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REHABILITATION OF COMPLETELY EDENTULOUS MAXILLARY AND PARTIALLY EDENTULOUS MANDIBULAR RIDGES – A CASE REPORT

Prosthodontics

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ABSTRACT

Oral rehabilitation is a process of restoring the functional integrity of the oral structures using various means of the prosthesis. Planning and rendering the restorative rehabilitation is a complex and challenging procedure. The major concern is regarding the centric relation, vertical dimension, esthetics and phonetics. Therefore, a comprehensive evaluation, multidisciplinary approach and a sequential treatment plan in harmony with patient's need is essential for a successful treatment outcome.

KEYWORDS

Oral rehabilitation, flabby tissue, cast partial denture, metal mesh

Introduction:

Treating patient with completely edentulous maxilla and partially edentulous mandible is common in clinical practice. Amongst them, remaining mandibular teeth opposing edentulous maxilla leads to certain degenerative changes in the hard and soft issues of the jaw[1]. Some of them include formation of flabby tissue due to bone resorption in the maxillary anterior region occuring due to continuous supra-eruption of the mandibular anterior teeth applying constant pressure[2]. Hence, loss of teeth not only affects the esthetics but also the functioning of oral cavity. Therefore, proper treatment planning is necessary to rehabilitate the patient's oral cavity to its optimal form and function[3].

Full mouth rehabilitation procedure is a complex procedure which restores the tooth to its natural form, function, and esthetics while maintaining the functional integrity of the adjacent hard and soft tissues for the oral health and welfare of the patient. This article explains the rehabilitation of a 73year old completely edentulous maxillary and partially edentulous mandibular arch patient using fixed and removable prosthesis.

Case history:

Case report:

A 73year old man came to the Department of Prosthodontics, with the chief complaint of excessive visibility of upper front teeth and loose upper dentures **(Fig 1)**.

Fig 1: Intraoral

Patient's Medical history revealed that he was Hypertensive since 25yrs, diabetic since 7 years, had prostate problem since 8 years, spondylitis since 20 years, involuntary tremors since 30 years and was on medication for the same.

Patient has used 3 sets of denture.

On Extraoral examination Patient had an ovoid facial form with class I facial profile. Muscle tone was class II i.e. slightly impaired muscle tone, with medium muscle development.

On Intraoral examination patient had Completely edentulous maxillary arch with Kennedy's class II mod 1 partially edentulous mandibular arch with missing 34,35,36,37,44 lost due to caries and periodontal infection 1 ½ years back. Severe attrition was observed wrt mandibular anterior teeth with few wear facets on the occlusal surface of mandibular posterior teeth.

Soft tissue examination showed a healthy mucosa except in the pre-maxillary region where it was flabby. Thickness of the mucosa was normal. Frenum attachment was class I i.e not interfering with the denture. Class I tongue position with slightly large tongue. Saliva was normal both in quality and quantity.

Hard tissue examination showed medium arch size, ovoid arch form, gently rounded ridge contour, with U shaped, normal hard palate and normal soft palate. Patient had Angle's class III ridge relation with deep lateral throat form and average mylohyoid ridge.

Treatment plan:

The diagnostic impressions were made using irreversible hydrocolloid impression material. The casts were poured using type III gypsum product. Facebow transfer was made and the casts were mounted on a semi-adjustable articulator. It was also found that there were no alterations in the vertical dimension. So the treatment plan was developed aiming at improving the occlusion, restoring the masticatory efficiency and the appearance of the patient.

The Treatment plan was discussed with the patient which included intentional root canal treatment wrt 31,32,33,41,42,43, 45 followed by single crowns wrt 31,32,33,41,42 and 3 unit bridge wrt 43,44,45. Conventional complete denture with metal mesh was planned for maxillary arch with cast partial denture wrt mandibular arch

Treatment procedure:

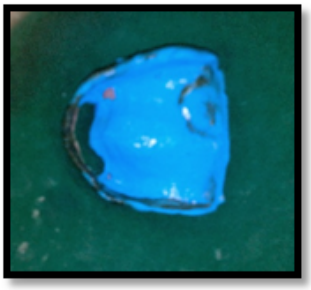
Patient underwent intentional root canal treatment wrt 31,32,33,41,42,43,45 as they were severely attrited. Tooth preparation was carried out wrt all the root canal treated teeth to receive porcelain fused to metal crown **(Fig 2)**. Crowns were fabricated and cemented on the prepared teeth using glass ionomer cement. As cast partial denture was planned wrt missing teeth in mandibular arch, during the fabrication of wax pattern for 33 and 43 cingulum rest was prepared in wax. Distal Guide plane was created wrt 33. After cementation, occlusal rests were prepared wrt 46, 47 to receive embrasure clasp. Final impression of the mandibular arch was made using poly vinyl siloxane impression material. Cast was poured using type IV gypsum product.

Fig 2: Tooth preparation

Meanwhile, primary impression of maxillary arch was made using impression compound. Cast was poured using type II gypsum product. Double layered wax spacer was placed in the anterior region of the maxilla with full spacer design. Special tray was fabricated using auto polymerizing resin. Border moulding was done using low fusing impression compound **(Fig 3).** Wax spacer was removed. Final impression was made using medium body poly-vinyl siloxane impression material. Area of the flabby tissue in final impression along

with the associated tray was trimmed using a bur. Impression of the corresponding area was made using light body poly vinyl siloxane. Cast was poured using type III gypsum product. Denture base was fabricated and occlusal rims were made using baseplate wax.

Fig 3: Secondary impression with window



Mandibular Cast was surveyed and undercuts were blocked. The casts were duplicated using reversible hydrocolloid material and the refractory cast was thus obtained. Wax pattern was fabricated on the refractory cast. Sprue was attached and the pattern was invested and casted. After the casting, the framework was retrieved, sandblasted. The framework was verified on the master cast followed by which finishing and polishing was done.

The framework was tried in patient's mouth for the fit and accuracy **(Fig 4)**. Denture base was fabricated on the framework containing the edentulous region. Occlusal rims were attached to the denture base.

Fig 4: Trial denture

Maxillomandibular relation was carried out. The casts were then articulated. Teeth arrangement was done and tried in patient's mouth. The trial dentures were processed in conventional manner. Processed dentures were finished and polished and was inserted in patient's mouth **(Fig 5).** Post operative instructions were given regarding the maintenance of the denture and the cast partial denture.

Fig 5: Final prosthesis

Discussion:

There are various approaches to treat patient with edentulous maxilla and partially edentulous mandible. But, final treatment depends on patient's desire, whether he wants a fixed or removable prosthesis, oral condition, treatment cost, time required for completion of treatment. Few patient demand only fixed prosthesis as they do not have to remove it repeatedly, whereas, some want only removable prosthesis as they are comfortable with previous denture or depending on the cost. But, oral condition, bone support, periodontal health of the remaining teeth, systemic health of the patient plays an important role in planning a fixed prosthesis[1]. Although, the systemic diseases are a relative contraindication for any surgical procedure like implant placement, patient's desire is very important.

In the current case report, patient had multiple systemic disease, overall bone support and periodontal health of the teeth were satisfactory. Implant placement in the edentulous region was not considered because patient was not willing to undergo any surgical procedure. So, removable prosthesis was provided.

As, the patient had flabby tissue in pre-maxillary region, making impression causes tissue displacement. This tissue displacement results in tissue irritation and ultimately dislodgement of dentures if it is duplicated in the finished dentures. Use of holes, window and wax spacer in the special tray during border moulding and secondary impression will reduce the hydraulic pressure and minimizes the displacement of soft tissues in the flabby tissue region[4,5].

Occlusal stress on the maxillary complete denture and edentulous area beneath this denture bearing area, can lead to midline fracture of the maxillary complete denture. This occurs due to flexural fatigue resulting from opposing natural dentition. This can be reduced by various means like incorporating different types of fibres, reinforcing the denture by incorporating butadiene styrene rubber, metal. In this case, metal reinforced denture base was fabricated as it improves fracture resistance, accuracy, dimensional stability, weight and retention of the definite prosthesis[6]. Various materials are used for this like cobalt chromium, nickel chromium and titanium.

Summary and Conclusion:

In this article, detailed step by step procedure for treating a patient with completely edentulous maxillary arch and partially edentulous mandibular arch is been explained. Modified impression procedure to record flabby tissue was used in this article. Metal ceramic crowns were given on the mandibular anterior teeth with rest seat preparation on both canines to receive rest of cast partial denture. Conventional complete denture incorporating metal mesh was fabricated for maxillary arch. By following this treatment plan, it was possible to restore the patient's oral cavity to its optimum function and maintain the esthetics.

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