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PROSTHODONTIC MANAGEMENT SIMPLIFIED IN MAXILLOFACIAL DEFECTS: A CASE SERIES

Prosthodontics

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ABSTRACT

A Prosthodontist plays an important role in the rehabilitation of lost maxillofacial and stomatognathic structures. The rehabilitation of maxillofacial defects improves the quality of life in such individuals. Thus it increases the self-esteem and well-being. In this case report, three patients treatment procedure has been described. It presents the rehabilitation of ocular, auricular and finger defects which fulfilled the patient's needs, esthetics and psychological well-being.

KEYWORDS

craniofacial defects, maxillofacial prosthesis, extra oral prosthesis.

INTRODUCTION

Esthetics play an important role in an individual's physical, mental and emotional well-being. It is an integral part of personality and complexity. The loss of a part of one's body may lead to anxiety and depression and lack of self-esteem in young and old. The goal of maxillofacial prosthesis is to replace part or all of any stomatognathic and/or craniofacial structures. The maxillofacial prosthodontist plays an important role depending on the mode of treatment. A prosthodontist is best qualified to provide prosthetic support. Thus improving the quality of life. These prosthesis are designed to be as similar as possible to the natural anatomy.

This article describes simple techniques to rehabilitate patients with maxillofacial prosthesis which are esthetically acceptable and economical for the patients. The following case series have taken place in the Department of Prosthodontics, Sharavathi Dental College and Hospital, Shimoga, Karnataka.

CASE REPORT

Case report 1- Ocular prosthesis

A 45 year old female reported with the chief complaint of missing eye. History revealed that the eye was lost when the patient was a child due to a fall. On examination, it was noted that the patient had evisceration type of defect(left) (FIG1).

Figure 1: Pre-operative: Evisceration Type Of Defect

The intraocular tissue bed was healthy with adequate depth beneath the upper and lower fornices for the retention of prosthesis. A custom made ocular prosthesis was planned. The patient was explained about the same and consent was taken.

Procedure:

- Petroleum jelly was applied over the eyelashes to avoid sticking of impression material and easy removal of the same.
- Light body polyvinyl siloxane impression material was used for impression making.
- The tip provided along with light body cartridges was used to inject the material in the tissue bed and in the upper and lower fornices to record the borders. (FIG 2 and 3).

Figure 2: Impression making

Figure 3: Retreived impression

- Patient was asked to do all functional movements possible of the ocular muscles while making the impression.
- The impression was retrieved from the socket and pored using split technique. (FIG4)

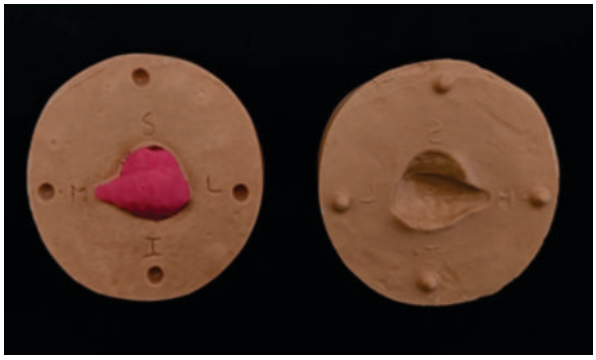

Figure 4: *S*plit technique

- Wax sclera blank was made in the split cast using modelling wax and was tried in the ocular socket to check for fullness and extensions.
- A stock eye shell was selected whose colour and size of iris matches with the natural eye of the patient.
- The selected iris was carefully trimmed to remove the stock eye shell.
- It was then placed in the wax sclera blank arbitrarily and the position was later adjusted by asking the patient to look straight at a focused point. (FIG 5)

Figure 5: wax trial

- The final try in was done to check for fullness, size, colour and position.
- Small quantity of auto polymerizing resin was placed in the form of a button on the iris to prevent its displacement during flasking.
- Flasking was done in die stone for accurate detail reproduction.
- Dewaxing and packing was done with heat cure tooth moulding acrylic by compression moulding. For characterization bits of shellac base plate and pink fibres found in heat cure acrylic were used.
- After polymerization, the prosthesis was carefully retrieved.
- Finishing and polishing was done and the final prosthesis was tried in the ocular socket and adjusted accordingly. (FIG 6 AND 7).
- Instructions about insertion, removal and maintenance of the prosthesis were given.

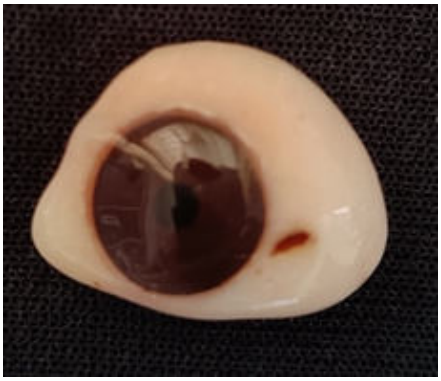

Figure 6: Finished And Polished Final Prosthesis

Figure 7: Post operative: Eye prosthesis

Case Report 2- Auricular prosthesis.
A 60 year old male reported with the history of defective ear on the right side due to an electrical accident. The patient was an electrician by profession and sustained injuries during an electric shock in which he lost an ear and a limb. On examination it was noted that external auditory meatus, tragus and lobe was present along with residual tissue(FIG 8).

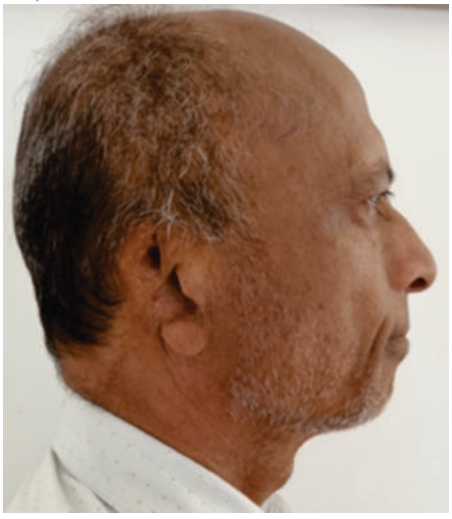

Figure 8: Ear defect: pre-operative

Patient did not want any invasive treatment so it was decided to provide a silicone prosthesis with the help of a retentive aid. In this case zero power eye glasses were used. Patient was explained about the same and consent was taken.

Procedure:

- The defective ear and the surrounding facial hair and skin was coated with petroleum jelly.
- A cotton ball was inserted in the external auditory canal to prevent the entry of any impression material.
- Putty light body elastomeric impression was made on the defective side and a die stone cast was poured. (FIG 9 and 11)

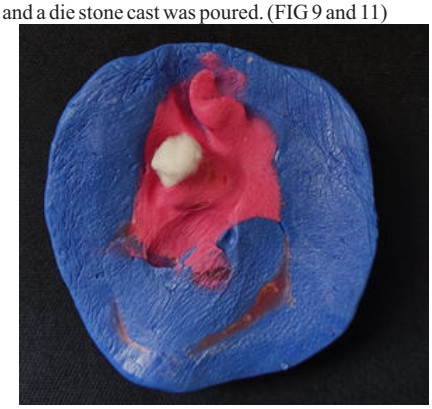

Figure 9: Impression of the ear defect

- Also impression of the natural ear was made with alginate impression material and a stone cast was obtained to be used as a guide to sculpt the wax pattern. (FIG10 and 11)

Figure 10: Impression of the non-defective ear

Figure 11: Defective and non-defective ear cast

- Wax pattern was made using 'donor technique'. Here the wax pattern was made from the beginning.
- The wax was rolled and sculpted into helix so as to form the various contours. (FIG 12)

Figure 12: Ear wax prosthesis

- The wax prosthesis was tried on the patient and evaluated for fit and alignment. Colour matching was done. (FIG13 & 14)

Figure 13: Wax tiral.

Figure 14: Color matching

- It was invested in die stone using three pour technique. (FIG 15)

Figure 15: Three pour technique.

- After dewaxing, silicone was mixed and packed by compression moulding.
- It was later retrieved and cut off excess material and fit was checked on the tissue surface.
- Retention was gained by attaching the prosthesis to eye glasses with the help of an orthodontic wire and checked on the patient(FIG 16). Patient was satisfied as it was esthetic and cost effective.

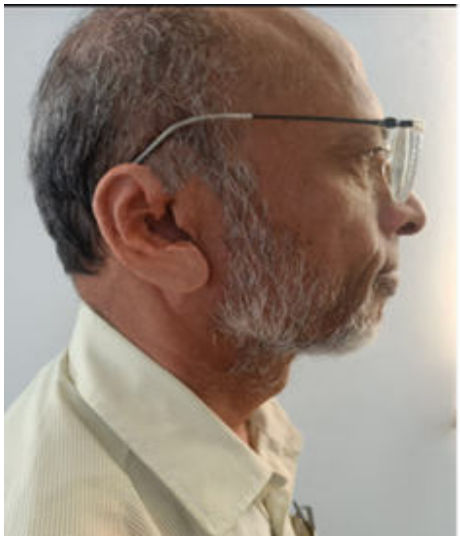

Figure 16: Final ear prosthesis

Case Report 3- Finger prosthesis

A 28 year old male patient reported with the chief complaint of missing finger(FIG 17).

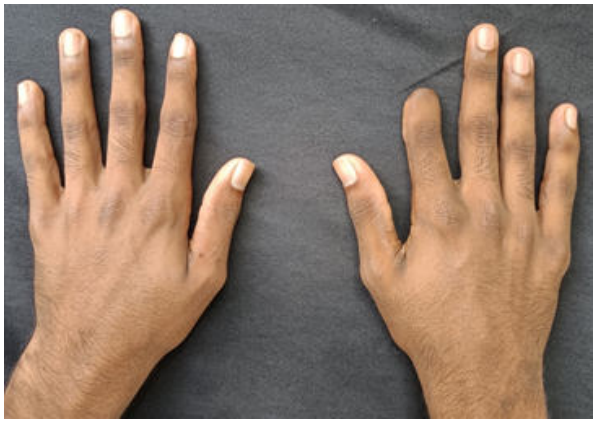

Figure 17: Pre operative-finger defect

The patient gave history of factory accident due to which he lost his finger nine years ago. An examination revealed missing right hand index finger with a residual stump measuring 4.5 cm in height. The treatment plan was to replace the missing finger with silicone prosthesis with retentive finger ring as insisted by the patient. The patient was explained about the same and consent was taken.

Procedure:

- Petroleum jelly was applied onto the hand of missing finger.
- Alginate impression was made of the defective hand and a cast was obtained. (FIG 18)

Figure 18: Cast obtained

- Then alginate impression was made of the opposing index finger and wax prosthesis was obtained.
- The wax prosthesis was carved to adjust in order to replace missing finger and try in was done. Retention was achieved by a finger ring. (FIG 19)

Figure 19: wax trial

- Colour matching was done with dorsal and ventral surfaces.
- The wax pattern was then invested in die stone and dewaxed.
- Silicone was packed by compression moulding.
- Prosthesis was retrieved and the excess was cut off.
- It was tried on the residual stump for fit and alignment.
- An artificial nail extension was trimmed and adjusted to be attached to the prosthesis nail bed.
- The patient was instructed regarding wearing the prosthesis and its maintenance. (FIG 20 & 21)

Figure 20: Final finger prosthesis- ventral

Figure 21: Final finger prosthesis: dorsal

DISCUSSION

The disfigurement associated with the loss of any body part leads to handicap and keeps a person away from social and professional activities. Maxillofacial prosthodontist plays a vital role in bringing back such patients to a normal social life by restoring the lost tissues with customized artificial prosthesis.[1] The literature provides many techniques for the fabrication of these prosthesis. They look life-like when colour-matched and toned.

Accurate impression of the contours of the defective site is required for an accurate custom made prosthesis. Polyvinylsiloxane impression material was used as the material of choice. They have an excellent dimensional stability, good tear strength, fine detail reproduction.[2]

In case 1 custom made ocular prosthesis was done. Custom ocular prosthesis provides good fit, enhanced esthetics, proper eyelid fullness, accurate contours and iris colour match over stock eye prosthesis.[1,3]

In case 2, patient did not want anything invasive though implant retained prosthesis was an option. A spectacle frame was used as mode of retention, which is most common, requires less chair side time, cost effective and can be placed and removed at the will of the patient.[4] 'Donor technique' was used to sculpt the ear wherein a cast of contralateral ear was used as reference.[5]

In case 3, a simple esthetic silicone prosthesis was given. Upon the request of the patient ring was used as a retentive measure. It was a passive prosthesis aimed at restoring the normal appearance of the hand. It has been stated that not all cases can be rehabilitated with an esthetic prosthesis.[6,7]

In case 2 and 3 silicone prosthesis was given as it gives life-like effects

and the acceptance is better. It is durable, has high tear resistance and is colour stable when compared to other materials.[8]

Recent advances in Maxillofacial prosthodontics have made it possible to be not just esthetic but functional as well. Various 3-D colour models created by rapid prototyping provides contours, colour shading to more "life-like" when compared to the conventional impression techniques. Latest innovations include Infinite Technologies Orthotics and Prosthetic 3-D scanners.[9]

A well fabricated simple esthetic prosthesis can help in providing the patients with psychological support. Patients feel more confident and self-assured. Maxillofacial prothesis are a good solution in order to improve the quality of life in patients with maxillofacial defects. Prosthesis are easy to handle and provide a satisfying social interaction for the patients.

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