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MASSIVE AMELOBLASTOMAS

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SUMMARY

Our experience in the management of eleven cases of massive ameloblastomas of the jaws seen during the last fourteen years in the department of Surgery at the King George's Medical College, Lucknow is being presented. Immediate reconstruction of the jaw was attempted with either a bone graft or a stainless steel plate or K-wires as was feasible. Of the three modalities used for reconstructing the defect, bone grafts gave the best acceptable results.

(*Key words* : Ameloblastomas, Jaw Tumours)

Ameloblastoma is a true neoplasm of enamel-organ type tissue which does not undergo differentiation to the point of enamel formation. They are slow growing benign tumours and often attain massive size in both the jaws (Fig. 1). So, even though they are only locally malignant, rarely metastasizing tumours, often large en-block resections like hemimandibulectomy and maxillectomy have to be done in order to minimize the chances of recurrence. One stage reconstruction of the lower jaw defect by autogenous bone graft, stainless steel plate or K-wire should always be attempted in order to give a cosmetically and functionally presentable lower jaw.

Material and Method

Out of 108 cases of benign jaw tumours treated in the department of surgery, 48 were ameloblastomas. Eleven of them, could be classified in the group of massive ameloblastomas. In seven patients the massive tumour was involving the entire vertical ramus of mandible of one side and extended on to involve the adjacent horizontal ramus (Fig. 1 & 3a). In 2 other patients it was involving both the horizontal rami through symphysis menti (Fig. 2 & 3b). The two maxillary ameloblastomas and two mandibular ones were in females and the rest were in males. Age of patients ranged from 20-60 years (mean 32.81 years). Average duration of symptoms was 4.45 years but it ranged from $1\frac{1}{2}$ years to 16 years (Table 1).

Observations

Swelling, disfigurement of face, difficulty in opening the mouth, pain on mastication and disturbed phonation were the main complaints. One patient presented with an intraoral ulcer with purulent discharge. The maxillary ameloblastomas presented with facial and palatal swellings, dilated veins and nasal obstruction simulating the clinical picture of cancer maxillary antrum, which was the preoperative diagnosis in one case, only to be altered by gross and histological diagnosis of ameloblastoma later on.

Radiographic picture in mandibular ameloblastoma revealed classical cystic appearance in 6 cases (Fig. 3a & 3b), solid and cystic picture in 2 patients and unilocular cystic picture in one case (Fig. 4). Of the 2 maxillary ameloblastomas 1 patient showed multilocular cystic lesion whereas the other one demonstrated bony destruction of the antrum and was labelled as cancer maxillary antrum (Table 1).

For the 9 cases in which mandible was involved, hemimandibulectomy was done. Autogenous rib graft was used to reconstruct the bone defect in 5 cases (Fig. 9) but in 2 of them it had to be taken out after 6 and 8 months respectively because of chronic discharging sinuses.

Table

Sl. No.	Name	Age/Sex	Site	Duration	Clinical picture
1.	R.P.	23y/M	Rt. Mandible Horizontal ramus + Angle	2½yrs	Painless jaw swelling. Difficulty in Mastication.
2.	S.P.	45y/M	Rt. Mandible Vertical ramus + Angle	1½yrs	Painless jaw swelling and facial disfigurement.
3.	P.	32y/M	Rt. Mandible Vertical ramus + Condyle + Angle	3yrs	Painless jaw swelling.
4.	X.P.	20y/F	Lt. Mandible Horizontal ramus and and angle + part of vertical ramus	3½yrs	Intraoral ulcer, jaw swelling.
5.	S.R.	30y/M	Lt. Mandible Part of Horizontal ramus, angle and Vertical ramus	4½yrs	Same as case 1.
6.	K.D.	26y/M	Symphyseal extending into both horizontal ramus	3yrs	Same as 1 + Difficulty in phonation.
7.	M.S.	60y/M	Symphyseal extending into both horizontal ramus	8yrs	Mouth opening and difficulty in phonation.
8.	P.P.S.	30y/F	Lt. Maxilla	2yrs	Facial and palatal swelling dilated veins and nasal obstruction.
9.	L.	27y/F	Rt. Maxilla	2yrs	Facial & palatal swelling.
10.	A.S.	20y/M	Rt. Maxilla	3yrs	Recurrent swelling after curretting and packing twice.
11.	M.R.U.K.	48y/M	Rt. Mandible	16yrs	Jaw swelling & disfigurement.

The cosmetic results remained acceptable even after removal of the rib. Iliac bone graft was used in one case to carve the angle and the patient has done well (Fig. 6). A stainless steel plate was used in one case (Fig. 5), and the 2 symphyseal defects were bridged by curved K-wires. In one of them the wire was removed after 3 years, as it extruded out on the skin, without causing any Andy-Gump deformity and the patient is functionally and cosmetically satisfied.

The maxillary ameloblastomas (Fig. 8) were treated by maxillectomy. Stent mould was used for temporary prosthesis which was replaced by permanent prosthesis after 3 months.

Discussion

Ameloblastoma is usually unicentric, non-functional, intermittent in growth, anatomically benign and clinically persistent odontome which remains asymptomatic for long and can reach

No. 1

Radiography	Histology	Therapy	Complication	Symptom free since
Multiloculated cystic appearance.	Ameloblastoma follicular type.	Hemimandibulectomy with split rib graft.	Graft rejection.	6 yrs 8 month
Cystic and solid appearance.	Ameloblastoma plexiform type.	Hemimandibulectomy with split rib graft.	Graft rejection.	8yrs
Multicystic	Ameloblastoma follicular type.	Hemimandibulectomy with iliac bone graft.	—	9yrs
Cystic and solid	Ameloblastoma plexiform type with intense inflammatory reaction.	Hemimandibulectomy with split rib graft.	—	2yrs
Monocystic	Ameloblastoma follicular type.	Hemimandibulectomy with steel plate interposition.	—	1yr
Multicystic appearance with teeth in them.	Ameloblastoma follicular type.	Segmental mandibulectomy with K-wire interposition.	—	5yrs
Multicystic	Ameloblastoma follicular type.	Segmental mandibulectomy with K-wire interposition.	K-wire extruded after 3 yrs.	7yrs
Erosion of Maxillary antrum. Ca. alveolus like appearance.	Ameloblastoma plexiform type.	Maxillectomy + prosthetic dentures.	—	5yrs
Multicystic	Ameloblastoma follicular type.	Maxillectomy + prosthetic dentures.	—	2yrs
Multicystic	Ameloblastoma	Hemimandibulectomy & reconstruction with two pieces of free rib graft fixed by stainless steel wire.	—	14yrs
Multicystic	Ameloblastoma	Hemimandibulectomy + rib grafting.	—	2½yrs

massive proportions (Fig. 7). Though, Falkson (1879) gave the first thorough description of this tumour (Shaffer, 1963), Robinson (1937) with 379 cases and Small and Waldon (1955) with 1036 cases clearly described the precise clinical features of ameloblastoma. Schemutizinzer (1980) reported an ameloblastoma in a lady which had attained the size of a child's head.

Except in isolated report of Anda (1948), Mac Whriter et al. (1952) and Baclease and Letonze (1950) radiotherapy has largely been condemned in the management of ameloblastoma. Intraoral block excision, extra oral block excision and peripheral/marginal osteotomy are all recommended for smaller lesions. However, for massive odontomes, only resection of a complete segment containing the tumour can give a better chance of permanent cure than other forms of local excision. The cases with massive tumours as in this study present with

expanded and papery thin tables and the longitudinal expanse of the odontome across both the rami of the mandible can be adequately treated only by radical resections like hemi-mandibulectomy. In the 2 cases where the symphyseal area was involved and the tumour extended to the horizontal rami on either sides, the entire segment in between the two angles was removed and replaced by a K-wire bent to conform to the shape of the jaw (Fig. 5).

Fig. 1. Massive ameloblastoma of right mandible.

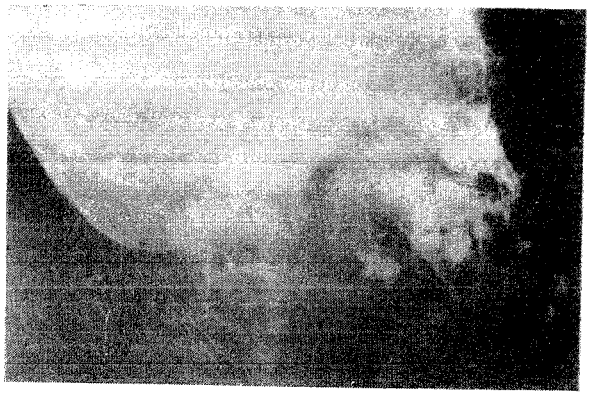

Fig. 2. Massive ameloblastoma of the symphyseal region involving both the horizontal rami—Radiographic appearance.

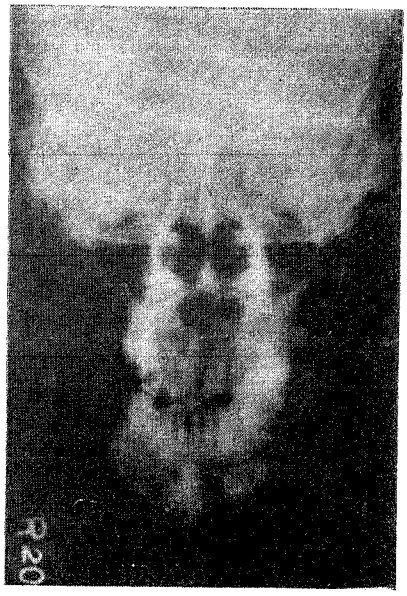

Fig. 3a. X-ray skull showing polycystic appearance of a massive ameloblastoma involving the entire vertical ramus and half of the horizontal ramus of mandible (Right side).

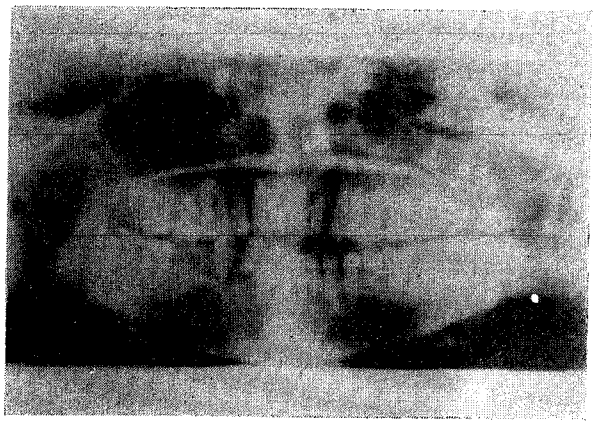

Fig. 3b. Orthopantogram showing symphyseal ameloblastoma with multicystic appearance.

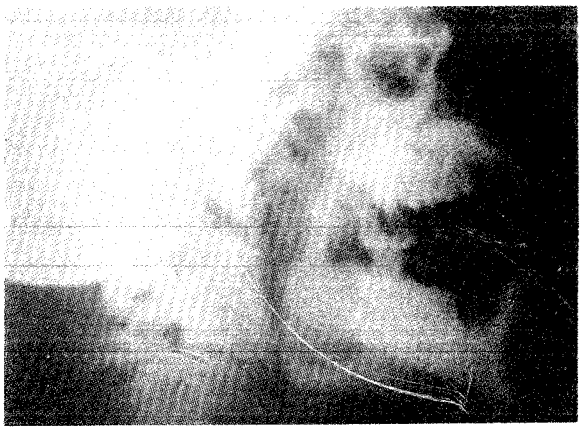

Fig. 4. Monocystic ameloblastoma.

Fig. 5. Reconstruction after hemimandibulectomy by a bent stainless steel plate.

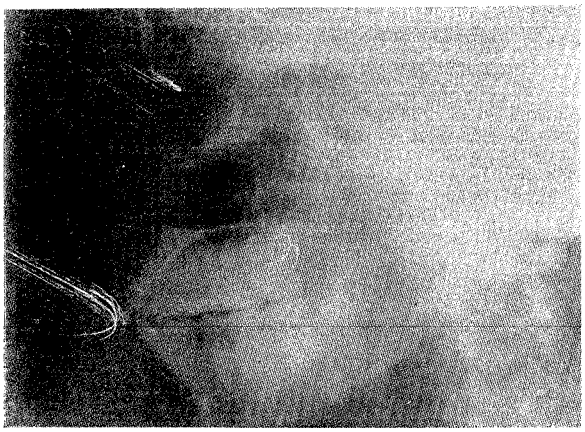

Fig. 6. Iliac crest reconstruction of right hemimandible.

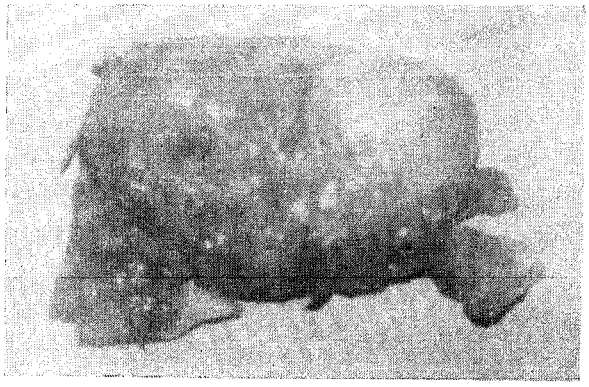

Fig. 7. Multicystic ameloblastoma—Gross appearance.

The two symphyseal ameloblastomas of the mandible need special mention because of enormous size and problems encountered with radical excision of the origins of genioglossus and geniohyoid muscles. Tracheostomy was performed to prevent respiratory obstruction due to tonguefall. These muscles got a new attachment to the fibrous tissue in the symphyseal area and floor of mouth and the tracheostomy was closed in a week.

Unlike carcinoma alveolus, after surgical ablation soft tissue coverage is never a problem in massive ameloblastomas. The lining was breached in only 1 patient but the peripheral tissue expansion caused by the tumour assisted a tension free primary closure. However, the reconstruction of the bony defect needs correction, to prevent jaw deviation and occlusal disharmony. An abundance of soft tissue to construct both the lining and cover prevents

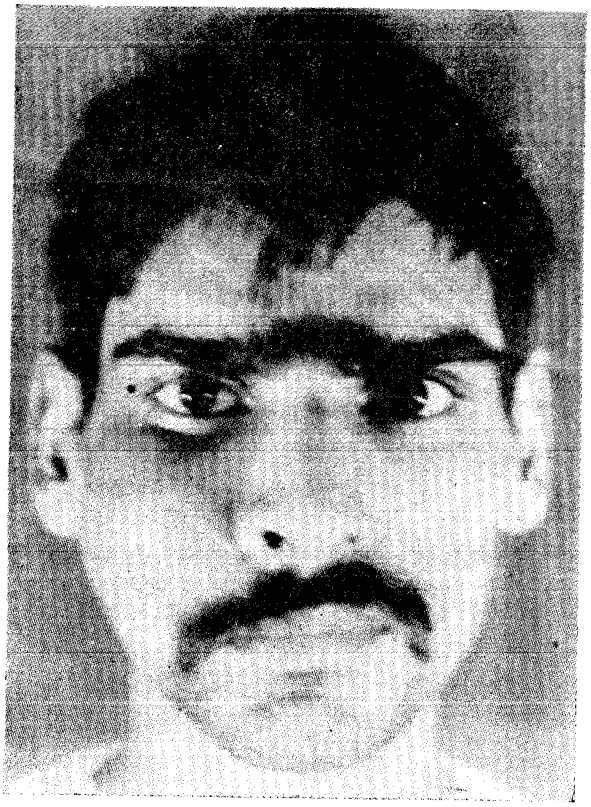

Fig. 8. Maxillary ameloblastoma (Right side).

autogenous bone grafts/metallic prosthesis from coming in contact with saliva or external infection.

Our experience of the reconstruction of these large mandibular defects with rib graft in 5 cases, iliac bone graft in 1, stainless steel plate in 1 and bent wire in 2 cases have been encouraging. Survival of autogenous rib graft for more than 14 years in one patient is a testimony to the efficacy of rib grafts as mandibular substitutes. Even when the bone graft or the implant had to be removed after 6 months to 3 years, because of chronic infection, enough fibrosis had occurred by then to hold the jaw in proper shape and prevent it from deviation, collapse and consequent gross disfigurement. The prerequisites of successful bone grafting are:

—Proper closure of the lining and cover.
—Adequate vascularity of covering tissue.
—Proper sized bone graft.
—Rigid intermaxillary fixation.

Fig. 9. Rib graft reconstruction of mandible. Orthopantogram after fourteen years of surgery.

Gillies and Millard (1957) have stressed the role of rigid fixation of remaining mandibular body by intermaxillary fixation for successful bone grafting. Seward (1974) has used a U-shaped piece of bone for reconstruction of the excised joint and Converse (1945) has used fenestrated tantalum plates filled with cancellous bone chips to fill the gap. Fry (1957) popularised the split rib graft to expose the cancellous bone for quicker graft take up. Manchester (1965) reproduced the anatomy of hemimandible from the lateral surface of ipsilateral ileum. An autopsy of his patient with melanoma showed that the architectural changes had begun to occur in the mandible, secondary to functional stress. Curettage and bone chip filling has no place in the management of massive ameloblastomas as the sheer size makes it impracticable. Moreover, it is attended with a very high recurrence rate. Cauterization, thermal or chemical, after curettage has been tried, but our experience with this modality is only in very small tumours. CO_2 lasers and cryotherapy are recent tools for ameloblastomas but their role in massive tumours is disputable.

Conclusions

Eleven cases of massive ameloblastomas where immediate mandibular reconstruction was carried out have been followed up during the last fourteen years. All the patients are

leading a cosmetically and functionally satisfactory life. No recurrence has been observed in any of these cases. The only problems encountered were a chronic discharging sinus and subsequent extrusion of the bone graft and K-wire in 3 cases, over a period of 6 months to 3 years post operatively. None of the patients agreed to have an artificial denture despite of our offer to them in cases where mandibular reconstruction was carried out.

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