Case Report

Received : 11-09-14
Review completed : 12-11-14
Accepted : 29-11-14

PROSTHETIC MANAGEMENT FOLLOWING HEMIMAXILLECTOMY AND ORBITAL RESECTION – A MULTIDISCIPLINARY APPROACH

PavanKumar R Koralakunte, * Nandeeshwar D Basavapura, **
DhanyaKumar H Budihal, *** RudraPrasad V Iynalli †

* Assistant Professor, Department of Prosthetic and Restorative Dental Sciences, College of Dentistry, Hail University, Hail, Kingdom of Saudi Arabia
** Professor and Head, Department of Maxillofacial Prosthodontics, Bapuji Dental College and Hospital, Davangere, Karnataka, India
*** Professor, Department of Maxillofacial Prosthodontics, Bapuji Dental College and Hospital, Davangere, Karnataka, India
† Professor, Department of Maxillofacial Prosthodontics, Bapuji Dental College and Hospital, Davangere, Karnataka, India

ABSTRACT

Rehabilitation of maxillofacial defects is generally required in patients who have undergone cancer and infectious ablative surgery of the head and neck region. A multidisciplinary approach is required for the overall success from treatment planning, surgical procedure to prosthetic treatment. Resection following surgery results in a defect affecting normal physiological function and a psychological impact on the patient because of the lost body part. To restore function, it is essential that the surgical defect be obturated to prevent escape of air, fluid and food between the oral, nasal and orbital cavities. For maxillectomy cases, the treatment options is by fabricating a surgical obturator just after surgery followed by an interim obturator during healing and finally by a definitive obturator after total healing to complete the prosthetic treatment. In this article, a case treated by an interim obturator is presented after hemimaxillectomy and orbital resection fulfilling the need of the patient.

KEYWORDS: Maxillofacial defect; hemimaxillectomy; orbital defect; interim obturator; maxillofacial prosthesis; prosthetic rehabilitation

INTRODUCTION

The prosthetic rehabilitation of a patient after hemimaxillectomy and orbital resection is a significant challenge to a maxillofacial prosthodontist. The problems such as decreased support, retention and stability are present due to loss of sufficient bone, teeth and surrounding tissues. When an implant based approach is not possible, the maxillofacial prosthodontist must rely on optimal utilization of the remaining supporting tissues and the neuromuscular skills of the patient. The surgical and interim obturators fabricated should fill the maxillary defect after surgery and in the healing period respectively being stable in position during function.

CASE REPORT

A 45-year old male patient reported to the Department of Maxillofacial Prosthodontics, with pain and swelling of the left eye since 6 months. Extra oral examination showed facial asymmetry with swelling and pus discharge from the left eye (Fig 1). Intra-oral examination showed limited mouth opening with generalized adult periodontitis (Fig 2). After clinical and histopathological examination, it was diagnosed as Actinomycosis affecting the left orbital and the left maxillary antrum. Treatment was planned for surgical resection (Fig 3) of the left orbital region and the maxillary antrum. The prosthetic rehabilitation was done following strict infection control protocol to prevent any cross infection throughout the treatment procedure.

PROCEDURE

The patient post surgery presented with orbital and hemi-maxillary defects (Fig. 4 & Fig. 5) of the left side. On examining the patient from the superior view through the orbital defect, tongue was visible (Fig. 6). Before beginning prosthetic treatment, the patient was explained about the procedure and its limitations. After 1 week post surgery, diagnostic impression of the maxillary arch (Fig. 7) was made with irreversible hydrocolloid impression material and the diagnostic cast was obtained by pouring type III dental stone with transferred peripheral outline extension. A custom made metal reinforcement (Fig. 8) using 22 gauge orthodontic wire was

Fig. 1: Frontal view patient showing facial asymmetry with infected left eye

Fig. 2: Intraoral view showing limited mouth opening

Fig. 3: During surgical operation

Fig. 4: Frontal view post surgery showing orbital defect

Fig. 5: Intraoral view post surgery showing hemi maxillary defect

Fig. 6: Superior view tongue visible through the orbital defect

Fig. 7: Diagnostic impression of the maxillary arch

Fig. 8: Diagnostic cast with reinforced metal wire

made to increase the strength of prosthesis. The waxup procedure was completed after blocking the undercut areas. After investing and dewaxing, packing (Fig. 9) was done with heat cure clear acrylic resin and acrylized. Finished and polished interim oburator (Fig. 10) was inserted (Fig. 11) intraorally that covered the maxillary defect (Fig. 12) with good fit. Patient was instructed to clean and soak the prosthesis daily for 30 minutes in 2% Betadine solution. Post insertion instructions were given to the patient with frequent follow up for evaluation.

DISCUSSION

The maxillofacial defects acquired by patients

Fig. 9: During packing

Fig. 10: Finished and polished interim obturator

Fig. 11: Interim maxillary obturator inserted

Fig. 12: Prosthesis filling the defect

due to trauma, cancer, infection or congenitally require high prosthetic care due to undergone surgical approach resulting in esthetic, functional and psychological impairment greatly affecting the patient's quality of life.[1] In most cases, it is difficult to achieve satisfactory outcome as jaw defects mainly affects vital functions such as respiration, mastication, deglutition, speech and esthetics. When surgical reconstruction of anatomic defect is contraindicated then prosthetic reconstruction must be employed to restore anatomy, function and esthetics.[2] Rehabilitation of such patients is quiet challenging and requires multidisciplinary team for comprehensive care and optimal post treatment functional outcomes. Advanced cancers, infections or trauma which destroy structures may include soft and hard tissues of jaws, facial skeleton, oral tissues, lips, cheeks, nose and eyes, affecting the maxillofacial region. The defect may result in oroantral, oronasal, oronasal-orbital communication. The primary objectives of maxillofacial prosthetics and rehabilitation are to construct a prosthesis, which will restore the defect, improve function, enhance esthetics, return the patient back to society and thereby boost the morale of the patient contributing to the quality of life of the maxillofacial patient.[3,4] Three types of maxillofacial prostheses used in jaw defect involvement are: the surgical obturator fabricated before and inserted just after surgery, the interim obturator used during healing stage and the definitive obturator used after complete healing of the maxillofacial defect.[5,6] The role of maxillofacial prosthodontist in pre surgical intervention and post surgical rehabilitation varies depending on the modality of treatment. As a critical member of the multidisciplinary team, the maxillofacial prosthodontist co-ordinates the efforts in many facet of patient care. The prosthodontist must be acutely alert towards the medical health of the patient and be familiar with the various hospital protocols. He is best qualified to provide prosthetic support to the surgeon by preparing facial moulages and surgical stents to aid postoperative recovery. Communication with the surgeon about extent of disease, precise surgical technique, anticipated postoperative defects and healing time could help to plan the prosthetic treatment. Recommendations can be made for the preservation of tissues or to improve the existing anatomical structures to improve the retention, stability and support for the prosthesis. Similarly, interaction with the radiation oncologist can render opinion regarding oral and dental condition and recommended extraction of teeth, maintenance of teeth post radiation since the radiation might modify the care of teeth and

mouth. Also, co-ordination with speech pathologist to gain knowledge about mechanics and physiology of speech can help to design the prosthesis, which can fulfill the requirements of resonance, phonation and articulation. The primary concern of the treatment is to assure that the oral cavity is prepared to reduce the potential untoward effects of cancer treatment. The patients should be educated regarding the possible short term and long-term complications of chemotherapy and radiotherapy, trained in oral hygiene methods and therapeutics for oral health preservation and rehabilitate the post surgical defect utilizing prosthesis. Long term follow-up and evaluation with an eye to the possibility of lesion recurrence is a part of the crucial contribution by the maxillofacial prosthodontist.[3,7-10]

CONCLUSION

A multidisciplinary medico-dental team approach involving a team of craniofacial surgeon, oncologist, plastic reconstructive surgeon, radiologist, social worker with maxillofacial prosthodontist are essential beginning from case history, patient examination, diagnosis, treatment planning, pre and post surgical interventions followed till definitive prosthetic rehabilitation. The prosthesis thus helps in mechanical, functional, esthetic and psychological enhancement of the patient even with the presence of maxillofacial defects

CONFLICT OF INTEREST & SOURCE OF FUNDING

The author declares that there is no source of funding and there is no conflict of interest among all authors.

BIBLIOGRAPHY

1. De Bree R, Leemans CR. Recent Advances in Surgery for Head and Neck Cancer. Curr Opin Oncol 2010;22:186-93.
2. Rodrigues SJ, Saldanha S. Prosthetic Rehabilitation of a Patient after Partial Maxillectomy: A Clinical Report. Contemp Clin Dent 2011;2:355-8.
3. Mantri S, Khan Z. Prosthodontic Rehabilitation of acquired maxillofacial defects. Head and neck cancer. Mark Agulnik. InTech publishers. 2012, p. 315-36.
4. Hubalkova H, Holakovsky J, Brazda F, Diblik P, Mazanek J. Team Approach in Treatment of Extensive Maxillofacial Defects – Five Case Report Serie. Prague Med Rep 2010;111:148-57.
5. Ackerman AJ. The Prosthetic Management of Oral and Facial Defects Following Cancer Surgery. J Prosthet Dent 1955;5:413-32.
6. Keyf F. Obturator Prostheses for Hemimaxillectomy Patients. J Oral Rehabil 2001;28:821-9.
7. Ariani N, Visser A, Van Oort RP, Kusdhany L, Rahardjo TB, Krom BP, *et al*. Current State of Craniofacial Prosthetic Rehabilitation. Int J Prosthodont 2013;26:57-67.
8. Martin JW, Chambers MS, Lemon JC, Toth BB, Helfrick JF. Prosthodontic and Surgical Considerations for Pediatric Patients Requiring Maxillectomy. Pediatr Dent 1995;17:116-21.
9. El Fattah H, Zaghloul A, Pedemonte E, Escuin T. Pre Prosthetic Surgical Alterations in Maxillectomy to Enhance the Prosthetic Prognoses as Part of Rehabilitation of Oral Cancer Patient. Med Oral Patol Oral Cir Bucal 2012;17:262-70.
10. Chalian VA, Bogan RL, Snadlewick JW. Retention of prosthesis. Chalian VA, Drane JB, Standish SM. Maxillofacial Prosthetics: Multidisciplinary Practice. Williams and Wilkins Co, 1972;121-32.