Journal of Case Reports in Dental Medicine (J Case Rep Dent Med) September 2019, Volume 1, Number 3: 64-67

Hemimandibulectomy and Intermaxillary Fixation: Surgical Treatment of Ameloblastoma in Mandible : Case Report

Jihad H. Sandiah,^{*} Winarno Priyanto, Seto Adiantoro, Agus Nurwiadh

Abstract

Objective: This article is to report a hemimandibulectomy with bridging plate reconstruction and inter-maxillary fixation as a therapy for left mandibular ameloblastoma performed to reduce deviation and facial defects.

Methods: Fourty-two years old female patient came to the Oral and Maxillofacial Surgery Clinic at Hasan Sadikin Hospital Bandung, with a lump at the left side of lower jaw, it happened since 3 years ago, with small size in the beginning and grow gradually, painless, hard on palpation and same colored with surrounding tissue. coronoid processus, ramus and some mandibular corpus on one side of the jaw. Ameloblastoma is the most common odontogenic tumor in the mandible and maxilla. Ameloblastoma has several variations of histopathologic appearance, but the most commonly seen is the follicular and plexiform type. In most cases, ameloblastoma is usually asymptomatic, growing slowly, and can expand in the affected jaw.

Conclusion: Hemimandibulectomy was performed to remove pathologic lesions radically to prevent recurrence. Bridging plate is an act used as a mandibular reconstruction. Intermaxillary fixation is one of the ways to reduce mandibular deviation after hemimandibulectomy.

Results: Hemimandibulectomy is the removal of most or half of the mandible including the entire condyloideus process,

Keywords: Ameloblastoma, Hemimandibulectomy, Intermaxillary Fixation.

Cite this Article: Sandiah JH, Priyanto W, Adiantoro S, Nurwiadh A. 2019. Hemimandibulectomy and intermaxillary fixation: surgical treatment of ameloblastoma in mandible : case report. Journal of Case Reports in Dental Medicine 1(3): 64-67. DOI: 10.20956/jcrdm.v1i3.101

Department of Oral and Maxillofacial Surgery, RSUP Dr. Hasan Sadikin, Faculty of Dentistry, Padjadjaran University, Bandung, Indonesia

Introduction

Ameloblastoma is a neoplasm of odontogenic epithelium, principally of enamel organ-type tissue that has not undergone differentiation to the point of hard tissue formation.¹ It is generally a slow-growing but locally invasive tumor.² They are classified as unicystic, multicystic or solid. Ameloblastoma in the mandible can progress to great size and cause facial asymmetry, displacement of teeth, malocclusion, and pathologic fractures.³

Ameloblastoma is the most common benign odontogenic tumour of the jaws that constitutes about 1% of all cysts and tumours of the jaws.^{4,5} It is generally a painless, slow growing, locally aggressive tumour causing expansion of the cortical bone, perforation of the lingual or the buccal cortical plate and infiltration of the soft tissues. It has peak incidence in third and fourth decade of life but can be found in any age group with equal gender predilection (1:1). ⁴⁺⁸ The relative frequency of mandible to maxilla is reported to be varying from 80-20% to 99-1%. In the mandible majority of ameloblastomas are found in the molar ramus region.^{4,6}

Based on histopathology ameloblastomas are classified: Follicular, acanthomatous, granular cell, basal cell, and plexiform. Follicular and plexiform ameloblastomas are the most common, with incidence rates 27.7% and 21.1%. Follicular ameloblastoma is characterized by recurrence rate (29.5%); plexiform ameloblastoma (16.7%); and acanthomatous ameloblastoma (4.5%). Early diagnosis with prompt and adequate management decrease recurrence and get good prognosis.⁹

Case report

A 42-years-old female patient reported to the Departement of Oral and Maxillofacial Surgery, Hasan Sadikin Hospital with complaint swelling at left cheek since 3 years ago. Present illness revealed that initially the swelling was small marble-size and grandually increased to reach upto present like Baseball-size. It was not associated with any pain or discharge. Patient had no complaint of dysphagia, trismus, dysphonia fever, chills, loss of weight and paresthesia. her past medical history was not significant.

On extraoral examination a oval swelling was present on the left face extending antero-posterior from the posterior border of the mandibular to behind the corner of the mouth to tragus of the ear to below the lower border of the mandibular, roughly measuring about 15x10x7 cm in size with no secondary changes. On palpation swelling was bony hard in consistency with no elevated, temperature and pain. On intraoral examination, premolar tooth of mobility grade 2. Figure 1. Based on a clinical picture a provisional diagnosis of ameloblastoma was considered.

Microscopic picture of incisional biopsy is layered epithelium, cell nucleus within normal limits, subepithelial appearance of tumor mass consisting

*Correspondence to: jihadharun@yahoo.com

Received: 7 June 2019 Revised: 25 July 2019 Accepted: 26 August 2019 Available Online 1 September 2019



Figure 1 Patient profil showing extraorally and intraorally picture



Figure 2 Histopatological picture showing of plexiform type ameloblastoma



Figure 3 X-ray examination: chest ilustrating no signs of metastasis intrapulmonal; panoramic, skull PA lateral ilustrating tumor eroding os. Mandibular of hyperplastic oval spherical cells, grouped to form plexiform structures figure 2.

Chest radiographic revealed no signs any intrapulmonal metastasis. Panoramic radiographic revealed a multilocular radiolucency extending from distal aspect of left lower anterior teeth region to retromolar pad area roughly oval. Skull anteroposterior and lateral radiograph revealed that bone destruction extend to left hemimandibular, measuring about 15x10cm in size with septae in between the radiolucent area giving soap bubble appearance along with expansion of inferior border of mandible in left body region figure 3.

Based on subjective and objective examination and medical support, a diagnosis of plexiform ameloblastoma is established.

Management is carried out based on the diagnosis established from the results of clinical examination and support and recurrence of pathological lesions. Patients are planned for hemimandibulectomy resection surgery and bridging plate installation with consideration of lesions large enough to restore aesthetic and mandibular function. The operation was carried out under general anesthesia with the extraoral submandibular approach ranging from symphysis to the left mandibular angle.

All pathological tissues that contain tumors are removed, hard tissue and soft tissue resection is examined and confirmed that the tumor tissue is clean figure 4A. Pieces of bone and tumor mass were taken to be put into 10% formalin solution for anatomical pathology examination figure 4B. Mandibular reconstruction in the form of mounting bridging plates from titanium as alloplastic to maintain bone continuity figure 4C. Muscles that are tinged in the bone taken are sewn to the bridging plate. The flap is returned to its original state and sutured layer by layer. Installation of extraoral vacuum and bleeding control. Intermaxillary fixation is installed after surgery to reduce mandibular deviation figure 4D.

One month post operative treatment, surgery wounds have been declared good and there are no signs of infection. The patient's face looks asymmetrical due to muscle contraction in the resection area. Panoramic photo results show that the bridging plate is installed replacing the resected mandibular bone figure 5.

Discussion

Treatment plan in the case of ameloblastomas was based on pathological tissue, histopathological structure of the tumor and the nature of thehigh reccurence. In mandibular tumors, both benign and maligmant, if



Figure 4 Intraoperatif: showing that mass, resection, bridging plate installation, mass and teeth removed, flap is returned



Figure 5 Intallation intermaxillary, panoramic x-ray (one month post operative)

it has mainly affected the ramus, coronoid and condyle areas, the most common treatment being hemimandibulectomy. Management in this case ishemimandibulectomy with regard to the high recurrence of ameloblastoma, so that the limit of removal of pathological tissue is 1cm from the outermost lesion.¹⁰

Hemimandibulectomy cause the patient to lose the median area of the mandible, corpus, ramus, teeth, and one sided condyle, so that they will experience functional and aesthetic disorders.

Post resection mandibular reconstruction can be done by wire or bridging plate with bone graft or without bone graft. In this case reconstruction was performed using the bridging plate as an alloplastic. Reconstruction using bridging plate without bone graft for reasons of age, length of the defect is too large and socioeconomic sufferers. Loss of continuity of right-left mandibular bone and reduced aesthetics and function are overcome by installing the bridging plate made of titanium has the advantage of being able to be shaped according to the contours of the mandible to be replaced.¹¹

Reconstruction is done immediately after the resection action, the primary reconstruction is the advantage is that the patient immediately regains its normal shape and function.¹¹ Bridging plate installation as a reconstruction measure at that time also serves to control the position of the remaining mandibular fragments and restore the muscle to the original attachment.¹²

The deviation that occurs when opening and closing the mouth and open occlusion that occurs because of the mandible is the attachment of the muscles associated with the function, so that loss of bone as a place for attachment causes these muscles to not function properly and lose harmony.¹² Overcome by installation of intermaxillary fixation. Intermaxillary fixation has been shown to reduce mandibular deviation. Installation of fixation is carried out immediately after surgery if the general condition of the patient is possible. Use of this intermaxillary fixation until normal occlusion is obtained.¹³⁻¹⁵

Treatment is enchanced by replacing missing teeth using partial removable prostheses by prosthodontia. The patient is reffered to the prosthodontia section after receiving a normal occlusion without the use of aids.

The results of examination of postoperative anatomical pathology is plexiform type ameloblastoma, this is in accordance with the initial diagnosis of ameloblastoma. The prognosis of this patient is quite good, because the reccurence of high ameloblastoma can be minimized by radical surgery, so that recurrence can be avoided.

Conclusion

In this case the management of ameloblastoma with hemimandibulectomy and bridging plate installation was successful. Intermaxillary insertion trains the muscles to carry the remaining mandibular segments laterally to reduce mandibular deviation and achieve normal occlusion, thus restoring the aesthetic and mandibular function. Ameloblastoma is an aggressive tumor of odontogenic origin. Treatment decisions for ameloblastoma are based on the individual patient situation and the best judgement of the surgeon. Prognosis is good if an early diagnosis of the lesion is made with prompt surgical intervention.

Acknowledgment

Thank the patient who has been willing to share his case for reported and for his cooperation to come for control treatment.

Conflict of Interest

The authors report no conflict of interest.

References

- Nakamura N, Mitsuyasu T, Higuchi Y, et al. Growth characteristics of ameloblastoma involving the inferior alveolar nerve: a clinical and histopathologic study. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2001;91: 557-562.
- Becelli R, Carboni A, Cerulli G, et al. Mandibular ameloblastoma: analysis of surgical treatment carried out in 60 patients between 1977 and 1998. J Craniofac Surg 2002;13: 395-400.
- Krishnapillai R, Angadi PV. A clinical, radiographic, and histologic review of 73 cases of ameloblastoma in an Indian population. Quintessence Int 2010;41: e90-100.
- 4. Kahairi A, Ahmad RL, Islah Wan L, et al. Management of large mandibular ameloblastoma-a case report and literature reviews. Arch Orofac Sci 2008;3: 52-55.
- Giraddi GB, Bimleshwar, Singh C, et al. Ameloblastomaseries of 7 treated cases-and review of literature. Arch Oral Sci Res 2011;1: 152-155.
- Vohra FA, Hussain M, Mudassir MS. Ameloblastomas and their management: a review. Pak J Surg 2009;14: 136-142.

- Varkhede A, Tupkari JV, Mandale MS, et al. Plexiform ameloblastoma of mandible-case report. J Clin Exp Dent 2010;2: e146-e148.
- Pizer ME, Page DG, Svirsky JA. Thirteen year follow-up of large recurrent unicystic ameloblastoma of the mandible in a 15-year old boy. J Oral Maxillofac Surg 2002;60: 211-215.
- Philipsen HP, Reichart PA: Classification of odontogenic tumors and allied lesions. Odontogenic tumors and allied lesions. Quintessence: Pub. Co. Ltd; 2004. p. 21-23.
- Safriadi M. Pathology of oral neoplastic tumors and non neoplastic oral cavity. Yogyakarta: Andi Publisher; 2008. p. 40-45. (in Indonesian)
- Greenberg AM, Prein J. Craniomaxillofacial reconstruction and corrective bone surgery: principles of internal fixation using the AO/ASIF technique. New York: Springer; 2002. p. 335-341.
- Hupp JR, Ellis E, Tucker MR. Contemporary oral and maxillofacial surgery. 5th ed. China: Mosby Elsevier; 2008. p. 605-610.
- Armani MA, Myers EN. Intermaxillary fixation following mandibular resection, J Prosthet Dent 1977;37: 437.
- Widayanti R, Priyanto W, Rizki KA, et al. Hemimandibulectomy of an extensive complex odontoma in the mandible: a case report. J Dentomaxillofac Sci 2017;2: 187-190.
- Muhajir I, Adiantoro S, Hardianto A, et al. Infected dentigerous cyst due to traumatic injury in impacted of mandible canine: a case report. J Case Rep Dent Med 2019;1: 17-20.



This work is licensed under a Creative Commons Attribution