment of ameloblastoma is a controversy all the time. Treatment, besides surgery includes cauterization, cryo, radio and chemotherapy. Surgical resection with margins of 1-2 cm had the least rate of recurrence, despite the histologic variants. This tumor is locally infiltrative, spreading in pathways of least resistance, through cancellous bone. Because of this, treatment mandates removal of a margin of normal bone beyond the tumor margin. Atkinson (1984) used megavoltage radiation to treat recurrent ameloblastoma and felt that radiotherapy was unsuccessful for intraosseous ameloblastoma but may be more beneficial in inoperable cases. Gardner (1988) suggested that radiotherapy was unsuccessful for intraosseous ameloblastoma and may be more beneficial in inoperable cases. Although cryotherapy (Emmigs *et al*., 1971; Marciami *et al*., 1977) as a mode of treatment has been advocated by a number of authors, there is a paucity of reports regarding the long term effects of its use. Macintosh (1991) recommended 2cm or more as an appropriate margin for resection. Olaitan *et al*. (1993) suggested that the basic approach for the management of ameloblastoma should be resection of at least 1 cm and up to 2 cm of surrounding clinically uninvolved cancellous bone. Feinberg *et al*. (1996) stated on the basis of the clinical experience and literature review that the treatment of solid or multicystic ameloblastoma of the body and posterior mandible requires radical therapy. They also suggested to attempt the excision of the neoplasm as a whole without violating the tumor boundaries in view of seeding of tumor cells. Olaitan *et al*. (1997) suggested that unicystic ameloblastoma often can be treated successfully less aggressively than what is needed for multicystic ameloblastoma. They also stated that when the lesion is confined within the bone, enucleation or marginal resection often can be successful. However when there is bony perforation full thickness resection should be done. Marx *et al* (1993) reported that ameloblastoma extended from 2.3 mm to 8mm beyond the radiographic appearance of the tumor. They recommended at least 1cm of normal appearing bone to be resected. Eric R Carlson (2000) recommended 1 to 1.5cm bony linear margin, when performing resection of the mandible. He also stated that the average tumor extension into bone is 4.5mm thereby justifying a resection with 1 to 1.5 cm linear bony margin.

All the cases in our study were treated by resection of the mandible with atleast 1cm linear bony margin. Specimen radiographs were taken and specimens were sent for histopathological examination. Serial sections in the longitudinal axis with uniform width of 1mm were taken and microscopical examination done to find out the infiltration. The microscopic infiltration of ameloblastoma in our series ranges from 0.5 to 8mm with an average value of 4.63 mm. The follicular and plexiform types exhibited maximum infiltration and the unicystic variety had the least infiltration.
The extent of infiltration exhibited in our study can be compared to the values suggested by Marx *et al*. (1993) and Eric R Carlson (2000). Although the range of infiltration found in our study is 1.8mm less than the study conducted by Marx *et al*, the average tumor extension into bone is compatible with the values suggested by Eric R Carlson. The multicystic ameloblastomas should be treated by the resection of the mandible with at least 1cm linear margin because of the tumor infiltration beyond the radiographic margin.

Summary and Conclusion

This study was undertaken to find out the infiltration of mandibular ameloblastoma beyond the radiographic margin, the histopathological type and characteristics and there by substantiating the linear margin recommendation for resection of 1cm. Six patients with mandibular ameloblastoma were included in the study and all were treated by resection of the mandible with atleast 1 cm linear bony margin. In two cases, classical hemimandibulectomy was done and only the mesial infiltration was studied where as in four cases the mesial and the distal infiltration were studied. Specimen radiographs were taken with a standardized scale. Serial sections in longitudinal axis with uniform width of 1mm from the cut margin were taken with the help of a stryker saw. These sections were decalcified in EDTA solution, processed and sectioned with the help of a microtome and microscopic examination was done to find out the infiltration. The extent of infiltration in mesial and distal side from the radiographic margin was calculated. The infiltration of ameloblastoma beyond the radiographic margin ranges from 0.5mm to 8mm.

The average infiltration is 4.63mm. The follicular and plexiform types showed the maximum infiltration whereas the unicystic mural type showed the minimum. This study shows that the multicystic ameloblastomas of the mandible should be treated by resection of the mandible with at least 1cm linear bony margin. Even though the total number of histopathological varieties was too small to arrive at any definite conclusions, the results show that in this series, the follicular and the plexiform types have a greater extent of infiltration than the acanthomatous and unicystic types. It is also felt that a more extensive study involving a larger sample of histopathological types should be undertaken to confirm the aggressiveness of these various types.

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