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Maxillary Obturator prosthesis: A Case Series

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Aim: Treatment for cancers of the palate results in oro-nasal communication with the sinus, which impairs the patient's speech, swallowing, and chewing abilities. It results in the reflux of fluids and food into the nasal cavity, which results in great difficulty for the patient. This case series demonstrates the fabrication technique of hollow bulb obturator which reduces the weight of the prosthesis and significantly has an overall effect on the psychological and mental well-being of the patient.
Case Description: Over the years, various reconstructive surgical techniques and the advent of microsurgery have made reconstruction possible. The conventional obturator is still the preferred modality of treatment for maxillectomy patients. Two different patients who were partially edentulous were treated for oral cancer of the maxilla and palate and were rehabilitated with hollow-bulb obturators.
Conclusion: This article describes the planning, design, and adjustment of prosthesis fabrication. The patients noted a remarkable improvement in speech and feeding immediately after the prosthesis was given to both patients.

Keywords: Maxillectomy, Oral Cancer, Dental Occlusion, Speech, Mastication

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Introduction

Head and neck cancers have to be treated surgically before prosthetically rehabilitating them, since after surgery it leads to oral and nasal communications between the antrum and nasal cavity. It leads to an influx of food and fluids into the nasal cavity with difficulty in speech, swallowing, and mastication.[1] Rehabilitation of these patients needs precise planning before and after surgery, which is done in consensus with the surgical and prosthetic team. Rehabilitation of such patients is an arduous task since the prosthesis's retention, stability, and sealing form an important criterion in the treatment protocol. Rehabilitation can be a surgical or prosthetic phase or a combination of both. Patients with head and neck cancers have a high risk of relapse; hence, they need to be followed up frequently. Along with low cost, less treatment time is needed for rehabilitation with immediate effect and an esthetic outcome.[2,3] Dentists usually prefer prosthetic rehabilitation with obturators, prosthetic bulbs, and rehabilitation prostheses as preferred treatment modalities over complex treatment procedures. In this article, we discuss two different types of cancer patients who underwent surgery followed by prosthetic rehabilitation done for these patients.

Case Report

Case 1

A 68-year-old man with a medical history of diabetes and hypertension reported to the Department of Prosthodontics at Saveetha Dental College and Hospital, Tamil Nadu, India, with a resected tumor site (Figure 1) for squamous cell carcinoma one year ago.[4] The patient had undergone chemotherapy and radiotherapy at the tumor site, difficulty in chewing, nasal regurgitation, and difficulty in speech.[5,6] On extraoral examination, there was no facial asymmetry or cervical lymphadenopathy with moderate mouth opening and a straight opening and closing of the mouth. Intra-oral examination revealed missing teeth. Intra-oral examination revealed teeth from 11 to 17 present with defects on the left side of the maxilla connecting the sinus on the left side. There was generalized attrition present on the posterior teeth.[7] The mucosal surface on the right side of the palate is high-arched. The left side of the palate is where the defect extends from the anterior to the posterior part of the palate, with undercuts in the anterior and posterior parts of the palate. The lower mandibular teeth were intact and had physiological attrition due to age. A mucostatic impression of the maxillary and mandible arch was made. The undercuts in the maxillary arch were blocked with gauze. The impression was poured with plaster, and an auto-polymerizing custom tray was made to record the secondary impression (Figure 2 and Figure 3).The anastomo-functional maxillary impression was made with the addition silicone elastomeric impression material, and the master impression was made with dental stone (Figure 4).

Figure 1: Case 1: Master Cast

Figure 2:Case 1:Special Tray

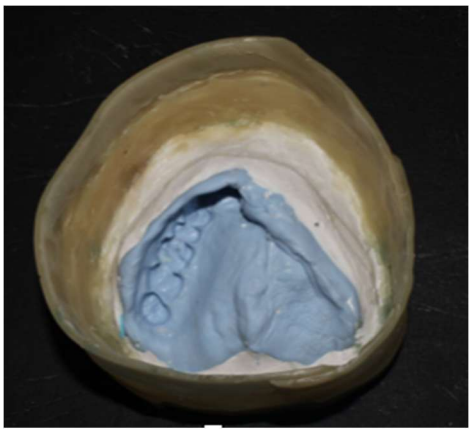

Figure 3: Case 1: Processed Hollow Denture

Figure 4:Case 2:Flasking of the Prosthesis

Jaw relation was done, and a centric relation record followed it. The vertical dimension was checked, and the casts were articulated. The wax try-in was done, and the patient's phonetics and aesthetics were checked.[8]A minimum of 5 to 7 mm was left near the top part of the palatal defect. Wax-up was done after blocking the undercuts into the defect. The short curing cycle was used to fabricate the hollow bulb. Table salt is added to fill the hollow defect, and the hollow part is fabricated using a short curing cycle. The denture base is fabricated, and two holes are made at the undersurface of the denture base. One hole was to dissolve the salt, and the other opening was to pass the water to dissolve the salt completely. The hollow space is maintained, and it also prevents the tongue from falling back.[9] Round ball end clasps were given from the premolar to the molar on each tooth to aid retention of the prosthesis. Both parts of the prosthesis are held together by auto-polymerizing resin and processed. The obturator was fabricated, trimmed, polished, and inserted (Figure 5). The patient had remarkable improvement in speech and chewing, and there was no influx of fluids into the oronasal sinus.[10]

Figure 5: Case 2:Dewaxing of the Hollow Denture Base

Case 2

The second case is a 59-year-old woman who had come to the Department of Prosthodontics at Saveetha Dental College and Hospital,Tamil Nadu,Chennai,with partial resection of the maxilla on the right side due to muco-epidermoid carcinoma. The patient had undergone hemimaxillectomy on the right side of the maxilla, followed by radiotherapy and chemotherapy a year ago (Figure 6).[11] The primary impression was made with alginate. The undercuts were blocked, and a special tray was fabricated.Border moulding was done with green stick compound, and a master impression was made with elastomeric impression material after blocking the undercuts in the hollow part with vaseline and petroleum jelly. The master cast was made, followed by the jaw relation, and the trial denture was checked in the patient's mouth.[12] The hollow part

was waxed up, and shellac base plate wax was used to cover the hollow part, and was processed using the short curing cycle. The fit was checked in the hollow part, and the prosthesis was checked for wax-try-in. Clasps were made to aid in additional retention of the prosthesis. Two holes were made on the undersurface of the prosthesis, as in the previous case, sealed with auto-polymerizing resin and processed. After the denture was inserted, the patient had better mastication and phonetics, had maximum comfort, and was at ease with the prosthesis.Both the obturators are processed with acrylic and 19-gauge clasps, which are lightweight, embrace better, have increased retention, and are cost-effective with reduced laboratory steps.[13,23]

Figure 6:Case 2:Processed Hollow Denture

Discussion

Patients with intra-oral disability have difficulty in speech and intra-oral reflux after maxillectomy. Rehabilitation of such patients with obturators improves speech and chewing. It also prevents communication between the oral and nasal complex. Treatment of patients with oral cancerous lesions involves a combination of surgery and prosthodontic rehabilitation.[14] Prosthodontic rehabilitation blocks the hollow cavity with vaseline-embedded gauze to record the primary impression with alginate. This material is of low cost and easily moulded to record the defect. The cast is poured, and then the master impression is done with an elastomeric impression to record the defect accurately.[15] Obturators are usually a single piece because they are easy to wear with the prosthesis. It is easy for the patient to maintain a single-piece prosthesis since an obturator and a prosthesis separately can be aspirated or swallowed. In both cases, the obturator was hollowed to reduce the weight of the prosthesis. The reduction in weight influences the retention and stability of the prosthesis.[16]

A hollow obturator is lighter, more sterile, and easier to make, which improves speech intelligibility; additionally, a closed hollow obturator intercepts food and fluid accumulation, reduces air space, and allows for greater extent and comfort than a single-piece obturator. An open bulb is inconvenient, noxious, and distressing for the patient. [17]

The two-piece obturator reduces the clinical time required for fabricating the prosthesis. It can be used in both partially edentulous and completely edentulous arches.[18] The disadvantage of this type of obturator is the laboratory processing time, and acrylic may seep into the lid if the seal is improper.[19] Thus, during processing, meticulous care has to be given while fabricating the two-piece prosthesis to reduce the failures in the prosthesis. It is the most sought-after prosthesis for large defects with undercuts.[20,21]

Follow-up helped reduce trauma to the communication area caused by pressure on healing tissues by the overextended obturator, which facilitated adequate healing, positioning the healing tissues, and preventing scarring, which excessively contracted and distorted the healing tissues and impeded future definitive rehabilitation.[22,23]

Conclusion

Patients rehabilitated with obturators comprise meticulous planning and execution while taking impressions while fabricating an appliance. Diagnosis and treatment planning are very important aspects of restoring the vital function of the resected part of the oral cavity and aid in reviewing the phonetics, mastication, and prevention of oro-nasal communication,

which leads to the better functional and psychological well-being of the individual.

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