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CASE REPORT

PROSTHETIC REHABILITATION OF A PATIENT WITH AN ACQUIRED MAXILLARY DEFECT A CASE REPORT

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ABSTRACT

Maxillary defects could be due to multiple reasons such as tumors, trauma and congenital defects. Rehabilitating such defects can be difficult at times as it encounters problems like inadequate retention, loss of lips and cheek fullness, poor appearance and psychologic disturbance to the patient. This case illustrates an acquired maxillary defect and the aim of this case report was to describe the prosthetic management of a patient who had undergone surgery for ameloblastoma of the maxilla. The maxillofacial prosthodontist faces a challenge to restore the functions, aesthetics as well as the speech of the patient. In this case a cast partial prosthesis was fabricated by carefully identifying the problems in hand and reconstructing the lost tissues. This method was time saving and beneficial to the patient.

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INTRODUCTION

Patients with acquired maxillary defects (those that occur due to tumours or trauma) usually are seen in younger population. Ameloblastoma is one such tumour which is treated generally by surgical excision causing a defect in the maxilla. This excision causes great amount of loss of tissue including the teeth of the patient. Hence the conventional removable partial denture becomes difficult to retain. It is generally observed that the condition of the teeth and tissues is less severein maxillary archdefects as compared to those havingmandibular defects. However, such maxillary defects may show cosmetic and functional deformities (Beumer, 2011). This causes problems such as esthetics, speech and mastication. In such cases removable partial denture is not only considered a time and cost efficient treatment alternative but also the patients' needs are fulfilled with these type of prosthesis (Rajul, 2015).

Case Report

A 28-year-old male patient reported to the department of prosthodontics with a chief complaint of loose removable prosthesis (Fig.1). It was observed that he had no significant medical history or any known drug allergy.

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Dental history revealed that the patient had undergone surgery for ameloblastoma of the left side of the maxilla 8 years back. Surgical excision of the maxillary alveolus and a part of palate was done. The involved teeth were also extracted along with the excised tissue. Extraoral examination revealed that he had oval facial form with a convex profile. The lips were thick, short and incompetent in nature. TMJ examination did not show any signs of tenderness or crepitus and mandibular movements did not show any deviation. The Orthopantomogram illustrates the missing teeth along with the defect in the alveolus in the region from 11 to 25 (Fig 2). The removable acrylic partial prosthesis which he was using wasn't retentive. The patient used to take help of a denture adhesive – Fixon for retaining the previous denture in his mouth. On examination, it was observed that the extensions of the denture were not adequate and also the defect wasn't replaced which gave the unesthetic look for the patient. The denture was stained and had three clasps which were ineffective in retaining the denture (Fig 3).

Intraoral examination revealed

- Partially edentulous maxillary arch with teeth 11,21,22,23,24 and 25 missing.
- Class 4 Gingival recession with lower incisors 31 and 41(Fig 4).

The defect was classified according to the Cologne classification of Alveolar Ridge Defects (European Consensus

Conference of BDIZ EDI; 2013). The defect can be described as code C.3.e: Combined alveolar defect more than 8mm with the relation of augmentation outside the ridge contour. The occlusion was canine protected on the right side.

The problems in hand were

- Non-retentive prosthesis
- Reduced vestibular depth in the maxillary edentulous area
- Recession in the lower incisors.

Photographs

Fig1 (a) and (b)-Preoperative extraoral photograph

Fig 2. OPG showing the defect

Fig 3. Patients existing non retentive prosthesis showing fixon denture adhesive

Fig 4. Intraoral photographs

Fig 5. Preliminary impressions

Fig 6. Preliminary Casts

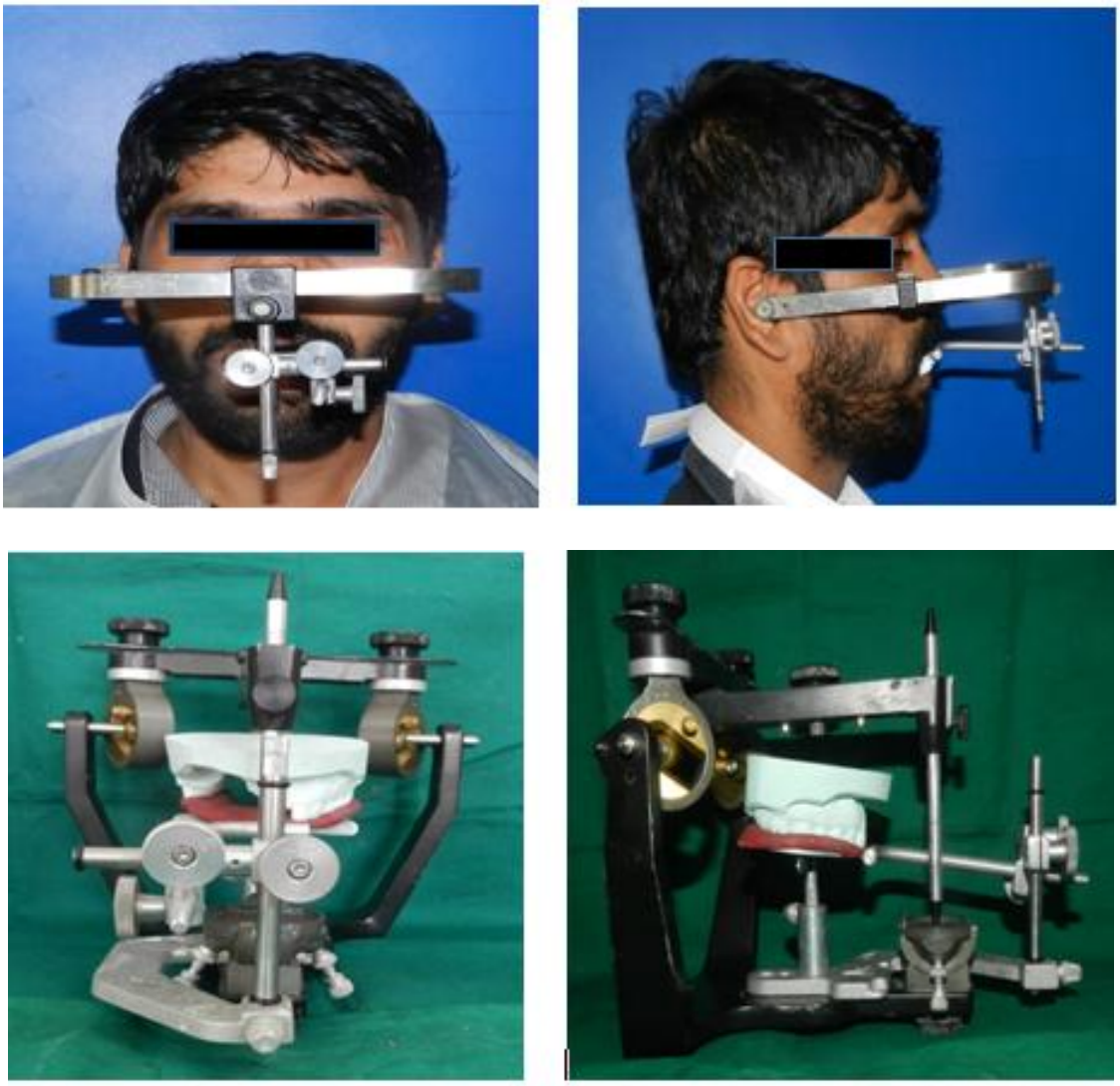

Fig. 7. Facebow record and transfer to semi-adjustible articulator

Fig 8. Tentative jaw relation and try in

Provisional treatment options were

- Conventional removable partial denture
- Cast partial denture
- Implant supported hybrid prosthesis

During the following visit, treatment options were discussed with the patient.

After considering invasiveness, amount of time, financial aspect and the high recurrence rate of ameloblastoma, it was decided to have, a cast partial prosthesis for the maxillary arch.

Treatment plan

Preprosthetic Phase: oral prophylaxis and treatment of gingival recession.

Fig 9.Surveying and designing of the Diagnostic casts

Fig 10. Mouth preparation

Fig 11. Final Impression with Final cast showing rest seat preparation

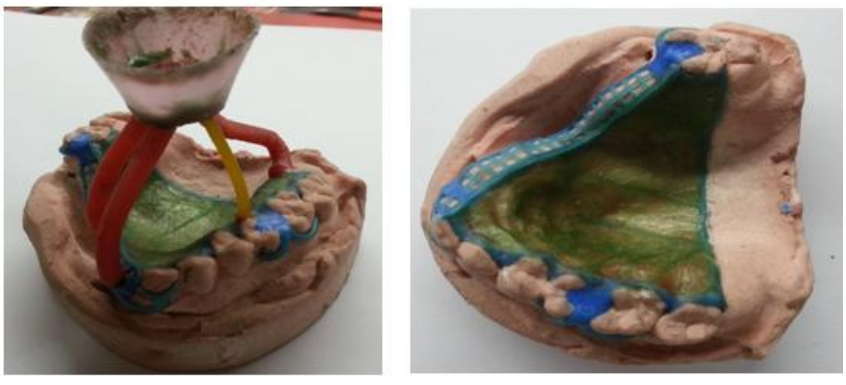

Fig 12. Refractory cast with wax pattern

Fig 13. Cast partial framework and trial

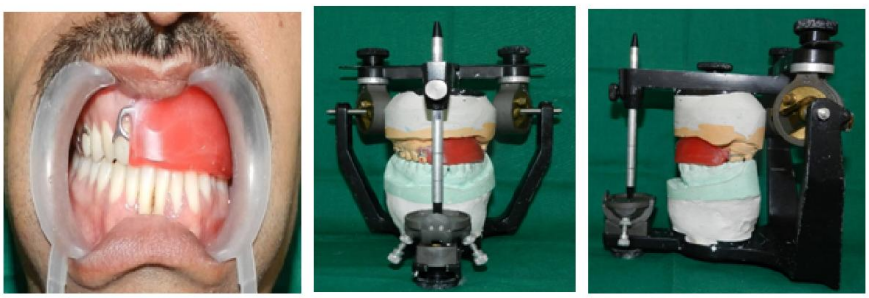

Fig 14. Jaw relation recording

Fig 15. Teeth arrangement and try in

Fig 16. Processed denture on articulator

Fig 17. Cast partial denture in situ

Fig18. (a) Preoperative (b) postoperative exraoral photographs

Examination of the lower central incisors revealed horizontal bone loss along with grade 1 mobility. Horizontal bone loss due to periodontitis was challenging to treat because of difficulty to regenerate bone in that area (Jayakumar, 2010). Hence only thorough oral prophylaxis was completed.

Prosthetic Phase: Cast partial denture fabrication.

Preliminary impressions: were made with irreversible hydrocolloid in perforated stock metal trays with proper extensions built up by beading wax. Diagnostic casts were poured with dental stone (Fig 5 and 6). Orientation relation was recorded using a spring bow and was transferred to a semiadjustible articulator (Fig 7).

Tentative jaw relation: was recorded and tentative try in was done to check for aesthetics, phonetics and occlusion (Fig 8). Patient was satisfied with the appearance and the phonetics and the following steps were carried out.

Surveying of the diagnostic cast: was done to determine the soft and hard tissue undercuts and designing was done accordingly (Fig 9) (Alan Carr).

Mouth preparation: was done for occlusal rest seat preparation with a pear shaped carbide bur on 15, 16 and 27(Fig 10).

Final impression: A custom tray was fabricated so as to make impression with Addition Silicone Monophase (Densply) (Fig 11). Master cast was then duplicated for obtaining a refractory cast. Wax pattern was made on the refractory cast and the metal framework was casted (Fig 12).

Trial of the metal framework: was done to check fit and stability (fig 13). The occlusal rests were adjusted for any premature contacts and polished with the help of metal finishing burs (Rhodney Phoenix, 3rd edition). Occlusal rims were fabricated on the metal framework for recording the jaw relation.

Jaw relation: was recorded and transferred on the semiadjustiblearticulator (Hanau wide vue). Further procedure was similar to conventional complete dentures (Fig 14).

Try in: of the dentures was done with the patients' approval (Fig 15). The denture was processed with heat cure acrylic resin using compression moulding technique. The processed denture was mounted on semiadjustible articulator and checked for eccentric contacts. The occlusal contacts were adjusted first on the articulator and then intraorally (Fig 16).

Denture delivery: was done after checking for fit, comfort and occlusal corrections (Fig 17). The patient was satisfied with the fit, retention as well as the aesthetics. Postoperative instructions on how to insert the prostheses and adequate oral hygiene maintenance were provided. Patient was recalled periodically.

DISCUSSION

The design of prosthesis depends on the anatomy of the defect and the amount of supporting tissues. Now a days many new techniques like precision attachments and maxillofacial implants have emerged so as to improve the retention of the prosthesis in the oral cavity (Murat, 2012). But since ameloblastoma has high recurrence rate in the long term, an invasive and time consuming treatment plan would be doubtful (Pedro, 2013). A cast partial denture gives the advantage of immediate fabrication, stability and adequate retention. The tissues were recorded with Monophase impression material. Monophase impression materials have excellent reproduction of details, high tear strength and resistance to deformation (Anusavice, 2013; Sareen, 2014).

Summary

Looking at the case with a simpler but an effective approach, a well-fitting, esthetic partial denture was delivered to the patient within a short span. Such simpler and faster rehabilitation techniques help patients to cope up with their functional and esthetic needs and also helps reduce the psychological disturbance.

Manufacturers' Details

Irreversible Hydrocolloid-Tropicalgin, Zhermack, Italy.

Type III dental stone-Kalabhai, Mumbai, India.

Semiadjustable Articulator and spring Bow-Hanau wide vue, Whipmix

Rubber Base impression material-Aquasil ultra Monophase Densply caulk

Autopolymerising resin for custom trays- DPI- RR cold cure, Bombay Burmah Products

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