



Prosthodontic Approach After Mandibular Dredging: A Case Report

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(Received: 27 October 2023)

Revised: 22 November 2023

Accepted: 26 December 2023)

KEYWORDS

Bone tumor,
Interim
Obturator,
Mandibular
Dredging,
Prosthesis

ABSTRACT:

Introduction: Treatment with prosthetic approaches in postoperative patients varies greatly. One of the maxillofacial prostheses is the obturator type. This device is used to close the defect and restore stomatognathic function. There are types of obturator prostheses. immediate, interim, and definitive obturator. The interim obturator acts as a prosthesis that prevents bone fractures during regeneration and restores the patient's esthetics. The sequence of stages of treatment with an obturator includes wearing an immediate postoperative obturator and then replaced with an interim obturator. This obturator is used during the healing period. If there is no recurrence of the tumor and no further surgical procedure is required, then a definitive obturator can be created approximately 3-6 months after surgery.

Objective: Provide information about patient management after mandibular dredging to close defects and restore optimal function and esthetics.

Case: A 22-year-old female patient came to the prosthodontics department for referrals from the Oral Maxillofacial Surgery department of Universitas Hasanuddin Hospital after dredging mandibular and extraction of teeth 43,44,45 and 46. There was a defect in the right posterior mandible.

case management: The patient will be rehabilitated using an interim obturator prosthetic around 3 weeks after surgery. The obturator is made of acrylic and soft acrylic resin in the defect area. Interim obturator treatment aims to stabilize the remaining tissue and keep bones from fracture.

Conclusion: After dredging the mandibular process, the interim obturator will restore the lost structure and act as a barrier to defects.

1. Introduction

Treatment with a prosthodontic approach both minor and major surgery in patients after maxillofacial surgery varies greatly. Maxillofacial prostheses are a branch of prosthodontics that refers to the restoration or replacement of stomatognathic and craniofacial structures with prostheses, or prosthetic correction and management of maxillofacial defects.^{1,2} One of the maxillofacial prostheses is the obturator. An obturator prosthesis is a device used to close the open tissue. The word obturator comes from the Latin word "Obturare" which means "to stop".³ This prosthesis is generally used to cover tissue defects that occur after surgery, especially in the palate or soft tissue.^{3,4}

One of the most common odontogenic tumors in the oral cavity is ameloblastoma which has a very high

recurrence rate. These tumors occur four times more often in the mandible than in the maxilla. Symptoms are usually minimal, so patients usually visit the doctor if the tumor size is large.^{2,5} Treatment of ameloblastoma is divided into 2 types, conservative and radical treatment. Dredging is a conservative treatment given after enucleation. The dredging process will remove 1-2 mm of bone around the tumor cavity.^{5,6}

Surgical procedures for oral cavity tumors usually leave scars or defects. Using an obturator, either an immediate, interim or definitive can close the defect and maintain the integrity of the oral and nasal components. In addition, speech and swallowing



functions can be restored.^{4,6} The obturator can be made of acrylic or silicone and should be lightweight so as not to put excessive pressure on the wound.^{8,9}

An interim obturator is a transitional obturator from an intermediate obturator after surgery and before a definitive obturator. For mandibular ameloblastoma, the removal of the large lesion as known as an enucleated or a mandibulectomy procedure can weaken the lower margin of the mandible and lead to fracture. With the use an interim obturator can act as a prosthesis to prevent fractures of the bones allow the regenerative process and restore the patient's esthetics.¹ A sequence of treatment steps when using an obturator includes attaching the immediate obturator after surgery, after 5-10 days this obturator is replaced with a interim obturator. Interim obturator used during the healing period. If there is no recurrence of the tumor and no further surgical procedures are required, a definitive obturator can be used about 3 to 6 months after surgery.^{10,11} Making an obturator in the mandible is more challenging than in the maxilla due to complete or partial loss of mandibular structure which causes loss of muscle attachment affecting the mandibular movement.¹⁰ In addition, the presence of tongue activity and the availability of some support structures can affect the stability of the obturator.³

2. Objectives

This case report is discuss post-dredging management of the mandible by creating an interim obturator during the healing period to close the defect and rehabilitate optimal function and esthetics before using a definitive obturator.

3. Case Report

A 22-year-old female patient was referred to the prosthodontics department of the Universitas Hasanuddin Dental and Oral Hospital Makassar with the main complaint of missing part of her right lower teeth. The patient's medical history showed that there was a surgical dredging 3 weeks previously resulting in a defect. The patient is in good physical condition without systemic disease and never used dentures before (**fig.1**). Before the next procedure, informed consent has been made to the patient and her family.



Figure 1. Patient profile

A clinical examination of the oral cavity revealed a seemingly closed defect on the right side of the mandible with the presence of irregularly shaped tissue, and loss of teeth 43,44,45 and 46 in the right region and 35 in the left region. The condition of the natural teeth is good without abnormalities. There is a diastema between teeth 33 and 34 (**fig.2**).



Figure 2. Clinical examination of the oral cavity.

Case Management

1. Examination and Impression

Anamnesis and objective examination were performed at the first visit to confirm the diagnosis of the mandibular post-dredging defect. Treatment is planned to rehabilitate the defect using an interim obturator made of acrylic material and soft acrylic resin in the defect area which will adjust the size of the defect every patient comes to control. The initial impression is done using a fabricated tray and irreversible hydrocolloid impression material. Then the impressions were cast using dental gypsum type 2 (**fig.3**). The study model and design of the interim obturator device were then sent to the laboratory for the bite rim manufacturing procedure.

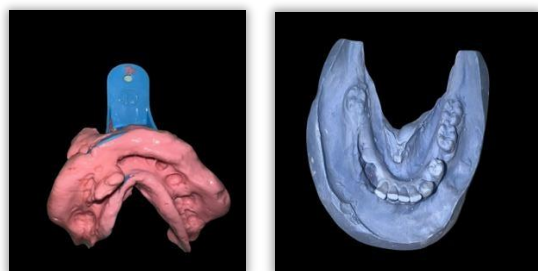


Figure 3. Initial impression results using irreversible hydrocolloid impression materials and mandibular cast impression models.

2. Try in bite rim

This step is performed to ensure the vertical dimension and the patient's overbite do not change after dredging (fig.4). The patient still has a locking occlusion on the antagonist side. The next step is to determine the color of the patient's teeth.



Figure 4. Try in Bite Rim

3. Laboratory process

At this step, dental wax will be replaced with an acrylic base with the addition of soft acrylic resin which will cover the defect. A three-finger clasp was placed on 36 and a ball clasp between 32-33 and 41-42 (fig.5). The use of clasps on the obturator is as effective as the use of retention clasps on partial dentures.¹²



Figure 5. Interim obturator with the addition of tooth elements

4. Interim obturator insertion

At the third visit, an interim obturator was inserted (fig.6). Before insertion, the interim obturator was disinfected and cleaned of acrylic residue using chlorhexidine. Examination of retention, stability, occlusion, esthetics, and phonetics were investigated. The obturator helps improve the patient's appearance. Patient instruction on how to put on and remove the obturator, adapt 1x 24 hours, and clean the obturator routine.



Figure 6. Interim obturator insertion process

5. Control

The fourth visit was 1x24 hours post-insertion to see tissue adaptation to the obturator. Retention, stability, and occlusion were also assessed (fig.7).



Figure 7. Intraoral conditions in the first control

4. Discussion

Making a prosthesis after the dredging or removing necrotic tissue requires careful procedure preparation. An interim obturator should be inserted as soon as possible after the dredging procedure, to protect the defect from infection until the defect is fully closed. Without an obturator, the soft tissues will be unsupported and collapse dramatically causing esthetic and possibly psychological problems to the patient.¹³ Obturator interim can also improve the ability to speak, swallow, and maintain oral hygiene which can help the process of



tissue healing until a definitive obturator is created.¹⁴ Patients are instructed to stay under control if the defect is still present. Every time the patient does control, the obturator will be adjusted due to tissue changes. These adjustments may affect the retention and stability of the obturator.^{15,16} In some cases that still require further surgery or other modifications, the interim obturator can be used for a longer duration.¹⁷

In this case report, the patient had never had a surgical obturator made before. Since the patient was referred to the prosthodontics department 3 weeks after the maxillofacial surgery procedure, it was assumed that a tissue regeneration process had occurred, so the defect-healing process had started. There is an addition of tooth elements in this obturator with the consideration that the existing defect would be small so that the addition of tooth elements would not add excessive pressure to the defect as well as to restore the patient's phonetic function, mastication, and appearance.¹⁸ Remaining natural teeth that are still present and occlusion also contribute to the efficiency of mastication.¹⁹ An interim obturator can also play a role as a backup prosthesis when the definitive obturator needs repair.²⁰

There are some disadvantages to the interim obturator, including that there is still a gap between the denture base and the soft acrylic resin so it is still possible for fluid to enter the defect, where this fluid will decompose and produce an unpleasant odor.¹³ Therefore patients need to pay attention to obturator cleanliness. The other disadvantage is the use of soft acrylic resin is not optimal for a long time but can still be overcome by regularly adjusting to existing defects.

5. Conclusion

Interim obturator can act as a barrier to defects after dredging mandibular and this obturator will restore the lost structure. Follow-up on patients has an important role in the success of the interim obturator to help the process of healing defects after maxillofacial surgery procedures.

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