

INTERIM CONJOINT EXTRA ORAL-INTRAORAL PROSTHESIS- A CLINICAL REPORT**PRANJALI DUTT^{a1}, POORAN CHAND^b, LAKSHYA KUMAR^c, SUNIT KUMAR JUREL^d, VIDHI SRIVASTAVA^e AND SRISHTI SRIVASTAVA^f**^{abcdef}Department of Prosthodontics And Crown & Bridge, Faculty of Dental Sciences, King George's Medical University, Lucknow, India**ABSTRACT**

Face is a central organ of sense and expression of emotion among humans. It animates emotion, communicate and intellect of the person as well. Mid-facial defects, either congenital or acquired often present with severe disfigurement and functional impairment. Chronic granulomatous lesion of the mid-face may present with large defect (Shafer et al., 2000) requiring either surgical reconstruction or prosthetic rehabilitation or a combination of the two to restore adequate aesthetics and function. The choice between surgical reconstruction and prosthetic rehabilitation of large facial defects is a complex and difficult decision, and depends on size, location, aetiology of the defect and socioeconomic condition (Beumer et al., 2011). When a large resection is necessary and recurrence of the tumour is likely, it is advantageous to rehabilitate in such a way which permit regular clinical examination of the site. Prosthesis permits such observation, whereas primary surgical reconstruction makes regular examination difficult/impossible (Beumer et al., 2011). Fabrication of such prosthesis should fulfil the basic requirement such as retention, support, aesthetics and function. This case report describes fabrication and use of complete denture obturator-retained lip prosthesis in a mid-facial defect restoring the aesthetic needs and improving the Quality of life.

KEYWORDS: Obturator, Extracoronal Attachment, Prosthesis, Case Report, Removable Dental Prosthesis

A 64-year-old patient was referred to department of Prosthodontics with chief complaint of unaesthetic appearance, impaired mastication and speech. Severe destruction of midline structures including nose, upper lip and palatal perforation was present. (Fig 1) Large maxillary lip defect precludes the immediate surgical reconstruction of the defect. Patient was undergoing corticosteroid therapy as topical application for mild inflammatory lesion on the face. Patient was given brief detail about the various treatment modalities available and after signing consent form, it was decided to fabricate lip prosthesis joined to attachment retained obturator prosthesis.



Figure 1: Extra oral view of the patient

¹Corresponding author

PROCEDURE

A multidisciplinary approach was followed in which intraoral prosthesis was first fabricated followed by extra oral prosthesis. Diagnostic impressions of the maxillary arch along with palatal defect and mandibular arch were made with irreversible hydrocolloid (Algitex, Dental Products India, Mumbai, India) in stock metal tray. Diagnostic cast were poured in dental stone type III (kalstone, Kalabhai Pvt Ltd, Mumbai, India). An Endodontist performed Intentional root canal treatment in 11, 12, 13, and 23. Intraradicular ball attachment (Ceka Preci-Clix Radicular, Waregem, Belgium) were used bilaterally in both maxillary canines, and right central and lateral incisors after preparing these teeth upto mucosal level. (Fig 2) Final impression was made using custom tray with low viscosity Addition silicone (Oranwash L, Zermach, Germany) using single step impression technique. Final cast was poured with die stone (Ultrarock, Kalabhai Pvt Ltd, Mumbai, India). Jaw relation was recorded and try-in was carried out. Denture was heat-processed using and evaluated in the mouth. Magnets (cobalt-samarium, Ambica Corporation, New Delhi, India) were incorporated in the labial flange of maxillary denture with the help of auto-polymerizing acrylic resin.



Figure 2: Intraoral attachments on natural teeth

For extra oral prosthesis, an preliminary impression around the lip with intraoral prosthesis in position was made using impression compound (DPI Pinnacle, The Bombay Burmah Trading Corporation, Mumbai, India), which was then relined with alginate (Algitex, Dental Products India, Mumbai, India). Master cast was pour with die stone. An acrylic shim was fabricated using auto polymerizing resin for incorporation of the magnet and to support silicon of the lip prosthesis. (Fig 3a) The lip prosthesis was carved with modelling wax. During try-in stage, fit of the pattern was evaluated, along with lip fullness and aesthetics. (Fig 3b) Wax pattern was invested and processed using Room Temperature Vulcanizing (RTV) Silicone (MP Sai, Enterprise, Mumbai, India). Intrinsic stains were incorporated in the clear silicone to match basic skin colour of the patient. Small amount of stains was gradually added with constant comparison with the skin of the approximating area.



Figure 3a: Acrylic shim to add magnet



Figure 3b: Try-in of lip prosthesis retained by magnet on shim of acrylic



Figure 3c: Final prosthesis

Packing of the tinted silicon material was carried out and allowed to polymerized. The manufacturer's instructions for silicon processing were followed. After opening the flask, the silicone prosthesis was examined for defects and porosities prior to being trimmed and finished using a sharp pair of scissors. External characterization was done in the presence of the patient and a moustache was created using patients hair.

During the prosthesis insertion appointment the maxillary obturator was placed intraoral and the facial prosthesis was positioned extra orally against the obturator magnet. (Fig 3c) The patient was recalled at every three months.

DISCUSSION

This case report describes the rehabilitation of mid-facial defect with extra oral prosthesis using retention

from intraoral prosthesis. Restoration of mid-facial defects can be accomplished surgically, prosthetically or both. Restoring mid-facial defects with facial prosthesis involves many challenges which involves achievement of proper retention and marginal fit (McKinstry, 1995; Parel et al. 1986). Movement of lips and cheeks during facial expressions and other movements can interrupt the seal of a prosthesis and compromise retention (La Velle et al., 1993). Adhesives, mechanical devices, tissue undercuts, and implants all have been used to retain facial prostheses (Shafer et al., 2000; McKinstry, 1995). In this case, soft tissues around mid-facial defects may not be ideal for adhesive retention. Moreover, adhesives tend to damage the fine margins of a prosthesis that is used daily and induce material deterioration (Shafer et al., 2000). Tissue undercuts can be used for retention if surgeons prepare the residual soft tissues to create undercut regions (Birnbach and Herman, 1987). Undercuts often provide insufficient retention, however, and they may cause soft tissue irritation. To gain a more stable and retentive prosthesis without the benefit of osseointegrated implants, the attachment of facial prostheses to intraoral prosthesis has been reported (Birnbach and Herman, 1987; Dumbrigue and Fyler, 1997). However, the connection of facial and intraoral prostheses often results in movement of the facial prosthesis during mastication, especially when edentulous patients are treated with maxillary obturators (Dumbrigue and Fyler, 1997).

In this case report extra oral prosthesis is retained with the help of magnets which is attached to the labial flange of the maxillary complete denture obturator. Maxillary complete denture obturator was retained with the help of intraradicular ball attachment. Magnets were preferred over other mode of retention (ball attachments, clip attachments etc) as magnets allows for some degree of freedom of movement of the extraoral prosthesis which is advantageous during mastication, speech and facial expressions. Moreover magnets have the ability of self aligning, even if the prosthesis get displaced slightly during the function, due to the magnetic attraction so it reposition itself to its original position.

Rehabilitation of this patient was done by fabrication of two individual prosthesis rather than a single

prosthesis because of the compound path of insertion which results in insertion and removal of the prosthesis difficult (Birnbach and Herman, 1987). Also extra oral and intraoral prosthesis should not be connected to each other because embarrassing movement of extra oral prosthesis may result during mastication.

CONCLUSION

Extra oral prosthesis can be fabricated with adequate retention by using magnet which is attached to intraoral complete denture obturator retained by intraradicular attachment.

REFERENCES

- Beumer J., Curtis T. and Marunick M., 2011. Maxillofacial Rehabilitation: prosthodontic and surgical considerations. Ishiyaku Euro America Inc. Tokyo, pp. 260-61.
- Birnbach S. and Herman G.L., 1987. Coordinated intraoral and extraoral prostheses in the rehabilitation of the orofacial cancer patient. *J. Prosthet Dent*, **58**: 343-8.
- Dumbrigue H.B. and Fyler A., 1997. Minimizing prosthesis movement in a midfacial defect: a clinical report. *J. Prosthet Dent*, **78**: 341-5.
- La Velle W., Arcuri M., Panje W. and Jons R., 1993. Transmolar pin and magnetic carrier for midfacial reconstruction: a clinical report. *J. Prosthet Dent*, **70**: 204-6.
- McKinstry R.E., 1995. Fundamentals of facial prosthetics. Clearwater (FL): ABI Professional Publications, pp. 19-30.
- Parel S. M., Branemark P.I., Tjellstrom A. and Gion G., 1986. Osseointegration in maxillofacial prosthetics. Part II: Extraoral applications. *J Prosthet Dent*, **55**(5): 600-6.
- Shafer G.W., Hine K.M. and Levy M.B., 2000. Diseases of microbial origin. Textbook of oral pathology (4th ed.), W.B. Saunders Co. Philadelphia, pp. 335.

