



# **A Conservative Approach to Prosthodontic Rehabilitation of a Patient with Mandibular Ameloblastoma- A Case Report**

**Prithika Eswaramurthy<sup>1</sup>, Aniket U. Vaidya<sup>2\*</sup> and Meena Aras<sup>1</sup>**

<sup>1</sup>Department of Prosthodontics, Goa Dental College and Hospital, Bambolim, Goa, 403202, India.

<sup>2</sup>Oral Medicine and Radiology Department, Goa Dental College and Hospital, Bambolim, Goa, 403202, India.

## **Authors' contributions**

*This work was carried out in collaboration among all authors. Author PE designed the study, was chiefly involved in management of this patient and wrote the first draft of the manuscript. Author AUV also contributed in drafting of this manuscript, managed literature searches and provided valuable insights of radiographic interpretation and Author MA read, edited and approved the final manuscript.*

## **Article Information**

### Editor(s):

(1) Dr. Vinej Somaraj, Rajas Dental College & Hospital, India.

### Reviewers:

(1) José Daniel Villegas Maestre, University of Medical Sciences of Granma, Cuba.

(2) Ramat Braimah, Usmanu Danfodio University Teaching Hospital, Nigeria.

(3) Juliana Andrade Cardoso, Metropolitan Union of Education and Culture (Faculdade Unime Lauro de Freitas), Brazil.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/60747>

**Case Report**

**Received 03 July 2020**

**Accepted 09 September 2020**

**Published 22 October 2020**

## **ABSTRACT**

Surgical resection to treat jaw pathologies results in loss of alveolar bone and teeth at the affected side. Prosthodontic rehabilitation helps the patient to cope up with masticatory difficulties and esthetic disfigurement, which arise as a consequence of morbid surgeries. The successful rehabilitation of such cases depends on strategic treatment planning. We report a case of a patient with mandibular Ameloblastoma who underwent marginal mandibular resection which resulted in many limiting factors like obliterated buccal and lingual sulci. Masticatory and speech inefficiency were chief concerns. Impression making and fabrication of a retentive prosthesis were the main challenges. Post-surgical radiographic examination revealed poor bone support. Therefore, a hollow cast partial denture using lost salt technique was fabricated and delivered to the patient.

**Keywords:** Ameloblastoma; cast partial denture; mandible; rehabilitation.

\*Corresponding author: Email: [draniketvaidya@gmail.com](mailto:draniketvaidya@gmail.com);

## 1. INTRODUCTION

Ameloblastoma is slow-growing tumor with a high recurrence rate which rarely exhibits malignant behaviour [1]. They represent approximately 11 to 18% of all odontogenic tumors, being the second most common after odontomas. There is no predilection for sex and its highest incidence is in the third and fourth decades of life [2] with the mean age at presentation being 35.9 years [3]. Majority of the ameloblastomas arise in the mandible, usually in the third molars and ramus region. Surgical approach is the gold standard for management of such cases. Large jaw lesions are usually treated with bone resection followed by reconstruction procedures. Surgery can result in cosmetic, functional and psychological impairment greatly affecting the patient's quality of life [2]. Rehabilitation of such patients is quiet challenging and the treatment is patient centered and patient directed, individualized to meet each patient's unique needs [4]. This study report a case of acanthomatous ameloblastoma which was successfully managed using removable prosthesis post-surgery.

## 2. CASE REPORT

A 21 year old male reported to the Oral Medicine and Radiology department with a complaint of sensitivity and pain in the mandibular teeth since past two months. On extra-oral examination there was no gross asymmetry of the face. On intra-oral palpation mild palpable swelling was noted along the body of the mandible on the right side (Fig. 1a). The swelling was non tender and firm in consistency. Cone Beam Computed Tomography scan revealed single, expansile, hypodense lesion with scalloped borders extending from 4-7 to 4-3 (Fig. 1b). The buccal and lingual cortical bone plates were extremely thin and indistinct (Figs. 1c,1d). The lesion was in close proximity to the right inferior alveolar nerve canal and the canal was displaced inferiorly towards the inferior border of mandible. The apical third of roots of teeth from 4-3 to 4-6 displayed external root resorption (Fig. 1b). Radiographically, Odontogenic tumor most likely Ameloblastoma was a provisional diagnosis. Odontogenic cyst was also considered as a differential diagnosis. The histopathological examination confirmed Acanthomatous Ameloblastoma as the final diagnosis.

The patient was treated by marginal mandibular resection (Fig. 2a). The post-operative healing was uneventful (Fig. 3a). Maxillary and

mandibular preliminary impressions were made with irreversible hydrocolloid (Zelgan; Dentsply Intl), and diagnostic casts were poured with Type III dental stone (Kalstone; Kalabhai). The tricky situation in the Kennedy Class II was the presence of a weak anterior abutment- the lateral incisor, which barred the use of attachment. Presence of >15mm restorative space was also noted. Surveying was done and the CPD design included fabrication of a T-clasp on 3-1, 3-2; lingual plate major connector; embrasure clasp on 3-6, 3-7 with occlusal rests; lattice type minor connector; and acrylic teeth on 4-1- 4-7.

Mouth preparation was done, and a definitive mandibular impression was made in a customised acrylic resin impression tray (DPI Heat Cure; DPI) border molded with low fusing impression compound (DPI tracing stick; DPI). The definitive impression was made with light-body polyvinyl siloxane (Elite HD+; Zhermack), and a definitive cast was poured with Type IV dental stone (Kalstone; Kalabhai). The patient had satisfactory occlusion on the unaffected side. Jaw relation was recorded and try-in was done, following which the conventional laboratory steps were followed until the wax elimination stage. A putty spacer was carved out to create the hollow cavity (Fig. 3c). Following trial closure with the spacer, salt was added in the hollow cavity thus created and the flasks were closed (Figs. 3d,3e). The denture was processed and finished in conventional manner. Denture delivery was done (Figs. 3f,3g). Patient was put on a maintenance protocol for every 6 months to review necessity for any relining [5].

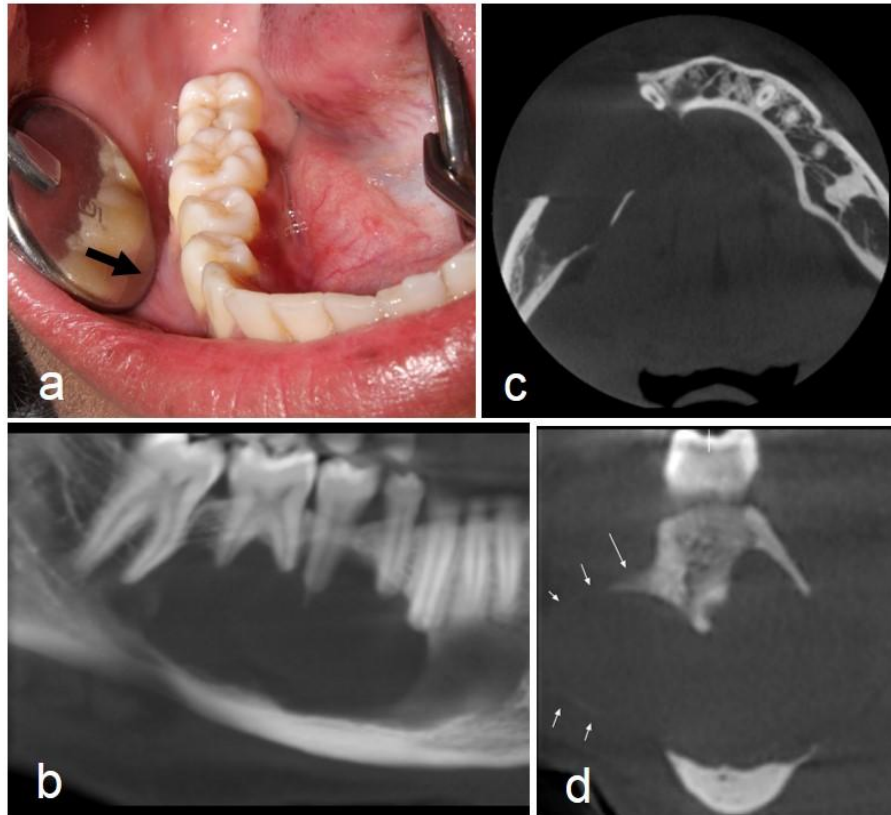
## 3. DISCUSSION

Ameloblastoma is a true neoplasm of enamel organ type tissue which lacks the properties of odontogenic mesenchyme and does not undergo differentiation to the point of enamel formation due to impaired ameloblast function and lack of stratum intermedium cells [6]. Various surgical approaches are used such as marginal, segmental, hemi, subtotal, total mandibulectomy depending upon the extent of the lesion [7,8]. The secondary outcome of such surgical options is loss of occlusal contact and facial disfigurement. This causes severe functional limitation and morbidity and loss of esthetics to the patient. In such cases, the prosthetic rehabilitation should be started as soon as possible to limit the deviation of mandible and should be accompanied by stretching exercises by the holding the chin and moving the mandible

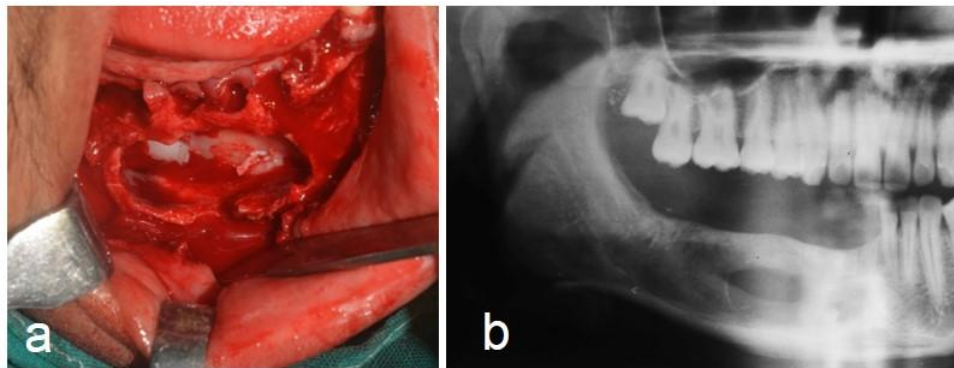
away from the resected side. This can be started during the postoperative healing period 2 weeks after surgery [9].

Major obstacles which a Prosthodontist tackles in rehabilitation of patients with mandibular defects

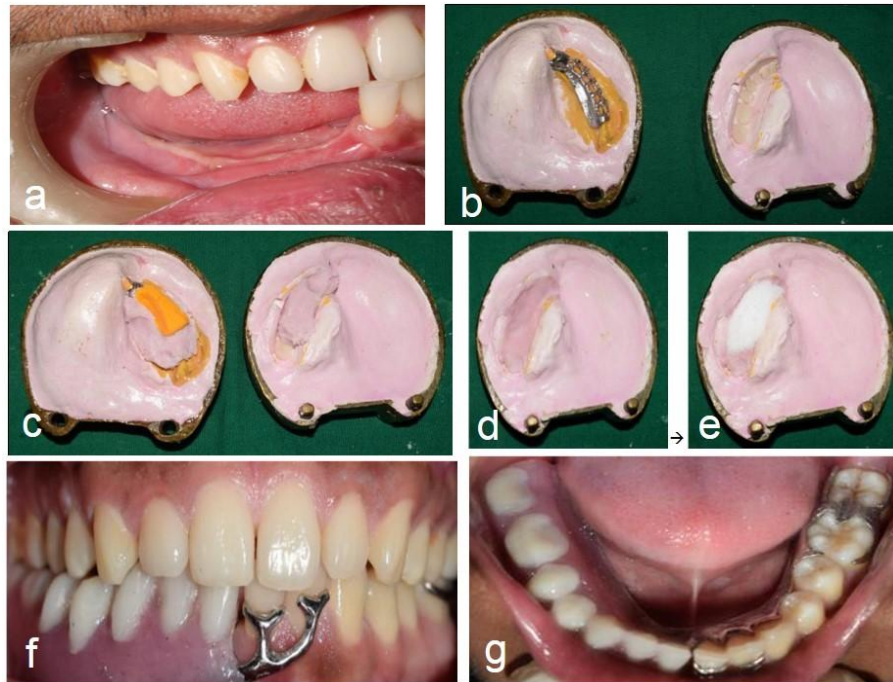
are inadequate denture bearing area available for support, obliterated floor of mouth, lesser number of remaining teeth, periodontal condition of the abutments, history of radiation and associated psychological distress. All these factors compromise the design or retention and



**Fig. 1a.** Pre-op intraoral photograph; **1b.** CBCT sagittal view showing inferior displacement of the nerve canal and external root resorption of the mandibular teeth showing loss of buccal and lingual cortical bone; **1c.** CBCT axial view; **1d:** Oblique coronal view showing alveolar bone destruction, cortical bone expansion and thinning



**Fig. 2a.** Intra-operative view; **2b.** Cropped panoramic view one month post operative displaying healing surgical defect



**Fig. 3a. Post operative intra-oral photograph showing loss of alveolar bone; 3b. Dewaxed flasks; 3c. Trial closure with putty spacer; 3d & 3e. Placement of salt in the hollow cavity; 3f: Frontal view- postoperative; 3g. Occlusal view- postoperative**

stability of the prosthesis [10]. In the present case of prosthetic rehabilitation of patient with large mandibular ameloblastoma options like removable prosthesis with cast partial denture (CPD), fixed prosthesis with implants or fixed removable hybrid prosthesis were considered. Poor bone support and a still-healing lesion precluded implant supported prosthesis and it was decided to fabricate a CPD. Anticipating heaviness and presence of lever action on the knife-edge alveolar ridge, it was decided to keep the denture hollow using lost salt technique [11,12].

#### 4. CONCLUSION

Light weight hollow cast partial dental prostheses is inexpensive and minimally invasive procedure. They are extremely beneficial in providing comfort, restoring functions (mastication and speech) and restoring esthetics to the patients suffering from acquired surgical jaw defects.

#### CONSENT AND ETHICAL APPROVAL

As per university standard guideline patient written consent and ethical approval has been collected and preserved by the authors.

#### ACKNOWLEDGEMENTS

The authors would like to thank the staff of Department of Oral Medicine and Radiology and Department of Oral and Maxillofacial Surgery for all the help rendered in the treatment of the patient.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

#### REFERENCES

1. Mendenhall WM, Werning JW, Fernandes R, Malyapa RS, Mendenhall NP. Ameloblastoma. *Am J Clin Oncol.* 2007; 30(6):645-8.
2. Cadavid AMH, Araujo JP, Coutinho-Camillo CM, Bologna S, Lemos Junior CA, Lourenco SV. Ameloblastomas: Current aspects of the new WHO classification in an analysis of 136 cases. *Surg Exp Pathol.* 2019;17(2):2-6.
3. Reichart PA, Philipsen HP, Sonner S. Ameloblastoma: Biological profile of 3677 cases. *Oral Oncol, Eur Journal Cancer.* 1995;31B(2):86-99.

4. Mantri S, Khan Z. Prosthodontic Rehabilitation of acquired Maxillofacial Defects. In: Head and Neck Cancer; 2012. DOI: 10.5772/31562
5. Academy of Prosthodontics. Principles, concepts, and practices in prosthodontics. J Prosthet Dent. 1995;73:73-94.
6. OA Effiom, OM Ogundana, AO Akinshipo, SO Akintoye. Ameloblastoma: Current etiopathological concepts and management. Oral Diseases. 2018;24: 307–316
7. Ofluoglu D, Ergun S, Guzelbey B, Tanyeri H. Implant-supported prosthetic rehabilitation after surgical management of an odontogenic tumour of the mandible. Dental Update. 2017;44(9):852-862.
8. Samuel S, Mistry FK, Chopra S, Pillai A. (). Unicystic ameloblastoma with mural proliferation: Conservative or surgical approach? Case Reports. 2014;2014: bcr2014206273.
9. Sujitha K, Bharathi M, Narayana SL, Naidu MA, Nagaveni D. Prosthodontic Management of Acquired Mandibular Defect by Functionally Moulded Palatal Ramp Prosthesis - A Clinical Report. Int J Oral Health Med Res. 2016;3(1):94-97
10. Mundhe K, Pruthi G, Jain V. Prosthodontic rehabilitation of patient with marginal mandibular resection using attachment supported prostheses: A clinical report. Contemp Clin Dent. 2014;5(1):123-6
11. El Mahdy AS. Processing a hollow obturator. J Prosthet Dent. 1969;22:682-6.
12. Brown KE. Fabrication of a hollow bulb obturator. J Prosthet Dent. 1969;21:97-103.

© 2020 Eswaramurthy et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

*Peer-review history:*  
*The peer review history for this paper can be accessed here:*  
<http://www.sdiarticle4.com/review-history/60747>