

## CASE REPORTS

### TREATMENT OF AMELOBLASTOMA OF THE JAWS IN CHILDREN

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#### SUMMARY

**Background:** To report the surgical experience on the treatment of ameloblastoma of the jaws in children.

**Method:** This is a prospective study of six children below the age of 16 years with ameloblastoma of the jaws seen at the Maxillofacial Unit of the Department of Surgery, Korle Bu Teaching Hospital over a fifteen year period. The clinico-pathological data and management of these children is presented here. The initial surgical technique used in their treatment consisted of one mandibular resection three enucleations with preservation of the surrounding dentition, and two marginal mandibular resections, preserving the lingual cortical plate in one, and the lower cortical border in the other.

**Results:** Though the end result of treatment in all the six children was satisfactory, all the three cases of enucleation showed signs of recurrence soon after and needed repeated surgery.

**Conclusion:** In terms of long term cure for this tumour, enucleation has limited benefits. In children however, especially in those afflicted with the unilocular type, enucleation may be used as an interim procedure for the mandible to achieve further growth before carrying out a more appropriate definitive surgery.

**Key Words:** Ameloblastoma, mandible, enucleation, child.

#### INTRODUCTION

Ameloblastoma is the commonest type of tumour arising from odontogenic epithelium and also constitutes the commonest jaw tumour found in Africans.<sup>1</sup> This tumour is characterized by a slow growth and with few or no symptoms in the early stages.<sup>2</sup> The highest incidence is in the third or fourth decades of life.<sup>3</sup> However, the tumour probably starts to develop between early childhood and young adulthood.<sup>4</sup> This opinion is validated by reports, in later years<sup>5, 6</sup> of the increasing frequency of ameloblastoma in children.

The rise in the diagnosis of the tumour in young children has been attributed to the increasing popularity of

orthopantomography.<sup>6</sup> The prognosis in terms of treatment of this tumour is good if one considers the mortality rate; but if the tumour's ability to invade locally and destroy by expansive growth into the tissues of the face and jaws is considered, then it should be concluded that it is a serious tumour and one in which the most adequate method of treatment must be chosen.<sup>7</sup>

Opinions concerning the most adequate treatment for ameloblastoma vary and include factors such as the probability of a final cure, the possibilities of controlling the disease by a later operation if a recurrence is diagnosed, the age of the patient, the degree of disturbance of function and growth and the possibilities of follow-up examinations.<sup>8</sup>

In children, because the growth of the jaws is not completed, choosing the most appropriate treatment for ameloblastoma is often most challenging and poses a special difficulty. Clinico-pathological studies were undertaken in 48 patients with ameloblastoma at the Korle-Bu Teaching hospital and the treatment of the tumour in children who were less than 16 years of age prospectively studied separately and constitutes the purpose of this report.

#### PATIENTS AND METHOD

The details of six patients aged less than 16 years old among 48 cases of histologically diagnosed ameloblastoma treated and followed up by this author at the Dental Department of the Korle-Bu Teaching Hospital, from 1992 to 2007 were reviewed. All the patients were Ghanaians. The data recorded included details of the clinical features, methods of treatment, complications and follow-up findings.

Initial diagnoses of all the patients were based on their clinical presentations coupled with radiological appearances while histological studies were based on biopsies and surgical resections. The surgical techniques used in the treatment of these children were enucleation, marginal resection - excising portion of the mandible to include the entire tumour while maintaining its conti-

nity by sparing either the lower cortical bone or lingual plates and total resection of the tumour with margins of 1cm of healthy bone.

## RESULTS

Two of the 6 patients studied were male while four were female giving a male to female ratio of 1:2. The mean age was 14.3 years, and the tumour was located in the mandible in all the six children. Four of them were located in the anterior region - between the pre-molar teeth on either side of the mandible, one in the angle region, extending into the ramus but not involving the condyle and the sixth was located in the body of the mandible on the right side.

Four of the tumours were unilocular while the other two were multilocular. All the unilocular cases were clinically associated with a cyst, and histologically diagnosed as arising from a dental cyst. Despite their early presentation, the tumors were noticeably large enough in size to produce distortion of the face and this was often the main reason given by the patients for seeking treatment.

The initial surgical technique used in the treatment of the 6 children consisted of one partial mandibular resection, three enucleations with preservation of the surrounding dentition, and two marginal mandibular resections, preserving the lingual cortical plate in one, and the lower cortical border in the other (Table 1).

Table 1; Management of ameloblastoma of the mandible in six Children

Patients	Age In Years	Initial Treatment Method	Second Treatment Method	Result
M.A.	12	Partial mandibulectomy	Nil	No recurrence after 13 years and 1 month
A.A.	14	Enucleation	Marginal resection after 14 months	No recurrence after 7 years 3 months
C.A.	15	Enucleation	Marginal resection after 19 months	No recurrence after 4 years 6 months
B.E.	15	Marginal resection	Nil	No recurrence 4 years 2 months afterwards
G.D.	15	Marginal resection	Nil	No recurrence 11 years 9 months afterwards
F.A.	15	Enucleation	Marginal resection after 17 months	No recurrence 6 years 3 months afterwards

The end result of treatment in all the six children was satisfactory. Thirteen years after treatment, no tumour recurrence was observed in the one case treated by partial mandibular resection and two cases treated with marginal resection. All three cases treated by enucleation, however, showed signs of recurrence soon after treatment and needed repeated surgery.

## DISCUSSION

In terms of treatment of this tumour, it is clear from this study that enucleation has only limited benefits in seeking a cure. In children, however, especially in those afflicted with the unilocular type, enucleation may be used to 'buy time' for the mandible to achieve further growth before carrying out a more appropriate treatment. Of the three patients treated by this method in this report, the tumour recurred soon after; however, by this time the mandible had achieved further growth and regeneration of new bone at the lower margin, thereby enabling marginal resection.

The compact bone of the lower border of the mandible may be eroded but is unlikely to be invaded, hence if it is thought desirable on general clinical and surgical grounds to save this part of the bone, then as a calculated risk, the clinical and radiological margin of the lesion may be regarded as the true margin.<sup>10</sup> In this study, this principle of selective conservative surgical treatment was applied in 2 of the children without any recurrence over a period of 4 years in one case and over 11 years in the other.

The use of this method is to be preferred, particularly in children, as mandibular growth is not yet complete and where mandibular form needs to be preserved or where facilities or expertise for reconstruction are not readily available. For it to be successful, however, there is the need to ensure a good and regular follow-up in order to detect and deal with any recurrence early. In this study, this principle was applied as an initial treatment in two cases and as a secondary treatment in three cases where enucleation failed.

No recurrence was observed in all the five cases in which this method was employed. The surface of the saved cortical bone was routinely planed well by drilling with a vulcanized bur and well washed with normal saline before wound closure. This form of treatment avoids the need for reconstruction, and is to be preferred wherever possible.

In the one case where total resection was carried out, the entire anterior portion of the mandible was involved with a multilocular destruction, preventing the use of either enucleation or marginal resection. Despite her age, a total resection of the tumour with at least 1cm of healthy tissue proved to offer a good result. The relative frequency of ameloblastoma in children as shown in this study is 12.5%, rather lower than previously reported in two similar reports.<sup>5,6</sup> In a recent report<sup>6</sup>, 22% of ameloblastoma treated in Japan were in patients less than 16 years old. In all these young patients the tumour was located either in the mandibular ramus or molar regions. In fact, none was located in the anterior region.

By contrast, in this survey, four of the tumors (66.7%) were located in the anterior region, and one each in the molar and angle regions.

The predilection of ameloblastoma for the symphysis and premolar regions in Africans as opposed to the molar and angle regions in Caucasians has already been reported.<sup>5,11,12</sup>

Ameloblastoma may be classified into five histological types as follows: plexiform, follicular, acanthomatous, basal cell and granular types.<sup>9</sup> These classifications, however, were not routinely used in histology reports at the Korle Bu Teaching hospital.

## CONCLUSION

It is clear from this study that in terms of long term cure for this tumour, enucleation has only limited benefits. In children however, because of rapid bone regen-

eration and growth associated with youth, enucleation may be used as an interim procedure, especially in those afflicted with the unilocular type, for the mandible to achieve further growth before carrying out definitive surgery.

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