Radical Management of Giant Ameloblastomas: A Case Series

Arpit Sharma · Ahmed M. Shaikh ·
Shraddha V. Deshmukh · Jyoti P. Dabholkar

Received: 10 November 2010 / Accepted: 16 November 2011 / Published online: 30 November 2011
© Association of Otolaryngologists of India 2011

Abstract Ameloblastomas are rare, slowly growing and locally invasive tumours with high recurrence rate, if not treated they can grow to enormous size; we report five such cases in our article and discuss their surgical management. We report five cases of giant ameloblastoma presented in our institute between 2007 and 2010, we treated them surgically with wide margin of resection. It is widely reported that recurrence of ameloblastoma in many cases reflects the inadequacy or failure of the primary surgical procedure. We treated all our cases with radical excision with free flap reconstruction with no recurrence in any of our patients in 2 years follow-up. Radical excision of these benign but locally invasive lesions, which grows to giant size with reconstruction using micro vascular free flaps forms the best modality of treatment.

Keywords Ameloblastoma · Surgical management · Radical excision

Introduction

Ameloblastomas or adamantinomas are rare tumours of jaw it constitutes 1–3% of all jaw tumours [1]. In 1885 Malassez introduced the term adamantinoma to denote the odontogenic tumours, Ivey and Churchill changed the name in 1930 to Ameloblastoma. It is more common in mandible, it presents as slow growing, painless swelling

causing expansion and local destruction of cortical bone, they can grow to enormous size over the years without any malignant change. These lesions have continued to fascinate the pathologists because of diversity of microscopic features, and surgeons because of their high recurrence rate. The criterion for surgical management of ameloblastoma are yet to be published, there are very few prospective studies to determine the best possible management of these lesions which would completely remove the disease and give best possible aesthetic results. In our study we discuss the management of five cases of ameloblastoma of mandible which have grown over many years and destroyed large part of mandible before presenting to us. The aim of our article is to evaluate the best treatment for such giant lesions.

Materials and Methods

We retrospectively evaluated five patients of Ameloblastoma and followed them up for 2 years for recurrence; patients were evaluated clinically and by digital OPG.

Case I

Fifty-eight year old female residing in rural part of north India presented with a gradually increasing painless swelling over the jaw since 15 years, the swelling was hard, spherical 50 cm × 30 cm in size, and involving almost complete right side of the jaw. Computed tomography scan demonstrated the lytic lesion with biopsy confirming it to be ameloblastoma. Patient was treated with wide local excision of the lesion which involved resection of almost complete mandible; the defect was closed with free fibular flap (Figs. 1, 2).

A. Sharma · A. M. Shaikh (✉) · S. V. Deshmukh ·
J. P. Dabholkar
Department of ENT and Head-Neck Surgery, Seth G S Medical
College & KEM Hospital, Parel, Mumbai, India
e-mail: drahmezz@gmail.com

Fig. 1 Case 1 showing giant tumour

Fig. 2 3D CT scan showing expansile tumour

Fig. 3 Staged reconstruction with titanium plate

Case II

Forty-eight year old male presented with gradually enlarging swelling over the right side of the mandible since six years, the swelling was hard well defined, 20 cm × 15 cm in size, biopsy confirmed it to be ameloblastoma, we did staged reconstruction in this pt, in first step the tumour was resected and titanium plate was fixed with the remaining part of mandible, final reconstruction was done after 8 months when patient did not showed any recurrence (Fig. 3).

Case III

Thirteen year old girl presented with right sided jaw swelling, which had increased in size rapidly over last 6 months, the histopathology of the lesion, confirmed it as ameloblastoma reconstruction was done with free fibular flap (Fig. 4).

Case IV

Fifty year old male presented with left sided jaw swelling, 10 cm × 8 cm, CT scan showed a lytic lesion involving arch of the mandible with ascending ramus, Hemimandibulectomy with resection of arch was done, reconstruction of large mandibular defect was done with free fibular graft. Post operatively pt developed the flap necrosis; a revision flap surgery was done.

Case V

Thirty-two year old male with h/o gradually progressive swelling of the mandible, painless since last 10 years, on examination patient had a firm swelling with ulceration of overlying skin swelling measured 10 cm × 10 cm. Fine needle aspiration cytology confirmed the diagnosis of ameloblastoma. Hemimandibulectomy with free fibular flap reconstruction was done.

Fig. 4 Intraoperative photograph

Results

Out of five patients we treated with wide local excision of ameloblastoma of mandible, we reconstructed four pts immediately with one delayed reconstruction with free fibular flaps, and none of our patients developed recurrence in post operative follow up period of one year. All patients had good aesthetic and functional outcome.

Discussion

Ameloblastoma are aggressive benign tumours of epithelial origin that may arise from the enamel organ, remnants of dental lamina, lining of dentigerous cyst or possibly from the basal epithelial cells of the oral mucosa [2]. The clinicopathological features are benign with a slow growing pattern, but locally invasive. The clinical behaviour may be regarded as lying some where between benign and malignant [3]. They may show various biological behaviours, ranging from cystic expansion to more aggressive infiltration of adjacent tissues. The architectural pattern of ameloblastoma is such that the border of tumour within cancellous bone lies beyond the apparent macroscopic surface and radiographic boundaries of the lesion [2]. The classification of the ameloblastoma in the past was poorly defined; the current concept is to classify the ameloblastoma as solid/multicystic [2], classical intraosseous, peripheral or unicystic subtypes. This classification has direct bearing on the pathological behaviour of these variants. Solid or multicystic variants are locally aggressive, and recur if inadequately excised. Unicystic ameloblastoma was identified as distinct entity with less aggressive behaviour [4].

Treatment of ameloblastoma is primarily surgical. There has been some debate regarding the most appropriate method of surgical removal of ameloblastomas. These ranges from conservative to radical modes of treatment. The conservative modalities include curettage, enucleation and cryosurgery, while the radical modalities are marginal, segmental, and Hemimandibulectomy. There is a lack of consensus over the most appropriate treatment modality. Proponents of conservative approach believe that ameloblastoma though locally invasive are essentially benign in nature. Sammartino et al. [5] advocated conservative approach because of low morbidity associated with these procedures. Many authors have recommended enucleation with preservation of periosteum which is important for bone regeneration especially in children.

Proponents of radical approach for the treatment of ameloblastoma are of opinion that curettage and enucleation of

these lesions results in unacceptably high recurrence rate, the recurrence rate up to 55–90% have been reported in the literature [6].

We also recommend a radical approach for these tumours; we resected all the tumours with a margin of at least 2 cm of healthy bone. Because of the giant size of these lesions all our cases had huge defect of soft tissue and bone post resection, we have used free fibular flap for reconstruction of these defects, free fibular flap offers lot of advantages in mandibular reconstruction [7]. It allows for transfer of bone, soft tissue and skin in a one-stage procedure using only one donor site, fibula flap allows for a skin paddle up to 25 cm in length and 5 cm in width, and bone up to 25 cm. Blood supply to fibula is both intraosseous and segmental, therefore, multiple osteotomies can be made. Post operatively very good aesthetic and functional results were obtained with this type of reconstruction.

Conclusion

We recommend the radical approach for resection of these benign but such giant and locally aggressive tumours, resection with safe margin of at least 2 cm of healthy bone with primary reconstruction using free fibular flap forms the best primary method for treating these lesions. Functional and aesthetic results are also good with free flap reconstruction.

Conflicts of interest None.

References

1. Crawled W, Even S (1978) Treatment of the ameloblastoma a controversy. *Cancer* 42:357–363
2. Adeyemo WL, Bamgbose BO, Ladeinde AL, Ogunlewe MO (2008) Surgical management of ameloblastomas: conservative or radical approach? A critical review of the literature. *Oral Surg* 1:22–27
3. Sehdev MK, Huvos AG, Strong EW, Gerold FP, Willis GW (1974) Ameloblastoma of maxilla and mandible. *Cancer* 33:324–333
4. Jackson IT, Callan PP, Forte RA (1996) An anatomic classification of maxillary ameloblastoma as an aid to surgical treatment. *J Craniomaxillofac Surg* 24:230–236
5. Sammartino G, Zarrelli C, Urciuolo V, di Lauro AE, Di Lauro F, et al (2007) Effectiveness of a new decisional algorithm in managing mandibular ameloblastomas: a 10-years experience. *Br J Oral Maxillofac Surg* 45:306–310
6. Ghandhi D, Ayoub AF, Anthony M, MacDonald G, Brocklebank LM, Moos KF (2006) Ameloblastoma: a surgeon's dilemma. *J Oral Maxillofac Surg* 64:1010–1014
7. Waldron CA (1966) Ameloblastoma in perspective. *J Oral Surg* 24:331–333