



Alveolectomy of Multiple Maxillary Unilateral Exostoses for Pre-Prosthetic Purpose: A Case Report

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Abstract: Buccal exostoses is a benign form characterized by nonpathological overgrowth of bone originating from the dense cortical bone without significant symptoms. Although it rarely causes pain, exostosis can interfere with patients who require prosthetics and can be solved through alveolectomy. This case report aimed to report the surgical management of buccal exostoses for pre-prosthetic purpose. A 63-years old male patient was referred to the Oral and Maxillofacial Surgery Department for pre-prosthetic alveolectomy surgical treatment before making dentures. Clinical examination showed multiple exostoses along the residual ridge on the upper right maxilla region. The segmental buccal exostoses were removed through alveolectomy by considering the height of the residual ridge where the prosthetic will be placed. Alveolectomy as the treatment was successful and re-evaluation showed no recurrence. In conclusion, this case report presents alveolectomy of multiple exostoses along the patient's residual ridge on the upper right maxilla region performed successfully without recurrence.

Keywords: exostoses; alveolectomy; pre-prosthetic surgery

INTRODUCTION

Buccal exostoses is a benign protrusion characterized by nonpathological overgrowth of bone originating from the dense cortical bone without significant symptoms.^{1,2} Compared to other types of exostoses, such as palatal and mandibular tori, buccal exostoses are a less common type. The etiology of buccal exostoses is not fully understood. However, several studies suggest that genetic and environmental factors, continued growth, and hyper-functional mastication, such as excessive occlusal pressure, can play a role in the formation of buccal exostoses.^{1,3} The distribution of exostoses based on age shows that the highest incidence is found in individuals over 60 years and lower in individuals aged 13-19 years. In addition, based on gender, the incidence in men is more common than in women (1.66:1).⁴

Buccal exostoses rarely cause pain; the overlying mucosa appears stretched, but it is attached to the bone and has the same color as the surrounding tissues.⁵ Often, when the patient still has their natural teeth, the exostoses do not interfere. However, when the patient requires prosthetic rehabilitation to restore masticatory function, the exostoses can interfere with the procedure and cause discomfort while making the prostheses.⁶ This case report describes alveolectomy surgery of exostoses on a buccal segment of the maxilla.

CASE REPORTS

A 63-year-old man came to the Oral and Maxillofacial Surgery Department at Rumah Sakit Gigi dan Mulut Universitas Sam Ratulangi after receiving a referral from the Prosthodontics Department. He complained of a bulge along the right upper gum, which would cause discomfort when he wears his denture. The patient did not remember when the lump appeared. Through anamnesis, the patient admitted that he had a history of multiple tooth extractions approximately five years ago. The patient denied any systemic and comorbid diseases. Therefore, we concluded that the bulge was multiple exostoses along the residual ridge on the upper right maxilla region.

A clinical examination found an uneven alveolar ridge growth on the right side of the maxilla. The uneven ridge was hard, smooth, and covered by thin mucosa (Figure 1). According to the residual ridge classification by Cawood and Howell, the patient's residual ridge is classified as Class III.⁷ The patient felt pain when the operator used a burnisher to do a pressure test on the uneven alveolar ridge growth peak. The treatment plan was explained to the patient, and he agreed to it through informed consent. The surgery was planned on January 25, 2024.

The procedure started with asepsis using 10% povidone-iodine, then, the patient was given local anesthesia using an infiltration technique in the right buccal side of the maxilla to block the anterior superior alveolar and middle superior alveolar nerves. The procedure continued with an injection in the palatal side to block branches of the nasopalatine nerve and the greater palatine nerve.

A mucoperiosteal incision was made to form a flap with a triangular design for good visibility of the surgical area. The flap was raised using a rasparatorium, and bone reduction began using a carbide bur/round bone cutter and a bone file (Figures 2 and 3). During this process, irrigation was performed using saline solution. The bone reduction was minimal to remove sharp parts and was carried out carefully to prevent the alveolar bone, which would be the place for the denture base, from being too short (Figure 4). Hemostasis was achieved by suturing using a simple interrupted suture technique of nine knots (Figure 5). The patient was given dental health education and prescribed antibiotics, analgesics, multivitamins, and mouthwash, and then an appointment was scheduled seven days later.

After eight days, the patient returned to remove the suture and was evaluated if there were any postoperative complications. The patient came for a follow-up one month later; the buccal bone contour was obtained, and it was ready for a new denture. Two months later, re-evaluation showed no recurrence (Figure 6). In this case report, there was no definite aetiology of the patient's bone protrusion; apart from that, the patient also denied any inherited genetic disorder.



Figure 1. Preoperative of multiple exostoses on the right side of maxilla which were irregular shaped and painful when pressed

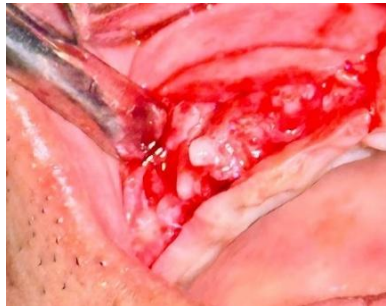


Figure 2. Anterior exostoses appearance while raising the mucoperiosteum flap



Figure 3. Posterior exostoses appearance while raising the mucoperiosteum flap



Figure 4. Post bone reduction using round bone bur and bone file



Figure 5. Simple interrupted suture of nine knots



Figure 6. Follow up three months after alveolectomy showed no recurrence, the shape of ridge is ovoid so it was ready to become a place for denture

DISCUSSION

Buccal exostoses are generally slow-growing, asymptomatic bony protuberances that often remain undetected unless they cause functional disturbance or are incidentally identified during clinical examination.^{8,9} Since exostoses are asymptomatic, their growth often goes unnoticed. In the present case, the lesion became clinically relevant only when it interfered with prosthetic rehabilitation. Although the etiology of exostoses remains uncertain, factors such as chronic functional stress and local remodeling have been proposed.⁸ Based on the patient's history, previous multiple tooth extractions were suspected as a possible contributing factor in the development of these exostotic growths.

Histologically, exostoses have characteristics identical to hyperplastic bone, consisting of cortical bone and mature trabecular.¹⁰ The diagnosis of exostoses can be made based on clinical examination and radiographic findings. The exostoses are usually well-defined on radiographs, have smooth contours with curved edges, and are internally radiopaque.¹¹ Radiographs such as panoramic and cone-beam computed tomography (CBCT) can assist in diagnosing and identifying anatomical variations such as exostoses.¹² Exostoses should be differentiated from the early stages of osteosarcoma, chondrosarcoma fibrous dysplasia, idiopathic gingival fibromatosis, and cemento-osseous dysplasia, especially from multiple osteomas.^{2,3} The practitioner should evaluate for the possibility of Gardner's syndrome in patients with multiple bone growths. In addition to clinical and radiographic examination, a biopsy can be performed if there is doubt when making a diagnosis.³ The clinical presentation in this patient was consistent with benign buccal exostoses, supporting conservative surgical management.

Another clinically relevant aspect in this case was treatment planning based on residual ridge condition. According to Cawood and Howell classification, the patient demonstrated a Class III residual ridge, which provided a favorable foundation for conservative alveolectomy while preserving adequate support for future prosthetic rehabilitation.⁷ This was particularly important because excessive bone reduction could compromise denture-bearing capacity, whereas insufficient contouring might fail to resolve prosthetic interference.

Exostoses usually do not require treatment unless they interfere with the patient's speech and mastication functions, cause pain and ulcers, and require a dental prosthesis and aesthetics.³ If the patient requires a dental prosthesis but refuses alveolectomy surgery as in this report, then making a flangeless (horseshoe) denture, using resilient lining materials on the surface of the denture intaglio, or modifying the flange shape of the denture can be considered.¹³⁻¹⁵ However, if the patient is willing to undergo surgical treatment, then alveolectomy surgery with a mucoperiosteum flap can be chosen, as in this case report.¹⁶

A key surgical consideration was that treatment was directed not simply toward removing excess bone, but toward achieving functional ridge preparation for prosthetic rehabilitation. This conservative approach is particularly important in pre-prosthetic surgery, where preservation of supporting bone must be balanced against elimination of anatomical interference. Potential contraindications, including proximity to vital structures, inadequate bone volume, systemic healing compromise, and bleeding disorders, should also always be considered before surgical intervention.^{17,18} In the present case, careful case selection and conservative bone reduction contributed to favorable healing without recurrence during follow-up.

CONCLUSION

Alveolectomy can be performed if the patient requires bone recontouring and smoothing after tooth extraction procedures, sharp bone recontouring and undercuts to wear a prosthesis, obtain implant stability, and bone reduction due to bone pathology. Practitioners must consider the indications and contraindications for a pre-prosthetic surgery based on the patient's medical condition. In this case report, alveolectomy for pre-prosthetic purpose was performed successfully without any recurrence sign.

Conflict of Interest

The authors declare no conflict of interest in this study.

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