INDONESIAN JOURNAL OF PROSTHODONTICS

CASE REPORT

Immediate surgical obturator and interim obturator for recurrent nasal cavity cancer patient with aramany's class II: A case report

Eugenius Bramianta Wardhana,[1] Franciscus Wihan Pradana,[2] Murti Indrastuti,[1]* Intan Ruspita[1]

Keywords: Aramany's class II, Hollow bulb, Interim obturator, Surgical obturator

ABSTRACT

The maxillary defect can interfere a patient's speech, masticatory, aesthetic and psychologic. To overcome this problem, an obturator prosthesis is needed. This case report focuses on prosthetic rehabilitation for Aramany's class II patient. In January 2022, a woman, 46 years old, was diagnosed with recurrent cavum nasi cancer. She got a subtotal maxillectomy at RSUP Dr. Sardjito. After maxillectomy, the patient was assigned a surgical obturator with vacuum formed retainer material to close the palate gap. One month after the operation, the patient came to Oral Clinic RSUP Dr. Sardjito for evaluation. On the intraoral examination, there was a maxillary defect in Aramany's class II. Resin acrylic obturator with hollow bulb was made as an obturator interim. The obturator insertion showed that the palate gap was tightly closed by the acrylic plate. In this case, the obturator interim successfully helps the patient bring back the function of speech, masticatory, and aesthetics. (IJP 2024;5(1):83-86)

INTRODUCTION

Nasal cavity cancer is a rare condition. The diagnosis is frequently only subsequently suspected because the symptoms of nasal cavity cancer are also frequent signs of many other illnesses, such as chronic rhinitis or sinusitis. Wood dust, nickel, and chemical solvent exposure are risk factors for cancer of the nasal cavity. Smoking cigarettes has also been strongly connected. One of the nasal cavity cancer treatments is a maxillectomy. In some cases maxillectomy can cause maxillofacial defects.[1] Maxillofacial defects may be a result of congenital malformations, trauma or surgical resection of tumors.[2] Multiple issues with deglutition, mastication, pronunciation, aesthetic, and oral hygiene are brought on by palatal defects. The primary objective of rehabilitating these defects is to eliminate the disease and to improve the quality of life for these individuals. Such deformities require a particular prosthesis to create an oro-nasal seal, which the obturator prosthesis can provide.[3]

Aramany's classification is divided into six different groups based on the relationship of the defect area to the remaining abutment teeth. Class I, the resection in this group is performed along the midline of the maxilla. The teeth are maintained on one side of the arch. Class II, the defect is unilateral, retaining the anterior teeth on the contralateral side. The central incisor and sometimes all the anterior teeth to the canine or premolar are saved. Class III, the palatal defect occurs in the central portion of the hard palate and may involve part of the soft palate. The surgery does not involve the remaining teeth. Class IV, the defect crosses the midline and involves both side of the maxillae. There are few teeth remaining which lie in a straight line, which may create a unique design problem similar to the unilateral design of conventional removable partial denture. Class V, the surgical defect is bilateral and lies posterior to remaining abutment teeth. Class VI, it is rare to have an acquired maxillary defect anterior to the remaining abutment teeth.[4]

An obturator is a maxillofacial prosthesis used to close, cover, or maintain the integrity of the oral and nasal compartments resulting from a congenital, acquired, or developmental disease process. The prosthesis facilitates speech and deglutition by replacing those tissues lost and can reduce nasal regurgitation and hyper nasal speech and improve articulation, deglutition, and mastication.[5] The first stage of treatment, known as surgical obturation, comprises the placement of a prosthetic during surgery. During the initial postoperative phase, it largely aids in the restoration

[1]Department of in Prosthodontics, Faculty of Dentistry, Universitas Gadjah Mada, Yogyakarta, Indonesia
[2]Department of in Oral and Dental Health, RSUP Dr. Sardjito, Yogyakarta, Indonesia

*Corresponding author: murtident@ugm.ac.id

DOI 10.46934/ijp.v5i1.194

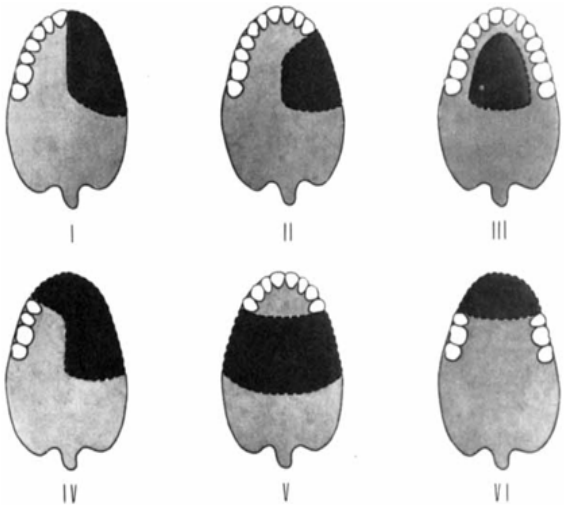

Figure 1. Classification for partially edentulous maxillectomy dental arches

Figure 2. Extraoral condition before subtotal maxillectomy

Figure 3. Surgical obturator insertion

and maintenance of oral functions. The tissue can mend during the second stage, which is referred to as the interim obturator. Typically constructed 2 to 6 weeks following surgery, the interim obturator is kept on hand until the permanent prosthesis is created.[6]

CASE REPORT

A 46 years old female patient was diagnosed with recurrent nasal cavity cancer. The patient had a maxillectomy before in 2002 and using a denture for maxilla. After diagnosed with recurrent nasal cavity, she got a subtotal maxillectomy at RSUP Dr. Sardjito. After maxillectomy, the patient was assigned a surgical obturator with vacuum formed retainer material to close the palate gap.

1 week after subtotal maxillectomy, evaluation conducted to examine post-surgery healing and instruct the patient how to maintain the oral hygiene. 2 weeks after last visit, the condition of post-surgery was good. Intraoral examination showed quite good oral hygiene, dental plaque slightly found, no swelling and no pain around the defect. Therefore, impression was taken with hydrocolloid irreversible. Working model for interim obturator was fabricated and jaw relations were recorded.

Next appointment, try in the bite rim with hollow bulb, teeth arrangement to the patient and a light contact with the opposing teeth was ensured. The purpose of this light occlusion is to not put a heavy load inside the defect. Bite rim made from Cavex modelling wax. After try in, the bite with teeth was delivered to laboratory. The interim obturator was fabricated with heat cure resin.

Interim Obturator with hollow bulb was inserted to the patient on next visit. After the insertion, patient can speak normally again, swallow properly and the aesthetic was good. There was no gap between the obturator and the defect. Occlusion were checked with articulating paper and the occlusion was balance.

On the next visit, evaluation was performed. The patient felt no pain and already used the obturator for eating, drinking and speaking normally. There was no leakage also between obturator and the defect. Patient was instructed to maintain her oral hygiene.

DISCUSSION

Oronasal and oroantral communication is caused by a rapid alteration in the physiological mechanism brought on by a maxillectomy. An obturator is a basic reconstructive procedure that can be used to separate oronasal communication, ease swallowing and mastication problems, support the soft tissues of the face, restore speech, and provide immediate dental restoration without the need for additional surgery.[7] In the aftermath of a maxillectomy, the obturator prosthesis is essential for oral function restoration. Fundamental concepts in prosthodontics, such as wide stress distribution, cross-arch stability with a robust primary connection, and stabilizing and retaining components at precise points within the arch to best avoid dislodging functional forces, should guide the design of every removable obturator prosthesis.[8]

Figure 4. Extraoral condition 4 weeks after maxillectomy

Figure 5. Interim obturator.

Figure 6. Interim obturator insertion.

Figure 7. Extraoral view after insertion.

Surgical obturator is needed to cover the defect on site of operation. It is a base plate prosthesis that is made from the preoperative impression cast and inserted during the operating room maxilla resection. A matrix is provided by the surgical obturator on which the surgical packing can be positioned. It keeps the packing in the right relationship, ensuring that the skin graft will closely adapt. Additionally, it lessens oral contamination of the site in the immediate aftermath of surgery, which may lessen the likelihood of local infection and allow for an earlier removal of the nasogastric tube. It is a base plate prosthesis that is made from the preoperative impression cast and inserted during the operating room maxilla resection. A matrix is provided by the surgical obturator on which the surgical packing can be positioned. It keeps the packing in the right relationship, ensuring that the skin graft will closely adapt. Additionally, it lessens oral contamination of the site in the immediate aftermath of surgery, which may lessen the likelihood of local infection and allow for an earlier removal of the nasogastric tube.[9]

This Case of maxillary defect included into Aramany's class II design. This patient got the defect because of post subtotal maxillectomy with cavum nasi cancer. There are still a lot of remaining teeth, so the support was still sufficient. After a maxillectomy, an interim obturator prosthesis is necessary to improve aesthetics, deglutition, and speech. Speech and swallowing are typically quickly restored using interim obturators, but over the following three to six months, continual modification and adjusting are necessary because to the constantly changing tissue conformation. Light occlusion is needed to avoid contact with the internal organ inside the defect.[10]

The type of retainer to be used will depend on the number and position of the remaining teeth. Abutment teeth are less stressed when retainers are appropriately made. Therefore, basic design principles like passive placement, encirclement, and stabilization should be used when creating the clasp assembly.

Various materials are used for making obturators such as heat cure resin and light cure resin. In this case, heat cure resin acrylic with hollow bulb was chosen for interim obturator. The patient here had well healed defect so definitive hollow bulb obturator prosthesis was plannedf or rehabilitation.[11] In this case, patient still having chemotherapy. Therefore, definitive obturator still postponed due to defect change.

CONCLUSION AND SUGGESTION

Obturator is needed for patient with maxillary defects to maintain the quality of their life. A good obturator can help the patient to reclaim the functional and psychological needs. Speech, masticatory, and aesthetics of the patient are the most important parts of obturator's success. Interim obturator needs to has a light occlusion to avoid heavy load on organs inside the defect.

In this case, patient suggested to replace the interim obturator to definitive obturator after finish chemotherapy. Prosthesis with metal provides durability, biocompatibility, and longevity of the prosthesis.

DOI 10.46934/ijp.v5i1.194

REFERENCES

1. Bhattacharyya N. Cancer of Nasal Cavity. Arch Otolaryngol Head Neck Surg American Medical Association.2002;128(9):1079-1083
2. Jain AR, Philip JM, Pradeep R, Krishnan CJV, Narasimman M. Cast Retainer Hollow Bulb Obturator for a Maxillary Defect. International Journal of Dental Sciences and Research. 2014; 2(6): 164-167.
3. Singh M, Parajuli P, Singh RK, Suwal P. Fabrication of Cast Metal Closed Hollow Bulb Obturator for Partially-Maxillectomy Patient. IOSR JDMS. 2019; 18(12): 50-54.
4. Aramany MA. Basic principles of obturator design for partially edentulous patients. The Journal of Prosthetic Dentistry. 2001; 86(6): 559-561.
5. Punjabi AR, Mistry G, Shetty O, Rathod A. Maxillary Hollow-Bulb Obturator: A Paradigm Shift. The Journal of Indian Prosthodontic Society. 2018; 19(1): 74-78.
6. Pankaj B, Shweta AK, Rohan S. Maxillary obturator prosthesis rehabilitation: Case series of three patients. BFUDJ. 2014; 5(3):1-7.
7. Nanda K, Choudhury GK, Sahoo PK, Samantaray RK, Bharadwaj S, Krishna M. Maxillary Hollow Obturator for Rehabilitation of Palatal Defect. Indian Journal of Forensic Medicine & Toxicology. 2020; 14(4): 8938-8942.
8. Singh M, Limbu I K, Parajuli P K, Singh R K. Definitive Obturator Favrication for Partial Maxillectomy Patient. Hindawi Journal. 2020; 202: 1-5.
9. Singh M, Bhushan A, Kumar N, Chand S. Obturator Prosthesis for Hemimaxillectomy Patients. National Journal of Maxillofacial Surgery. 2016; 4(1): 117-120.
10. Jamayet NB, Rahman AM, Husein A, Alam MK, Nizami MM. A Simple Method of Fabricating an Interim Obturator for a Maxillectomy Defect. Adv Dent & Oral Health. 2017; 6(3): 1-4
11. Rani S, Gupta S, Verma M. Hollow Bulb One Piece Maxillary Definitive Obturator. Contemporary Clinical Dentistry. 2017; 8(1): 167-170

DOI 10.46934/ijp.v5i1.194