Case Report

Transitional prosthesis for a dentulous hemimaxillectomy patient

Ajay Singh, Neeraj Kumar, Vibha Singh, S. K. Singh

ABSTRACT

Hemimaxillectomy patients present with abrupt alterations in the physiologic processes of the maxillae, along with increased anxiety levels due to sudden impairment in esthetics, mastication, speech, deglutition and hypernasal speech. Such patients should be rehabilitated as early as possible, in the postoperative phase with the help of careful preoperative planning by the surgeon and the prosthodontist. This case report illustrates the multidisciplinary approach to rehabilitate a patient, who had undergone maxillectomy on the right side, due to carcinoma alveolus. The transitional prosthesis given in this case used Tissue conditioners, which, because of their viscoelastic nature, ensure continuous adaptation, helping peripheral seal and retention. This greatly reduces discomfort and nasal reflux and improves speech.

Key words: Hypernasal speech, maxillectomy, nasal reflux, presurgical planning, transitional prosthesis, wrought wire clasp

INTRODUCTION

The use of artificial substitutes to replace anatomic structures has long been an accepted method of treatment for patients with maxillary defects. Egyptian mummies with nonliving substitutes for missing body parts have been found. Treatment of patients with acquired maxillary defects differs from that of patients with congenital defects because of the abrupt alteration in the physiologic processes with which the maxillae are involved.

Hemimaxillectomy patients should be restored to normal function as soon as possible postoperatively. Construction of a transitional prosthesis will enable the patient to eat, speak and swallow normally. These are essential functions for physiologic and psychologic health. The patient can then become a functioning member of the society.

CASE REPORT

A moderately built 50-year-old male patient reported to the Outpatient unit of the Department of Prosthodontics, Sardar Patel PG Institute of Dental and Medical Sciences, Lucknow, complaining of difficulty in speech and nasal regurgitation. The left maxillary dentition was relatively intact. The left maxillary dentition was relatively intact. The patient had difficulty in speaking due to marked hypernasality. He could not eat or swallow properly.

The medical records of the patient revealed that he had squamous cell carcinoma of the right alveolus of the maxilla. He had undergone maxillectomy on the right side with split skin grafting and palatal flap closure under general anesthesia one and a half months ago. On examination, the right side of his face was found to be depressed inward giving an unesthetic appearance. An obvious nasal twang was observed in the speech of the patient. The lower arch was completely dentulous [Figures 1 and 2].
**Figure 1:** Intraoral maxillary preop view

**Figure 2:** Intraoral mandibular view

**Figure 3:** Tryin

**Figure 4:** Intraoral maxillary postop view

**Figure 5:** Tissue conditioner (Viscogel)

**Procedure**

A conventional maxillary removable partial denture was fabricated following the accepted prosthodontic norms; 21-gauge, round, wrought wire clasps were used for retention on the remaining natural teeth. Highly cross-linked Acrylic resin teeth were used and a processed acrylic resin denture base was made with the compression molding technique. Although the anterior teeth were set as usual, the posterior teeth were reduced in number and also kept out of occlusion [Figure 3]. The purpose of this was to reduce the stress on the resected site. The prosthesis was fitted in the mouth [Figure 4]. The occlusion was adjusted and the borders checked. The patient was instructed to wear the prosthesis for 1 week. After this period he returned and areas of soreness were relieved. The border of the prosthesis in the region of surgery was then reduced about 2 mm. The tissue conditioner material (autopolymerizing; Viscogel- Dentsply-India) [Figure 5] was added to this border and the prosthesis was fitted in the mouth. Speech tests were used to determine the elimination of the hypernasality. Tests were also done to ensure that there was no nasal regurgitation. Postoperative visits revealed acceptance of the prosthesis, decreased nasal twang and no nasal regurgitation.
Acquired defects are the most common maxillofacial defects managed by using removable prosthesis. During the immediate postoperative healing stage, the maxillary surgical defect undergoes dimensional changes that affect the fit and peripheral seal of the prosthesis. Hypernasality and nasal reflux are the most common problems.

In dentulous patients, the main problem with using a hard acrylic resin material for the transitional prosthesis denture base is the difficulty in obtaining a satisfactory border seal at the surgical site. Excessive pressure causes tissue injury, whereas insufficient contact will not create the necessary border seal.

A tissue conditioner material used with the hard acrylic resin will solve this problem. The material is used at the denture border at the surgical site to form a resilient border seal that will not irritate the tissues. This material remains flexible up to 3 months. Should replacement become necessary, it can be easily stripped and replaced. This procedure is also used if the border seal is affected by shrinkage of tissue at the surgical site.

The interim prosthesis is made of easily adjustable material to accommodate the rapidly changing tissue profile. Tissue conditioners are helpful in this regard, by virtue of their viscoelastic nature, which permits continuous molding to the tissue and enhancing retention and peripheral seal. The patient must be instructed to take small sips of liquid and to keep the head horizontal when swallowing.

Stark,[1] 1972, reported the use of tissue conditioners to enhance peripheral seal at the border of the interim prosthesis. The lateral band of scar tissue was also used for the development of peripheral seal. The remaining dentition, on the contralateral side can be used for retention with wrought wire clasps, in the interim prosthesis. Later, these teeth can serve as abutments to receive cast circumferential or bar clasp for direct retention, indirect retention and cross-arch stability.

Desjardins,[2] 1977, reported the problems faced by the patient immediately following maxillary resection.
1. Inability to speak
2. Difficulty in deglutition
3. Nasal reflux
4. Esthetic impairment
5. Psychologic disturbance.

The objectives of Presurgical Prosthetic Planning are as follows:[3]
1. Psychologic support to the patient
2. Preoperative dental management
3. Preoperative impressions
4. Suggestions for the surgeon.

The preservation of the remaining natural teeth and alveolar bone is important for the retention and stability of the prosthesis. The posterior soft palate is critical, since the prosthesis can obtain retention and support from it. Functional contact of the soft palate with the posterior surface of the prosthesis can allow the closure necessary for speech and swallowing.

Javid and Dadmanesh,[4] 1976, reported that with the conventional clasp design, because of the lack of a supporting residual alveolar ridge, the prosthesis tends to sink inside the tissue, thereby increasing the stress on the abutment teeth leading to the mechanical failure of the clasps. They reported the use of a swing lock design with multiple retention bar clasps on as many teeth as possible.