

Surgical obturator of upper jaw post hemi-maxillectomy sinonasal cancer

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ABSTRACT

Surgical obturator is a maxillofacial prosthesis used in post-hemimaxillectomy patients to close defects and maintain the integrity of components presents in the oral and nasal cavities due to sinonasal cancer. Maxillary defects in maxillofacial patients will lead to stomatognathic disorders and loss of confidence. Prosthetic rehabilitation is an important procedure in palate reconstruction after sinonasal cancer surgery, include forms of treatment carried out in multidisciplinary cooperation with the ear, nose and throat, surgical oncology, oral surgery, and prosthodontics. This article provides information on post-hemimaxillectomy patient management with a surgical obturator. A 65-year-old female patient came to the prosthodontist of Gusti Hasan Aman Banjarmasin Dental and Oral Hospital, on referral from the Banjarmasin Alert Surgery Special Hospital with a diagnosis of sinonasal cancer with hemimaxillectomy and palate reconstruction. Before the operation, impression is carried out first on the maxillary area using alginate. The obturator shape is created by optimizing the retention of the remaining anatomical structures, creating designs on the model, creating clasp retention using wire 0.8, processing with acrylic, followed by postoperative obturator insertion. It is concluded that surgical obturator can be used as post hemimaxillectomy rehabilitation.

Keywords: hemi-maxillectomy, sinonasal cancer, surgical obturator

INTRODUCTION

Sinonasal cancer or sinonasal malignant tumor is a malignancy that occurs in the area of the nasal cavity and paranasal.¹ The overall incidence of sinonasal cancer in the United States is 0.556 cases per 100,000 inhabitants per year with a male-to-female ratio of 1.8:1. The most common histology is squamous cell carcinoma (51.6%) and adenocarcinoma (12.6%), while the most common primary places are the nasal cavity (43.9%) and maxillary sinuses (35.9%).² The incidence of sinonasal carcinoma in Indonesia based on research at the ENT Department of FKUI Cipto Mangunkusumo Hospital found 10-15% sinonasal malignancy from all ENT malignant tumors.³ According to Barnes, factors that can trigger act as sinonasal cancer are exposure to wood dust, nickel, other metal materials, and smoking.⁴ Other studies have also said that smoking and being in an environment with cigarette smoke have been established as risk factors for sinonasal cancer.⁵ Symptoms that can be experienced by patients with sinonasal cancer include nasal obstruction, facial pain, persistent rhinorrhea (runny nose), or epistaxis (nosebleeds). The symptoms of sinonasal cancer are not specific, and cannot be distinguished from the symptoms of benign sinonasal diseases, so sometimes the patients have had an advanced state.⁶

The American Joint Committee on Cancer (AJCC) classification is used in Indonesia to determine the

stage assessed from tumors, nodules, and metastases (TNM) and is divided into stages I, II, III, IVa, and IVb.⁷ Optimal care management is determined through a multidisciplinary approach, which involves ear, nose, and throat specialists, oncology specialists, prosthodontics specialists, oral surgeons, and other professionals.³ The principle of management of sinonasal carcinoma is surgery in the form of a maxillectomy as the main option followed by radiotherapy and or chemotherapy.⁸ Surgery in patients with sinonasal can cause defects in the palate area which will have an impact on the normal functioning of the oral cavity such as speech disorders, mastication, and swallowing so that rehabilitation treatment is needed.⁹

Prosthodontic rehabilitation uses maxillofacial prostheses called surgical obturators as a follow-up to post-surgery.¹⁰ Surgical obturators are prostheses used to close palatal defects after a maxillectomy, restore masticatory function and improve speech.¹¹ Surgical obturators can be used in patients with intact teeth, total edentulous or partially edentulous.^{12,13}

CASE

A 65-year-old female patient came to the Prosthodontics of RSGM Gusti Hasan Aman Banjarmasin, on a referral from an ear, nose, and throat specialist at RSKB Siaga Banjarmasin to make a surgical obturator that will be installed after surge-

ry. From the anamnesis, it is known that the patient is diagnosed with sinonasal cancer in the palate area and surgery will be performed. An extraoral objective examination shows a convex profile of the patient's face, there is swelling of the maxillary (Fig. 1A), while intraorally the teeth left only teeth 23 and 26 (Fig. 1B). Based on the panoramic radiographic supporting examination, abnormalities were seen in the maxillary area to the patient's nasal cavity area as well as dental impactions 14 and 28 (Fig. 2). The patient must be surgically performed immediately and plan for rehabilitation due to palate defects that will be caused after surgery later.

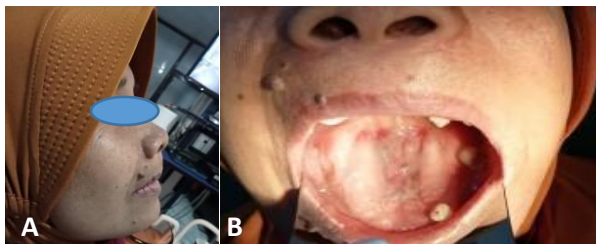


Figure 1A Patient's profile, **B** intraoral condition (Source: own documentation)



Figure 2 Panoramic radiographic (Source: own documentation)

MANAGEMENT

For the rehabilitation of this patient, a plan is made to make a surgical obturator to cover the palate defect due to surgery. Before surgery, impression is done using stock trays with alginate material on the upper jaw and then filled with a type IV stone cast (Fig. 3A) as a working model. The impression is done carefully because the condition of the palate area is very soft, using a 50 mL syringe to assist in anatomical printing. Because of the patient's condition that only left teeth 23 and 26, retention was made in the form of adam clasp on tooth 26, and a C clasp on tooth 23 using wrought-wire. Then a night obturator model was made that covered the entire surface of the printed product to the limit of the movable and immobile mucosa. Surgical obturators with nights are sent to the dental lab for acrylic processing (Fig. 3B). The obturator is made using acrylic resin material, after the processing is completed, finishing, and polishing (Fig. 4).

After surgery, a defect was obtained on the durum palate, the obturator that had been made before installation was soaked first with a 0.2% chlorhexidine gluconate solution. Still, under the influence of general anesthesia, the operating area was cleaned with sterile gauze, and conduct an intraoral examination first. The defect area of the palate has been given sterile gauze with 0.2% chlorhexidine gluconate. Inserter surgical obturator to the patient to see the edge boundary and retention of the obturator. It is necessary to be careful of defects in the maxilla of the former operation (Fig. 5A).

After 1x24 hours of surgery, the first control is carried out to find out whether the surgical obturator is still retentive or not, whether there are no injuries to the wings of the surgical obturator, and whether defects in the palate are still well closed. Cleaning of obturators and soft tissues of the oral cavity using sterile gauze with 0.2% chlorhexidine gluconate material. The patient is asked to perform repeated swallowing movements so that the patient can adapt to the obturator. The second control was carried out 3 days after the first control (Fig. 5B), there was food debris attached around the wing of the surgical obturator, and the defect in the palate was still well closed even though from the patient's description there was fluid entering the nasal cavity and the fluid came out of the nose. In the second control, the swelling on the face has begun to decrease. The third control was carried out 3 days after the second control, there was still food debris attached around the wing of the surgical obturator, and the patient had not dared to clean the surgical obturator himself (Fig. 6) and was subsequently evaluated after one month; the results of the examination showed that the patient could swallow food well, and could also speak well compared to when not wearing an obturator. After checking the obturator and there are no problems, the patient is

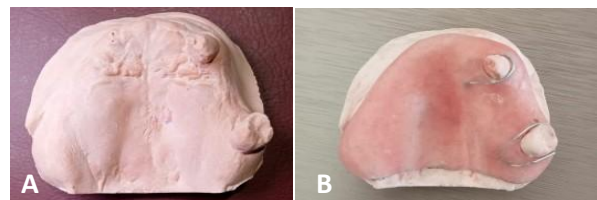


Figure 3A Working model, **B** surgical obturator using acrylic (Source: own documentation)

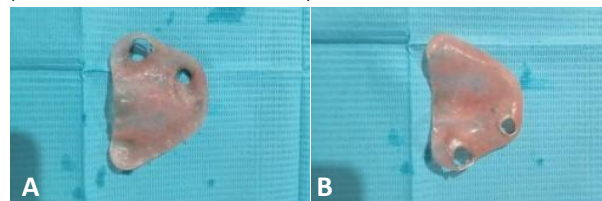


Figure 4 Finished and polished surgical obturator viewed from the outer and inner surfaces (Source: own documentation)

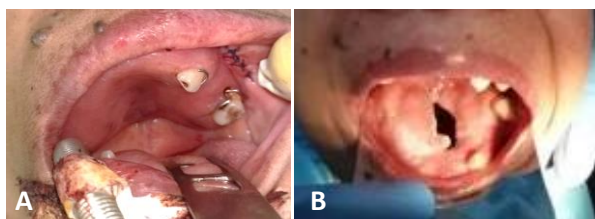


Figure 5 A Postsurgery with a surgical obturator, B third control (Source: own documentation)



Figure 6 Fourth control (Source: own documentation)

taught to install and remove the obturator and teaches how to clean the obturator and the soft tissues of the oral cavity.

DISCUSSION

Defects of the maxillary are caused by surgical treatment of benign or malignant neoplasms, congenital malformations, and trauma. The size and location of the defect affect the degree of damage and difficulty in prosthetic rehabilitation. Lack of support, retention, and stability are common problems of prosthodontic treatment for patients who have undergone a maxillectomy.¹²

Maxillectomy is an action in the maxilla that causes defects in the face and oral cavity in the form of damage and deformation to the face and oral function. Maxillary reconstruction is the rehabilitation of the treatment of maxillary defects after a surgical procedure involving the loss of part or all of the maxilla.¹⁴ Prosthodontic rehabilitation of acquired defects on the upper jaw can be organized into three stages of treatment. For each step, a different type of obturator is made.¹⁵ In this case, the post-maxillectomy defect is closed with a surgical obturator made of acrylic resin to prevent the entry of food into the respiratory tract.¹⁶ The main purpose of surgical obturator is to maintain the remaining teeth and tissues and to provide comfort, function, and aesthetic to patient.¹⁷

This type of tool is made from molds obtained

before the day of operation and inserted at the end of the maxillary resection action. The many benefits of using a surgical obturator include providing a stable matrix for surgical packing, being able to form a barrier between the oral cavity and the wound during initial healing, and allowing the patient to speak and swallow more effectively.¹⁸ The main difficulties that occur after resection may have a psychological impact on the patient that can be reduced by the presence of a surgical obturator. For this case, a surgical obturator is immediately made before surgery and inserted on the day of surgery immediately after maxillary resection. No teeth were added and retention was obtained from the remaining teeth.¹⁵

In surgical obturators, education to maintain oral hygiene is very important to support the healing process and postoperative tissue regeneration and avoid local infections that can hinder the healing process. Ultimately the prosthesis for maxillofacial defects has a significant impact on the patient's quality of life when returning to the social environment.¹⁹ The quality of life of patients with maxillary defects can obviously be improved by the provision of well-designed obturators. Prosthetic obturators can restore mastication, ingestion, aesthetics in particular the middle of the face, resonance, and speech. Patients with maxillofacial defects undergoing rehabilitation can continue their social habits as usual.²⁰

It is concluded that surgery in sinonasal cancer involving the maxillary area and nasal cavity often causes defects in the area that disruption of the normal functioning of the patient's oral cavity such as chewing, swallowing, and talking so that rehabilitation is needed for the patient's condition. A surgical obturator as a post-hemimaxillectomy rehabilitation treatment has been shown to close defects in the maxilla and restore speech function, chewing, and swallowing in patients.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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