

Surgical Obturator as an Immediate Prosthesis Post Hemimaxillectomy of Palatal Squamous Cell Carcinoma: A Case Report

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Abstract

Surgical management of oral squamous cell carcinoma results in significant defects in the oral and maxillofacial regions. This case study aims to support the formation of an intraoral defect profile, shorten recovery time, and improve the patient's psychological aspects by inserting a postoperative surgical obturator. A 44-years-old male presented to Dental Hospital Universitas Airlangga at the referral from General Hospital Dr. Soetomo Head and Neck Surgery Department due to recurrent palatal squamous cell carcinoma. The patient required a surgical obturator to restore anatomical defect post-hemimaxillectomy. Multidiscipline discussion forums were performed to determine the plan for tissue removal, and the prosthodontist designed the surgical obturator. The design was made utilizing the retention of the remaining 17 and 27 teeth with Adams clasps. In this case, mechanical retention was achieved by a wire, which was attached to the zygoma bone. The artificial teeth were arranged in the anterior area to improve aesthetic, while in the posterior region, the artificial teeth were not used to minimize the masticatory loading. Surgical obturator improved the masticatory function and psychology of the patient.

Keywords: Carcinoma, Hemimaxillectomy, Human and Health, Maxillofacial Prosthesis, Surgical Obturator

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INTRODUCTION

Squamous cell carcinoma is one of the most prevalent malignancies found in the oral cavity. The incidence of oral squamous cell carcinoma (OSCC) involving the hard palate and soft palate are 50% and 70%, respectively.^[1,2] Despite advancements in combined therapy, including as surgery, chemotherapy, and radiotherapy, the 5-year survival rate of oral squamous cell carcinoma (OSCC) is still around 40%. Despite the fact that OSCC is found in a visible area of the surface mucosa, up to 50% of cases are detected late. Because speech, mastication, and swallowing are all necessary functions of the oral cavity, the treatment method for oral cavity cancer has a direct impact on the patients' quality of life. The most effective strategy to reduce fatality rates, morbidity, and anatomical injury is through early detection and diagnosis.^[3]

Surgery is one of the treatment option commonly used in patients diagnosed with this disease. Surgical treatment, in this case, involves the removal of part or all of the maxillary structure and leaves a defect that can interfere with the integrity and function of the oral cavity.^[4] The management of OSCC requires multidisciplinary treatment mainly by oral and maxillofacial surgeons, head and neck specialists, and prosthodontists. Prosthodontists have a pivotal role in maxillectomy cases to assist recovery and rehabilitation of the patients by manufacturing and installing surgical obturators.^[4]

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A post-operative surgical obturator has to be inserted into the patients. This case study seeks to explain support the formation of an intraoral defect profile, shorten recovery time, and improve the patient's psychological aspects by inserting a postoperative surgical. A surgical obturator can be post-operative soft tissue support and minimize tissue contraction from wound defects to positively impact patient psychology. Rehabilitation with this prosthesis that replaces the structure of the teeth and palate can help restore speech, mastication, and esthetics.^[5-8]

CASE REPORT

A 44-years-old male patient was referred to the Dental Hospital Universitas Airlangga by the department of Head and Neck Surgery Dr. Soetomo General Hospital due to recurrent palatal squamous cell carcinoma. The patient requires a surgical obturator to support hemimaxillectomy. Six months ago, the patient was diagnosed with localized oral squamous cell carcinoma. The diagnose showed that the patient got a partial maxillectomy performed on the maxillary anterior region.

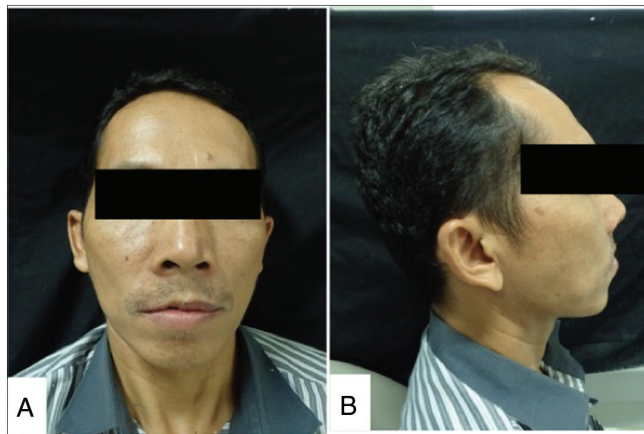


Figure 1: Patient profile. Front view (a) and side view (b)

Three months recall post-surgery, the patient complained about a persistently ulcerated lesion that appeared in the maxillary mucolabial fold. Clinical examination the patient got further examination; there was recurrence and extension of the previous carcinoma. The patient was diagnosed with Oral Squamous Cell Carcinoma palatal region (T2a N0 M0). The patient had never used dentures. On examination, there were asymmetrical lips caused by a maxillectomy defect in previous surgery, causing a concave upper lip profile [Figures 1 and 2].

CASE MANAGEMENT

In the first stage of treatment, a thorough discussion of the treatment plan was conducted, and the patient's informed consent was acquired. Subsequently, anatomical impressions of the maxilla and mandible were taken using a stock tray with irreversible hydrocolloid (alginate), and the positive impressions were made with type III plaster (dental stone). The next step was mounting the study model to the articulator, and a complete treatment plan and surgical obturator design were established [Figure 3a, b, and c].

The study model was utilized to fabricate the surgical obturator [Figure 3d]. Adam's clasp was used as retentive components, and artificial teeth were arranged in the anterior region to improve the patient's aesthetic. The posterior region was left edentulous to minimize masticatory loading. The finishing stage of the wax-up was conducted and then continued by the acrylic packing stage. After the fabrication of the surgical obturator was completed, we made several retention holes on the entire surface edge of the obturator [Figures 4 and 5].

A day before surgery, the obturator was disinfected by an antiseptic solution. The surgery was performed by a head and neck surgeon Dr. Soetomo General Hospital, Surabaya [Figures 6, 7, and 8]. After the surgical procedure

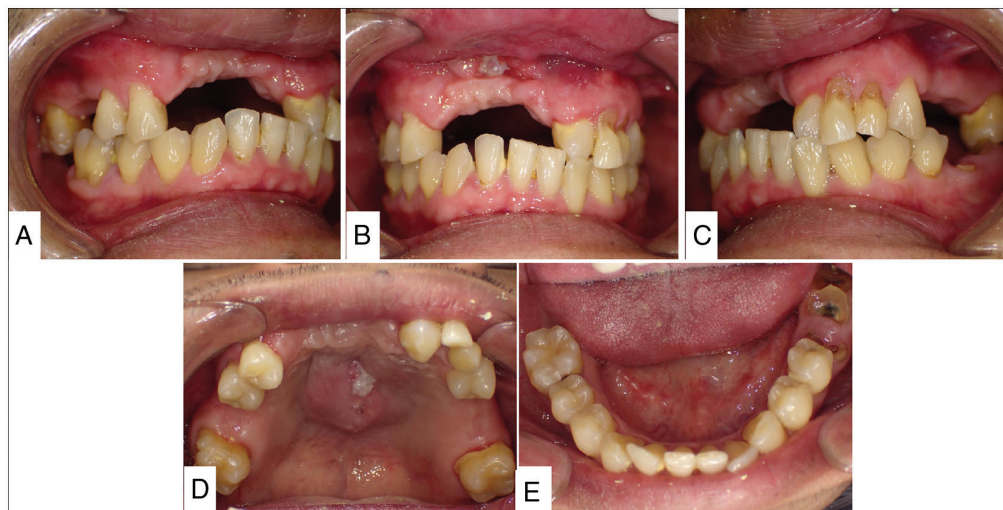


Figure 2: Patient clinical photo. Right view (a), front view (b), left view (c), Maxillary occlusal view (d) and Mandibular occlusal view (e)

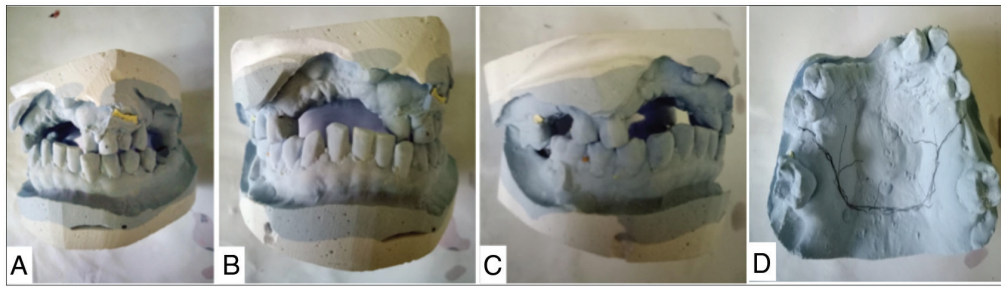


Figure 3: Study model left view (a), front view (b) and right view (c) design of the surgical obturator (d)

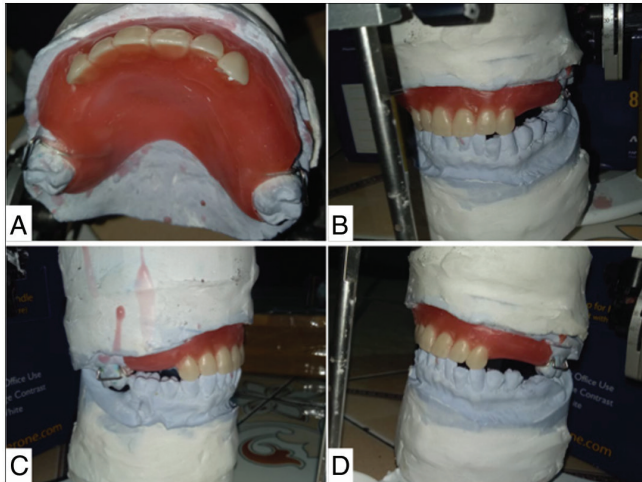


Figure 4: Arrangement the artificial teeth occlusal view (a), front view (b), right view (c) and left view (d)

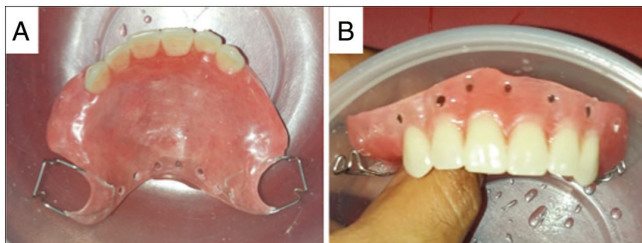


Figure 5: Surgical obturator after polishing

was finished, the surgical obturator was adjusted to the patient. Adam's clasp was placed on teeth 17 and 27 and fixated to the right and left zygomatic bone using wires as presented in [Figure 9]. Extraoral and intraoral suturing were done on the entire retention hole of the surgical obturator using a simple interrupted suture technique. The occlusion evaluation was done, and no occlusal adjustment is needed [Figure 10].

After the surgery, the patient was instructed to maintain the hygiene of the surgical wound and only to consume liquid diet. On the first control (three days' post-surgery), the patient complained of moderate discomfort in the operated area. The intraoral examination showed redness (+), bleeding (-), swelling (+), debris (+) in the operated



Figure 6: Try in the surgical obturator on patient

area. We irrigated the area using 3% H₂O₂ and clean the surgical obturator. In the second control (ten days after the surgery), patients complained of minor discomfort in the operated area, and intraoral examination shows improvement of clinical symptoms, redness (-), bleeding (-), swelling (-), debris (+). We instructed the patient to consume a soft diet and visit for evaluation one month after the second control for the interim obturator planning.

DISCUSSION

The design of the surgical obturator utilized the 17 and 27 teeth as abutment with Adam's clasp and retentive component. Retention using a wrought-wire clasp has long been used as a type of retention in the manufacture of surgical obturators.^[9,10] In this case, mechanical retention in the form of a zygoma-attached wire is also used. A similar case has also been carried out by Appadurai *et al.* (2019), which shows one of the relatively easy ways to obtain retention in maxillectomy cases where retention to the dentition is challenging.^[11]

The surgical obturator design involves the arrangement of anterior artificial teeth, while in the posterior region, the surgical obturator design is only a plate without artificial teeth. The arrangement of artificial teeth in the anterior



Figure 7: Wire placement on the edge of the surgical obturator

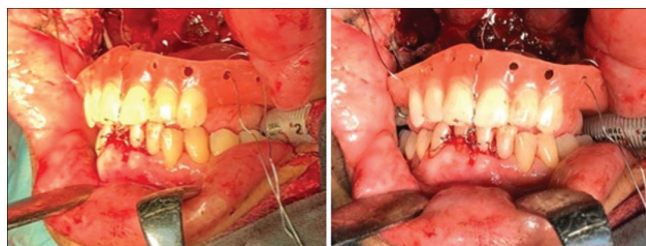


Figure 8: Fixation on the anterior region to get occlusion and stability of the surgical obturator



Figure 9: Fixation on left and right zygoma

region supported the aesthetic function of the prosthesis used by the patient. Some authors also recommend that in the manufacture of surgical obturators, the posterior part should be freed from occlusal contacts and only functioned to close the defect and form a palatal. This design is continued until the surgical wound has healed and is ready for an interim obturator.^[12,13]

An interim obturator can be made 4 to 6 weeks after insertion of the surgical obturator.^[12] Following the instructions carried out at the second control, an evaluation will be carried out one month after the second control and assess the readiness of the defect tissue to receive the interim obturator. An interim obturator can be made to prepare healthy tissue that can receive complete stomatognathic function through definitive obturator prosthesis.^[14-17] In surgical obturators, education

to maintaining oral hygiene is essential to support the healing process and tissue regeneration after surgery. This treatment aims to avoid local infections that can hinder the healing process. In the end, prostheses on maxillofacial defects significantly impact the patient's quality of life when he returns to the social environment and increases the patient's confidence.

This case will get a lot of research, but there are some conclusions that can be relied on right away for postoperative surgical obturator was effective for supporting the formation of an intraoral defect profile and shorten recovery time. The issue of surgical management OSCC is an intriguing one which could be usefully explored in further research.

CONCLUSION

The study contributes to our understanding of surgical management of OSCC by postoperative surgical obturator insertion. The surgical obturator can shorten the recovery time in 7 weeks. Interim obturator can be made to prepare healthy tissue that can receive complete stomatognathic function through definitive obturator prosthesis. The prostheses on maxillofacial defects significantly impact the patient's quality of life when the patient returns to the social environment and increases the patient's confidence. The issue of surgical management OSCC is an intriguing one which could be usefully explored in further research.

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None to declare.

Conflict of interest

There are no conflicts of interest.

Author contribution

Study conception, design, definition of intellectual content, literature search, clinical studies (RMS, MDAA, KM, RAAS, TRP, AD); Experimental studies, data acquisition, data analysis, statistical analysis (RAAS,



Figure 10: Insertion of surgical obturator extra oral (a) and intraoral (b and c)

TRP, AD); Manuscript preparation, editing, review, and guarantor (RMS, MDAA, KM).

Ethical policy and institutional review board statement

Not applicable.

Patient decaration of consent

The authors certify that the patient(s) has/have consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Data availability statement

Not applicable.

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