

Interim Obturator Rehabilitation of a Maxillary Defect –Case Report

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Abstract: Goal of prosthodontics is rehabilitation of missing oral and extra oral structures with restoration of normal function of mastication, speech, swallowing, appearance etc. Malignancies are common in oral region, which are treated through surgical intervention. Surgical intervention creates devastating effects on aesthetics, functional and psychological aspects of patients. anatomic defect which forms communication among the oral cavity, nasal cavity and maxillary sinus. In such cases it is very difficult for the patient to perform various normal functions like mastication, swallowing, and speaking etc. Prosthodontic rehabilitation with obturator prosthesis restores the missing structures and act as a barrier between the communications among the various cavities.

Keywords: Upper jaw defects. Acrylic obturator, Interim prosthesis. Rehabilitation.

I. Introduction

Malignant neoplasms of upper gingiva and hard palate nearly account for 1-5% of total occurrence in the oral cavity; two third of the lesions which involve these areas are squamous cell carcinomas.1 Unfortunately they spread to adjacent structures, by the time they are diagnosed. The recommended treatment for these type of lesions are alveolectomy, palatotomy, partial/total maxillectomy, depending on the aggressiveness & location of the actual lesion, its histotype, patient's age and general health status. The post-surgical effect usually has serious consequences as it disturbs both form and function of normal stomatognathic system. Typically it results in hyper nasal speech, regurgitation of food/fluid into nasal cavity, impaired mastication and deglutition. At times, it affects the facial contour of the patient, particularly when it involves one or both sides of maxilla with or without associated paranasal sinuses.

Rehabilitation of these acquired maxillary defects can be accomplished by using various type of micro-vascularised flap or by prosthetic means. Surgical reconstructions are usually considered when extensions of the defects are small. For larger defect, prosthetic rehabilitation seems to be a better alternative, since more risks are involved for survival of the graft. The prosthesis that is fabricated to repair the defect is called as a maxillary obturator. An obturator (Latin: obturare, to stop up) is a disc or plate, natural or artificial, which closes an opening or defect of the maxilla as a result of a cleft palate or partial or total removal of maxilla for a tumour mass.2 Two primary objectives of maxillo-facial prosthodontists in carrying out rehabilitation is to restore the functions of mastication, deglutition, speech and to achieve normal oro-facial appearance.3 Depending upon the time period elapsed from surgical resection of maxilla, the obturator can be of three types: the surgical obturator, the temporary or intermediate obturator and the definitive obturator.4 In case of planned surgical resection of maxilla, the prosthetic rehabilitation can be executed properly which significantly reduces patient morbidity. However, many patients report at the clinic few days to few months following surgical resection of maxilla which has got a strong influence on overall prognosis of prosthetic rehabilitation. The later categories of patient either adapt lately or do not adapt easily to prosthetic treatment. To start with a simplified version of the obturator in the form of an acrylic plate and gradually converting it to make the intermediate/definite obturator can very often be helpful in relatively faster adaptation to such bigger prosthesis. This clinical report described a method for fabrication of a surgical plate turned into an intermediate hollow obturator following resection of left side maxilla, over a period time that allowed the patient to get accustomed to it favourably.

II. Case Report

A 62-year-old man, visited to the post graduate Department in Government Dental college and hospital, Indore (India) due to the extensive ulceration and swelling in the right maxillary palatal region. Intraoral examination revealed the deep ulceration 4 cm antero-posteriorly and 3 cm mesio-distally on the palatal aspect of the left maxillary posterior teeth. Orthopantomographic examination revealed large radiolucency covering entire left half of the hard palate. Clinico-pathological examination revealed T3N2M0 squamous cell carcinoma of left maxilla. The speech, mastication and swallowing functions were drastically affected due to the cancer lesion. Surgical resection of the cancer tissues was planned followed by restoration of the defect with the surgical obturator. The surgical obturator was fabricated by restoring the patient's original anatomical tissue form of the future defect-area and delivered immediately after surgery.

Examine the oral cancer lesion carefully prior to surgery and discuss the planned treatment with the surgeons with regard to the proposed line of incision and amount of resection fig 1.

Take a pre-surgical impression of the maxillary arch with irreversible hydrocolloid (Dentalgin; Prime dental products, Mumbai, India). Pour the impression with type III gypsum material (Kalstone; KalabhaiKarson, Mumbai, India) to obtain a working cast and outline the anticipated line of resection on the maxillary working cast fig 2. Review the design with the surgeon to verify the anticipated scope of the planned resection. Maxillary working cast with anticipated line of resection marked. Modify the cast (in the areas of the lesion) to obtain normal anatomical contours Scraping of the cast to achieve the normal anatomical contours in the labial vestibule. fig.3. Note that the swollen areas of the lesion can be scraped and the defect (ulcer) areas can be built-up with dental stone in order to create the normal anatomical tissue form on the cast. Manipulate 19 gauge hard round stainless steel orthodontic wire (3M Unitek, Monrovia, Calif) to fabricate 'C clasps' that engage the labial infrabulge retentive areas of the remaining healthy teeth on the nonresected and/or resected side. Fabricate the plate incorporating the clasps with heat polymerizing acrylic resin (DPI Heat cure; Dental Products of India, Mumbai, India) in conventional manner. Finish and polish the palatal plate in usual manner. Reseat the palatal plate on the maxillary cast and make a vacuum formed template over the plate fig 6. Note that the facial surface on the defect side of the cast should be completely recorded in the vacuum formed template till border areas.

After fabrication of the obturator, operate the patient for resection of the left maxilla to eradicate all possible cancerous tissues fig 4&5. Carefully examine the surgical defect area fig 4&5. Disinfect the prosthesis before trying it in patient's mouth with a glutaraldehyde 0.2% solution. Carry out the minor adjustments to fully seat the prosthesis in position immediately after the surgery. Place a surgical pack in the defect area before placement of the obturator if necessary. Surgical obturator was placed after maxillectomy fig 7. Schedule the patient for routine recall appointments for the examination of the healing tissues and adjustment of the obturator.

III. Discussion

Rehabilitation of acquired maxillary defects are always a tough task since the defects are usually presented with varying degree of morphological forms which are highly individual in nature and the patients seek rehabilitation at different stages of treatment for a primary disease e.g. malignant tumour of maxilla. Hence, a common treatment approach seldom looks feasible while rehabilitating such patients. Very often the clinicians get puzzled as a great dilemma still exists whether to go for surgical or prosthetic rehabilitation. The basic advantages of surgical reconstruction are permanent closure of oro-nasal communication. But, the problem with this procedure are questionable prognosis of vascularised flap with autogenous bone graft particularly for very large defect, because the vessels of the free flap are compromised with partial necrosis in 1.8% patients⁵ Other than this, patients need to be motivated for a second surgery and patients have to be convinced for another surgical wound at donor's site for the graft. The positive features of obturators include avoidance of any further surgery, allow the defect to keep under control in case of recurrence of primary disease, provision for replacement of teeth and can be planned at any time soon after surgical resection. In the present case, rehabilitation with palatal obturator was preferred because the patient reported within 6wks following surgery, where at the defect site, though the wound healing was satisfactory, still there was some signs of inflammation which was not very much suitable for surgery. The patient's attitude for not going for a second surgery, size of the defect and chances of recurrence of primary lesion are few other considerations for prosthetic rehabilitation. In literature, various materials have been used for fabrication of obturators. Silicone rubber⁶ and light polymerizing acrylic resin lack adequate strength.⁷ Heat polymerizing acrylic resin has been found to be one of the most durable and relatively tissue compatible materials which is still in use⁸ because of its ease of manipulation, superior hygiene, good colour stability etc. One of the most important factors from retention and stability point of view is the hollow bulb design consideration of the prosthesis. It contributes to lightness of the obturator which further improves the cantilever mechanics of suspension, avoid over burdening of adjacent soft tissue⁸ and add resonance to speech.⁷ Fortunately, the mouth opening of the patient was adequate and she had good neuro-muscular control which allowed making a single obturator that is simple with regard to daily home care. The obturator was fabricated with proper sequence owing to the patient's gagging tendency and the lack of motivation towards wearing a big prosthesis at the beginning. The purpose of making a simple acrylic plate initially was to allow sufficient time so that the patient's awareness of wearing a foreign object would decrease gradually with increasing time. Apart from this, it also served as a diagnostic aid to test patient's ability to manage with the obturator. Addition of hollow bulb and teeth to the existing maxillary plate avoided unnecessary adjustment of the plate and allowed the patient to adapt faster to the prosthesis.

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