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Rehabilitation of Patient with Acquired Maxillary Defect Using Cast Partial Obturator with Precision Extra Coronal Attachment

Abrar Ahmad Hakeem[1], Shabir Ahmad Shah[2], Qazi shazana Nazir[3], Sandeep Kour Bali[4], Shazia Mir[5]

[1]Post Graduate Student, Department of Prosthodontics, Crown & Bridge, Government Dental College & Hospital, Srinagar, J&K.
[2]Professor, Department of Prosthodontics, Crown & Bridge & Head Dental Materials, Government Dental College & Hospital, Srinagar, J&K.
[3]Associate Professor, Department of Prosthodontics, Crown & Bridge, Government Dental College & Hospital, Srinagar, J&K
[4]Professor & Head, Department of Prosthodontics, Crown & Bridge, Government Dental College & Hospital, Srinagar, J&K
[5]Associate Professor, Department of Prosthodontics, Crown & Bridge, Government Dental College & Hospital, Srinagar, J&K

Corresponding Author: Abrar Ahmad Hakeem

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ABSTRACT

The prosthetic rehabilitation of a patient with maxillary defect is a very challenging task. Obtaining proper retention when almost half the dentition along with the supporting bone is missing is difficult to obtain. Proper knowledge of the anatomy of both the structures lost in resection as well as the remaining portion helps in fabrication of an effective prosthesis. This article describes the management of acquired maxillary defect case with semi precision attachments enhancing the retention of the obturator prosthesis.

Keywords:- precision attachments, definitive obturator.

1. INTRODUCTION

Surgical resection of the maxilla results in oro-antral communication with nasal regurgitation, nasal speech and inability to eat with poor facial appearance. These multi-faceted problems affect the patient psychologically[1]. Lack of proper nutrition leads to deficiencies and subsequent loss of immunity. This further paves the way for secondary infections and there by the patients are stuck in a malicious cycle. With the help of obturator prosthesis, the maxillary defect is closed to improve deglutition, articulation, pronunciation, facial appearance and to support the orbital contents[2]. The patient's dependence on feeding tube gets reduced and thus overall health is improved. In extensive maxillary defects the weight of the obturator prosthesis is increased, resulting in poor retention and insecure mental status of the patient. The present article describes the rehabilitation of a patient with Aramany Class 1 defect[3] by a definitive prosthesis with a cast partial obturator with extra coronal semi precision attachments.

2. CASE REPORT

A 30-year-old male patient reported to the Department of Prosthodontics, Crown & Bridge Government Dental College and Hospital Srinagar, India with a chief complaint of ill-fitting and loose maxillary facial prosthesis with poor esthetics. The patient had a history of squamous cell carcinoma of the left palate and maxillary

antrum. Left maxillectomy and later radiotherapy was performed. He was rehabilitated with a definitive acrylic maxillary obturator. On examination, the patient had a Class 1 Aramany defect with loss of all teeth in the left upper second quadrant. The patient's old acrylic obturator was heavier with direct retainers made of stainless steel wire on abutments 11 and adams clasp on 15 and 16. The obturator was less retentive with poor esthetics (Fig 4 &5). A cast partial obturator with castable extra coronal precision attachments were planned for better retention and esthetics. 11 and 12 were selected as abutments to receive the male part of semi precision attachments. The female part was planned to be incorporated in the cast partial denture framework with a complete palate design.

3. PROCEDURE

Fig 1:-Pre-op frontal view

Fig 2:- Post-op intra-oral view

Fig 3:- Diagnostic cast

Fig 4:-Obturator designed with the anticipated resection area

Fig 5:-Interim Obturator inserted

Tooth preparation was done in 11 and 12 to receive the metal ceramic crowns followed by rest seat preparation in relation to 15 and 16. The impression was made of rubber base impression material (Fig 6) and a cast poured. After proper diligence extra coronal castable attachments of Rhein 83

were selected Wax patterns fabricated for 21 and 22 with a connector and rest seat was prepared in relation to 15and 16 to receive a embrasure clasp. Using a cast surveyor the male part of extra coronal castable vertical attachment was attached mesial to 11(Fig 9). Once casting procedure was completed, ceramic layering of the crowns was done and tried in the patient's mouth for fit and occlusion. The impression procedure for cast partial denture framework done. A cast partial denture framework pattern with a complete palate design was fabricated on the refractory cast (Fig10). The resilient yellow cap placed over the male attachments before duplication and the female housing incorporated in the partial denture framework. The partial denture framework completed, and the framework trial done after luting the crowns with temporary cement. Occlusal rims were made on the metal framework, and the maxillomandibular relation was recorded (Fig 10). Wax try in was done (Fig 13), and final wax-up completed. The metal ceramic crowns with male attachments luted with type I GIC cement, and the rubber housing (yellow) fixed to the female portion of the obturator. The patient is now satisfied and comfortable with an obturator of lesser weight, better retention, and better esthetics (Fig 16&18).

Fig 6 :-primary impression

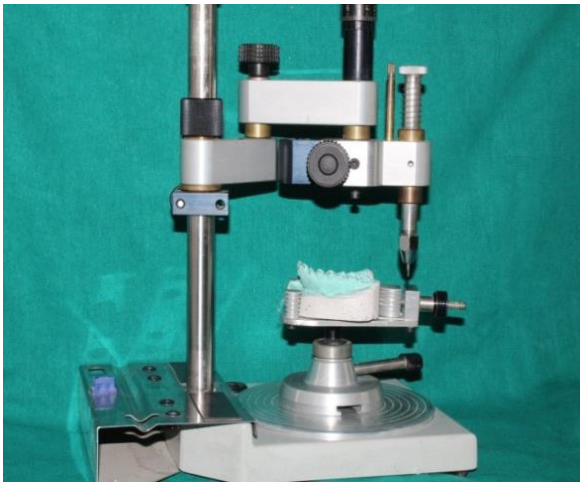

Fig 7:- Surveying of primary cast

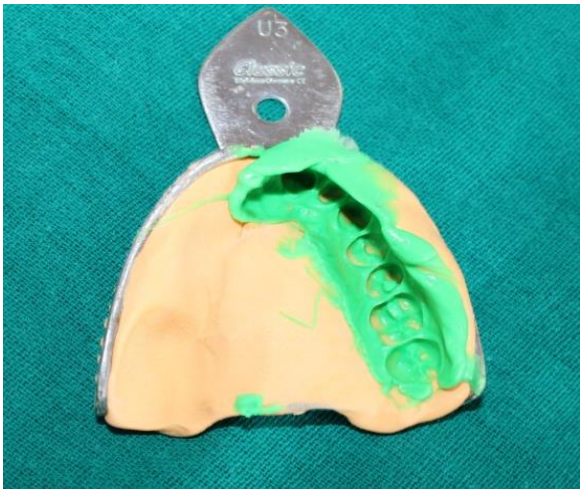

Fig 8:- Secondary impression

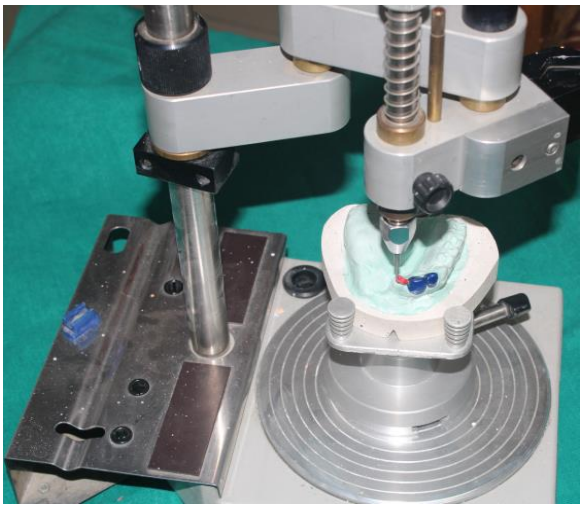

Fig 10:- wax pattern fabricated on refractory cast

Fig 9:- Placement of attachments using surveyor

Fig 13:- Try in

Fig 11:- Recording Maxillo mandibular relation

Fig 14:- Flasking of cast partial obturator

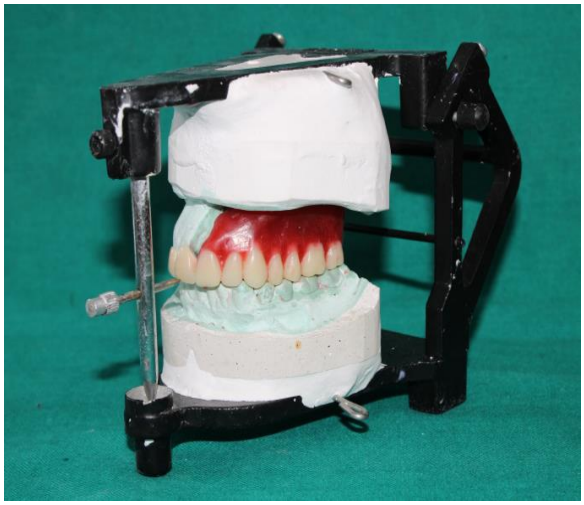

Fig 12:- Teeth arrangement on mean value articulator

Fig 15:- Mould after de waxing

Fig 16:- Occlusal view of prosthesis in mouth

Fig 17:- Pre insertion photograph

Fig 18:- Post insertion photograph

4. DISCUSSION

Management of multiple problems that arise during fabrication of complex maxillofacial prosthesis requires careful deliberation and assessment. In this case the main challenge was to provide adequate retention for the prosthesis. Readily available attachments are known as precision attachments and those fabricated in laboratory are semi precision attachments. They are used to obtain the support of existing teeth. The attachments consist of a retainer with a male part which is a metal receptacle on a contoured abutment crown and a female part which is attached to a removable prosthesis or a pontic[4]. The attachments are designed to replace occlusal rest, bracing arm, and retaining arm of the conventional clasp retained partial denture. They provide retention, stability and support for the removable partial denture. Precision attachments, very like their name offer precise and effective solutions[5]. Charkawi HG et al[6] evaluated and quantified changes in retentive ability and weight change over time. They postulated that precision attachment protects the abutment teeth and the supporting bone when associated with at least two splinted abutments. Here we have splinted the abutments 21 and 22 to distribute the stresses when using extra coronal attachments. This improves cantilever mechanics of the suspension and prevents overloading of remaining supportive structures[7]. Prabhakar B. Angadi et al[8], review of precision attachments states that the extra coronal type of attachment occupies the space immediately next to abutment tooth, which is precisely where a replacement tooth should ideally be positioned, is a disadvantage. Stupendous choice of proper attachment for the available space will overcome this. For the long-term success of this obturator prosthesis, it is important that the patient maintains proper oral hygiene and follows post-operative instructions judiciously. Regular review visits to change worn out rubber housing is also stressed to the patient.

5. CONCLUSION

Patients with maxillary defects have deep seated psychological trauma. It is also difficult to fabricate a prosthesis with adequate retention. The selection of suitable

retentive aids for the existing clinical condition depends on the availability of the latest tools and the clinician knowledge to utilize it. The case report presented here is rehabilitated with a prosthesis that included castable attachments for enhanced retention. This helped the patient in his overall recovery and regained his ability to eat properly. He regained his confidence to lead a life with renewed vigour and zest.

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