Case Report

PROSTHODONTIC REHABILITATION OF MAXILLOFACIAL DEFECT WITH MAGNETICALLY RETAINED MAXILLARY OBTURATOR

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ABSTRACT:

This case report deals with a rehabilitation of a patient with an extensive maxillary defect using a two-piece intra oral prosthesis obturating the defect. Retention of first piece was achieved by snug fit of the prosthesis to underlying tissue and adjacent teeth whereas the second piece was retained with the help of magnets. The rehabilitation procedure resulted in improved function, aesthetics, comfort and confidence to the patient thus enabling him to have improved quality of life. This case report briefly describes the quick and simple lab method of positioning the retention magnets in maxillary obturator, in the rehabilitation of deformed patients.

KEYWORDS: Magnets, Obturator, Maxillofacial prosthesis, Two-piece sectional palate prosthesis, Removable partial denture, Cleft lip and palate

INTRODUCTION:

Congenital or acquired maxillo-facial defects leave the individual with some facial deformity because of extensive muscle and bone loss. These issues, if untreated, will result in the individual to become psychologically depressed and isolated.[1] Patients who have undergone partial or complete palatal repairs either surgically or non-surgically, face many problems like difficulty in speaking, deglutition and even difficulty in breathing. Additional complications may include paraesthesia of the resected area, lip incompetency, scarring and xerostomia.[2]

The lack of hard bony structures, size of the resected area and the reduced number of the remaining teeth in the involved arch make the prosthodontic rehabilitation of such cases a clinical challenge.[3,8] Different techniques have been implemented in these scenarios to improve the retention and stability of prosthesis for optimal performance by the prosthesis. One of the methods is the use of the Magnets. For this, a two-piece prosthesis is planned, one magnet is added in the segment I (obturator which is covering the defected palate) of the prosthesis and second piece of magnet is added in the segment II (tooth retained part) of the prosthesis. Both the segments are placed separately inside the oral cavity, once inside the magnets are attached to each other and the prosthesis becomes virtually immobile.[4]

Careful treatment planning, accurate execution of clinical and laboratory procedures is essential for successful restoration of these cases. To achieve this, a well retained and user friendly removable maxillofacial prosthesis is required, which also provides comfort and protection to the remaining tissues. It may also provide good aesthetics, allowing patient to go about life without drawing attention to his facial defects.[5] This report explains a method of rehabilitation

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of patient with obturator using magnets as an in-snap attachment.

Case Report

A 28-year-old male patient reported to MTH Dental Clinics, Department of Prosthodontics, University of Faisalabad/Madinah Teaching Hospital, Faisalabad with presenting complaint of difficulty in eating and speaking (fig 1, fig 2). His history showed that he had bilateral cleft lip and palate. He had undergone surgical repair operations which resulted in his lip repair but the palatal defect in the anterior maxilla could not repaired by the surgery. The multiple teeth were missing in the maxillary arch which included both central and lateral incisors (11, 12, 21, 22) and 2nd molar on the right side (17). The maxillary canines were also mesially and lingually inclined (fig 3).

In mandibular arch, all incisors (31, 32, 41, 42) and first molars of both side (36, 46) were missing but patient's requirement was to replace only incisors (fig 4). Patient did not want any intraoral modifications, which restricted our treatment options and left us to fabricate prosthesis maintaining conservative approach.

In maxilla, teeth were mesially and lingually inclined so, it was not possible to fabricate one-piece prosthesis which may be inserted or removed. So, a two-piece prosthesis design was finalised. First piece to be designed and inserted was as normal obturator covering most of the defect, while second piece containing artificial teeth to be attached to the main first part with help of magnets. Additional retention and stability was achieved by extending the second-piece to defect making most of the bulb part (fig 3).

In mandible, as teeth were mesially and lingually inclined, a plate-based prosthesis was not suitable option leaving us to fabricate either swing lock denture or modified bars supported denture with rotational path of insertion (fig 4). Prefabricated lingual bars were used on both labial and lingual sides. Path of insertion was designed from lingual to labial.

Treatment and Lab Procedure

Upper and lower impressions were made with irreversible hydro-colloid (alginate) using stock stainless steel trays (fig 5).

Impression were poured with dental stone and final models were articulated on simple plane line articulator in centric relation after taking the maxillo-mandibular records in wax rims (fig 6, fig 7, fig 8, fig 9, fig 10).

On maxillary cast, using 0.9mm stainless steel wire, claps were made on molars (16 and 27).

On mandibular cast, using 0.9mm stainless steel wire, clasps were made on premolars (34 and 45).

On maxillary cast, full palate wax-up was done using modelling wax. In incisor region, wax pattern was kept as vertically straight extension and covering posterior part of the defect/bulb. Separating media (soft plaster) was applied over vertical wax part and second-piece wax-up was done making it into the wax rim form (fig 11).

On mandibular cast, prefabricated bars were adapted one on lingual and other on labial side. Both bars were attached with modelling wax. Wax-up was done in anterior region joining both bars and wax rim fabricated at height of occlusal plane (fig 12).

Teeth were arranged according to available inter-occlusal space. Anterior teeth setup was done in Angle's classification III. Maxillary laterals were trimmed thin and placed over the canines to give better aesthetics. Mandibular incisors were arranged in available space. Wax was cut to produce the sockets between both maxillary pieces to accommodate bar magnets (fig 13, fig 14).

Acrylic was processed using standard conventional method, finishing and polishing was done. Magnets were attached to the carved sockets using cold cure acrylic resin (fig 15, fig 16, fig 17, fig 18).

Final prosthesis was inserted into patient's mouth and it was checked for proper seating and seal. Patient was educated about the use and maintenance of the prosthesis. Patient was very much satisfied with the treatment on the follow up visit (fig 19, fig 20).

CONCLUSION:

It is quite difficult to improve the quality of life for maxillofacial defect patients compared to the routine patients requiring conventional prosthodontic treatment. This can be achieved with skill, knowledge and experience of specialists. The problems experienced by

maxillofacial defect patients are reduced if a team approach is adopted, technical skill and experience applied carefully at all stages and patient is kept under regular review. [6,7]

Finally, when the patient received and inserted the prosthesis, his appearance and self-confidence improved significantly.

Fig. 1
Examination (Frontal View)

Fig. 2
Examination (Lateral View)

Fig. 3
Examination Occlusion (Frontal View)

Fig. 4
Examination Occlusion (Lateral View)

Fig 5
Alginate impression of maxilla covering the defect.

Fig 6
Maxillary Cast (Occlusal View)

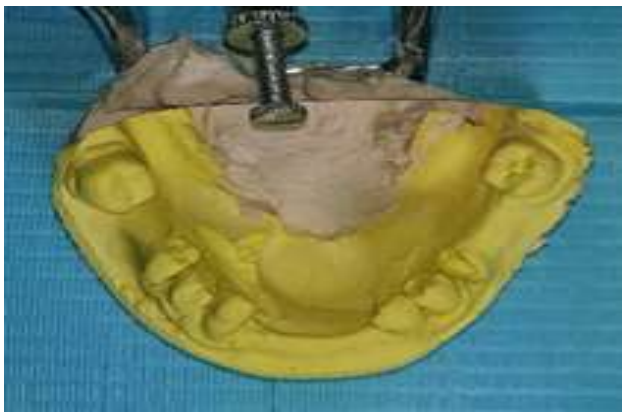


Fig 7
Mandibular Cast (Occlusal View

Fig 8
Articulated casts on monoplane articulator

Fig 9
Articulated casts (Right Lateral View)

Fig 10
Articulated casts (Left Lateral View)

Fig 11
Maxillary cast wax-up

Fig 12
Mandibular cast wax-up

Fig 13
Teeth arrangement (Incisal View)

Fig 14
Teeth arrangement (Labial View)

Fig 15
Bar magnets attached with auto-polymerizing acrylic in the previously carved socket.

Fig 16
Lateral view of the processed prosthesis. Both pieces attached with the bar magnet.

Fig 17
Processed prosthesis (Upper and Lower)

Fig 18
Processed prosthesis (Upper and Lower)

Fig 19
Insertion of the prosthesis (Frontal view)

Fig 20
Insertion of the prosthesis (Lateral view)

To watch the video of insertion procedure, kindly visit the link or scan the QR code

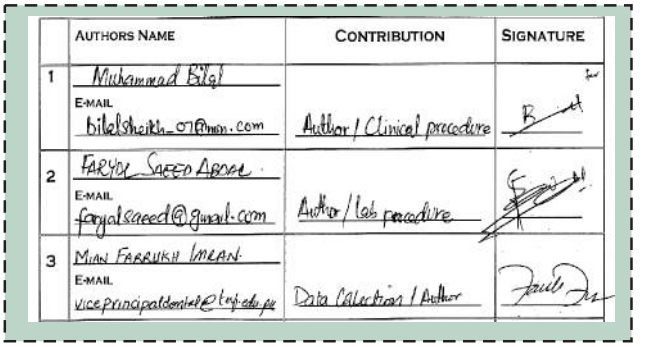
goo.gl/FbzTF5

youtube.com/c/faryalsaeed

REFERENCES:

1. D Suryyakant C, M Snesha S. Rehabilitation of a partial maxillectomy defect with magnet retained two-piece hollow bulb obturator. European Journal of Prosthodontics | May-Aug 2014 | Vol 2 | Issue 2.
2. Bhocchibhoya A, Maethma S, Maskey B. Prosthoetic rehabilitation of a dentulous maxillectomy patient with obturator prosthesis; A clinical report. An

Otolaryngeal Rhinol 3(10) : 138.
3. Jiao T, Zhu C, Dong X, Gu X. Rehabilitation of maxillectomy defect with obturator prosthesis fabricated using computer aided design and rapid prototyping ; A pilot study. Int J Prosthodonto. 2014;27;480-6.
4. Jalan S, Barman J. Rehabilitation 0f Hemi-maxillectomy patient with definite hollow characterized obturator prosthesis. Braz Dent Sci 2017 Apr/Jun;20(2).
5. Uemura E S, Silva J M F, Kojima A N. Removable Partial Denture with dual path of insertion: clinical case report. Braz Dent Sci 2017 Apr/Jun;20(2) 146-51.
6. Aramany MA. Basic principles of obturator design for Partially edentulous patients. Part I: Classification. J Prosthet Dent 1978;40:554-7.
7. Ramninder Kaur Bawa, Kamleshwar Kaur, Simrat Kaur, Imandeep Singh. Prosthodontic management of dentate hemimaxillectomy patient: a case report. Indian Journal of Comprehensive Dental Care 2011:1(1); 75-77.
8. F Keyf. Obturator prostheses for hemimaxillectomy patients. Journal of Oral Rehabil 2001; 28: 821-829



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"PERFECT HAPPINESS COMES WITH KNOWLEDGE, AND PARTIAL HAPPINESS COMES WITH ABSTINENCE (CONTROL, FORBEARANCE, ZUHD), WORSHIP WITHOUT KNOWLEDGE AND WITHOUT ABSTINENCE MERELY EXHAUSTS THE BODY."

Hazrat Ali (Karmulha Wajhay)