MAXILLARY OBTURATOR WITH EYE PROSTHESIS RETAINED BY RARE EARTH MAGNET

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Face is not only the index of mind, but it is an impact, a total personification of one's ability and a passport to success. We are aware of the charisma of an attractive face and rejection of a mutilated face by the society. 40% of all carcinomas in India have been reported to be oral cancer[1]. The inevitable mutilation that follows the radical surgery leaves the patient physically and psychologically crippled. Rehabilitating these patients with maxillofacial prosthesis to bring them back to mainstream of society is the main responsibility of the prosthodontist particularly in developing country like India where large number of patients remain untreated or partially rehabilitated because of the lack of facilities, expertise and finances.

An attempt has been made to rehabilitate a patient of maxillectomy including enucleation of eyeball with hollow bulb obturator and eye prosthesis retained by rare earth magnets using routinely available material and simple method.

Esthetic has fascinated mankind for ages. Face is the forefront of esthetics .Any disfigurement of face has serious impact on the patient's esthetic and mental state. Today advancements in the medical sciences have been able to save the patients from dreaded diseases like cancer, but the inevitable facial disfigurement following surgery permanently cripples the patients.

The complete rehabilitation of these patients poses a great challenge to the prosthodontists. In developing country like India large number of patients are left untreated or partially rehabilitated because of limited resources, expertise and finances. The facilities are available at major centers, which are usually overcrowded. Hence for vast majority of people who are to be rehabilitated, it is essential to find methods of rehabilitation, which are economical and can be done even when limited sources are available.

An effort has been made here to use routinely available material and simple method, so that these patients can be treated with minimum cost and expertise.

CASE REPORT

A 55 years old male was referred to the department of Prosthodontics from ENT hospital with maxillectomy of left side along with enucleation of left eye.

Patient had reported to ENT hospital, with swelling in the left palatal region, the swelling extended onto the left eye. It was diagnosed as carcinoma of the left side of maxilla involving the floor of the orbit. Maxillectomy of left side with enucleation of left eye was done. A surgical obturator was given to the patient and referred for definitive prosthesis to this department.

Extra oral examination showed the absence of left eyeball. The left eyelids were scarred with no movement. (Fig-1)

Intra oral examination showed left maxillary defect extending up to the roof of the orbit (Fig-2). Maxillary arch in the right side and mandibular arch had full complement of teeth.

It was decided to restore the left maxillary defect, with a hollow bulb obturator and eye prosthesis to cover the eye defect. As the maxillary defect was continuous into the orbital defect and the mouth

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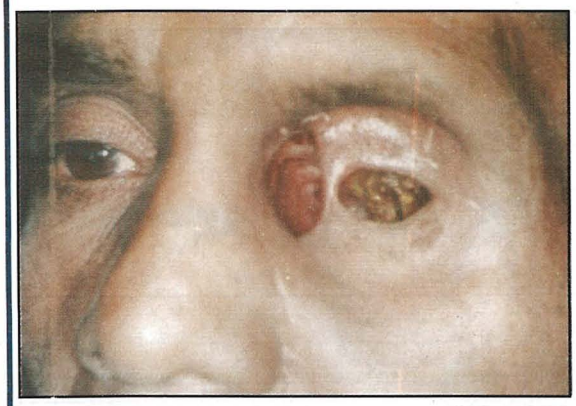


Fig. 1: Eye defect with scared eyelid.



Fig. 2: Maxillary defect. (Intra oral)

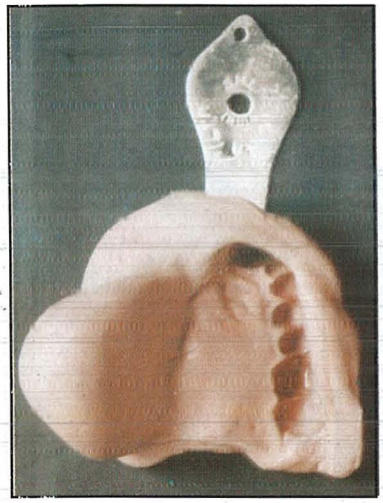


Fig. 3: Preliminary impression.

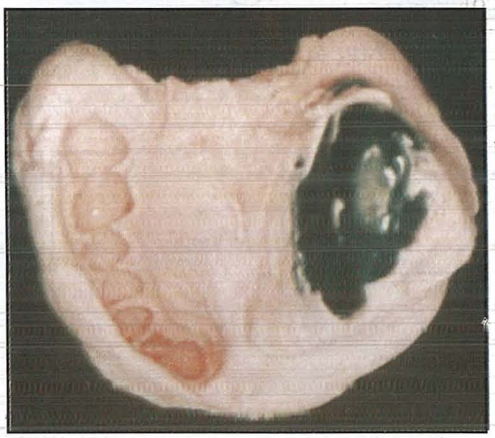


Fig. 4: Final impression

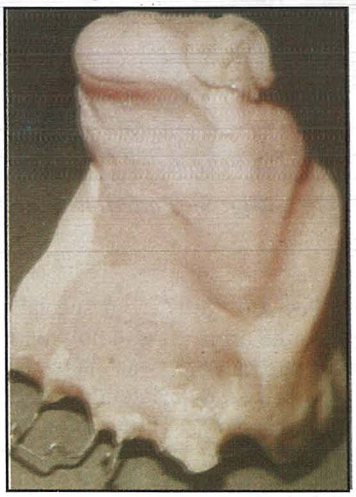


Fig. 5: Hollow bulb obturator.



Fig: 6: Obturator in place.



Fig: 7: Facial mould.

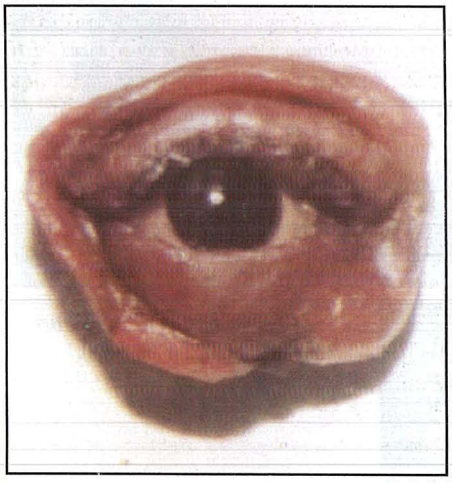


Fig: 8: Eye prosthesis.



Fig: 9: Patient with defect.



Fig: 10: Patient with final prosthesis.

opening was adequate it was decided to extend the hollow bulb obturator up to the orbit for retaining the eye prosthesis using rare earth magnet.

As the size of the defect was large and no soft or hard tissue undercuts were present, Impression compound was chosen as preliminary impression material (Fig-3).

A special tray was subsequently fabricated in auto polymerizing acrylic resin. Border moulding was done using low fusing compound, on the lateral borders to seal the defect and final impression was made in irreversible hydrocolloid impression material (Fig-4)

Hollow bulb obturator was fabricated using the Chalian's technique of using a hollow shim using

auto-polymerizing acrylic resin, to reduce the weight of the prosthesis. The final obturator prosthesis was processed in heat cure acrylic resin. After processing the prosthesis was tried in patient's mouth and necessary adjustments were done. (Fig-5). For the placement of the rare earth magnet with polymeric coating (Neodynium-iron-boron)[3] on the obturator, the hollow bulb obturator was placed in the mouth and Centre point of the obturator extending into the orbit was marked using indelible pencil and subsequently the magnet was attached to the prosthesis using auto-polymerizing resin at the marked position.

Fabrication of eye prosthesis

As the both the eyelids were found to be scarred with no movement, it was decided to surgically remove them. A prefabricated acrylic eye shell was selected of shape, size and colour after matching it with the right eye.

With the hollow bulb obturator in place (Fig-6), a facial impression was made using an irreversible hydrocolloid impression material. Model was then poured using type-III dental stone (Fig-7)

The position of the pupil and the sclera was adjusted to mimic the right eye position while the patient gazes forward. A wax pattern was carved around the acrylic eye shell on the model. Upper and lower eyelids were carved such that the area covered by them on the sclera mimicked the right eye. This pattern without the eye shell was then invested. While the moulds was being made by dewaxing of the flasks, heat cured permanent soft liner (Molloplast-B nuetra colour-Detex)[4] was mixed with the vegetable colour dyes, the colour mix was tested on the skin a shade darker was selected, as the patient was a farmer, who would be exposed to sunlight. The mix was then packed into the mold and excess was trimmed off and processed. After processing the eyelid was attached to the eye shell by adhesive. (Fig-8) The prosthesis was then tried in the socket and eyelid contours were evaluated. The eye contour and lid openings were evaluated from several angles. For attaching the rare earth magnet to this final prosthesis a secondary impression was made. This helped to determine the exact location and orientation of the 2nd magnet. For this obturator was first placed in patient's mouth and second magnet was attached to the first magnet on the obturator. For the impression irreversible hydrocolloid material was loaded on the back surface of the eye prosthesis and the prosthesis was placed in position.

This impression was poured and the second magnet was attached to the prosthesis using auto-polymerizing acrylic resin.

The hollow bulb obturator was placed in mouth and the eye prosthesis was attached to it to verify the retention and position of eye prosthesis. Spectacles were only used in this case to protect eye prosthesis and to conceal the margins. (Fig-9, Fig-10)

DISCUSSION

Retention of the extra oral prosthesis always poses a challenge to the prosthodontist, it is further complicated if there is associated intra-oral defect like maxillectomy.

Chalian V A, BulbulianA.H[2] have suggested use of spectacle for retention of eye prosthesis. Keith Thomas [4] suggested the use of skin adhesives for retention of eye prosthesis. In this case it was decided to use polymeric coated rare earth magnets (Neodenium-iron-boron) for retention of the eye prosthesis to the hollow bulb obturator. The rare earth magnets have been used in dentistry since 1960.Several authors have used magnets for attaching the intra oral and extra-oral prosthesis to osseointegrated implants.

Rene Brigoni et.al fabricated a three-piece prosthesis that included a sectional intra-oral obturator and extra-oral facial prosthesis and an intermediate retentive acrylic framework with the use of magnets. The rare earth magnets are smaller in size so they can be easily attached to the prosthesis. They other advantage of the rare earth magnet is that they have relatively high retentive capacity and they do not tend to demagnetize early. Although corrosion

is a problem with Neodinium-iron-boron magnets when they are in contact with the saliva [7]. In this case the magnets are not in contact with the saliva or any other fluid, moreover the polymeric coatings on the magnets prevents any corrosion. Various methods of retention of the eye prosthesis have been advocated by Chalian VA, Bulbulian AH, Lotolow.Ian[2], like skin adhesives, spectacles, engagement of the orbital undercut using flexible material and more recently ocular implants. However, when a patient has undergone maxillectomy in combination with an orbital exenteration, retention achieved by attaching the eye prosthesis to frames is advantageous, but in this case to achieve a more life like appearance and to keep eye prosthesis independent to external support it was decided to use a rare earth magnet for retaining the eye prosthesis to the obuturator as suggested by Beumer J III [6].

CONCLUSION

An attempt has been made to rehabilitate a patient of maxillectomy with enucleation of eye with hollow bulb obturator with eye prosthesis retained by rare earth magnets using routinely available material and simple method. Though various methods for rehabilitation of each case have been reported with the objective that such cases can be carried by simple method and with minimum expertise

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