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Case Report

### CHANGE THE SMILE IN A WHILE WITH TOOTH SUPPORTED IMMEDIATE OVERDENTURE

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#### ABSTRACT

Addressing the edentulous predicament with the help of artificial replacements is a challenging task. The modality of immediate denture has proved out to be a boon for socially active individuals who cannot remain without teeth even for a single day and esthetic aspect has to be kept at prime importance. The concept of perpetual preservation lead to advent of overdentures where remaining teeth are retained under the denture which provide stability to denture, preserve the proprioceptive impulses and residual ridge. Rare situations may arrive where all the challenges may come at the same time.

The clinical report constitutes a situation where a socially active Lady, had only the upper anterior teeth remaining with moderately resorbed mandibular ridge and was reluctant for extraction for esthetic reasons. The treatment was planned by combining the procedures for maxillary immediate denture and overdenture opposed by a mandibular complete denture.

**Keywords:** Immediate Dentures, Overdentures, Residual Ridge Preservation.

#### INTRODUCTION

The esthetic concerns and reluctance for extractions of anterior teeth has always been a major hindrance in undergoing complete denture treatment among socially active individuals. The transitional phase of edentulism leads to social isolation and a negative psychological impact. To overcome this obstacle, Richardson introduced Immediate Dentures in 1860 adding a new dimension to Complete Denture Therapy. An immediate denture is a complete or removable partial denture fabricated for placement immediately after the removal of natural teeth.<sup>1</sup> The versatility of immediate dentures lies in the fact that patients are never without teeth and can continue their routine activities. In addition, immediate dentures act as splints to control haemorrhage, prevent wound contamination and provide immediate replacement of teeth to aid in oral functions.

Besides replacement, preservation of remaining natural teeth is the first and foremost objective of prosthodontics that is served through overdentures to large extent as natural teeth are preserved beneath dentures which ultimately minimizes residual ridge resorption owing to the proprioceptive impulses.<sup>2</sup> Prosthodontists may come across esthetically

demanding patients who cannot afford transitional edentulous phase having a few teeth worth preserving beneath dentures.

Modifications to immediate denture protocol is being presented in this case report with the intension to benefit the patients with advantages of Immediate as well as overdentures.

#### CASE REPORT

A 75 years old lady reported to the Department of Prosthetic Dentistry, Swargiya Dadasaheb Kalmegh Smruti Dental College & Hospital, Nagpur with a complaint of all teeth missing in lower jaw and few teeth missing in upper jaw. She was unsatisfied with her appearance and had difficulty in mastication. The maxillary arch was a Kennedy's Class I partially edentulous situation and teeth present were 11,12,13,14,15,21,22,23,24 and 25 (Fig.1&2).

Generalized recession and pathological migration was evident as a sequelae of generalized periodontitis.14, 15, 24 and 25 were Grade III mobile, 12 and 22 were grade II mobile whereas 11, 13, 21 and 23 had only Grade I mobility. The mandibular arch was completely edentulous with moderate amount of residual ridge resorption (Fig.3).



Figure 1: Pre-operative Smile



Figure 2: Intraoral view of Maxillary Arch



Figure 3: Intraoral view of Mandibular Arch

The medical history revealed no systemic conditions except Hypertension which was well in control with regular medications.

An Orthopantomogram was used to assess the periodontal status of the remaining teeth and formulate the treatment plan. The possibilities were either to fabricate a conventional denture or an overdenture by retaining 13 and 23 as abutments. The patient was adamant for both options due to post-extraction transitional edentulous healing phase owing to her active participation in social and religious gatherings. In order to cope up with the patient's demand, protocol for a Tooth Supported Immediate Overdenture was put forward which fascinated and motivated the patient to proceed with the treatment.

Oral prophylaxis and intentional endodontic treatment was performed with 13 and 23 as they were to be used as abutments. Primary impression of maxillary arch was made in irreversible hydrocolloid while that of mandibular arch was

made in medium fusing impression compound. Custom trays were fabricated in auto-polymerising acrylic resin for both the arches. 13 and 23 were then prepared to a height of 2mm above the gingiva and parallel to each other. Border molding was performed for the maxillary arch with low fusing impression compound and final impression was made in light bodied addition silicone (Fig.4).



Figure 4: Maxillary Final Impression

A routine procedure was performed for final impression of mandibular arch. A putty index was made of labial surface of maxillary cast upto incisal edges of teeth in order to predictably establish adequate proclination and level of incisal edges of maxillary teeth.

Occlusal wax rims were used to establish the vertical dimensions and a facebow record was made to transfer the maxillary cast to the articulator and centric relation was recorded by inter-occlusal wax check-bite method. The teeth except 13 and 23 were extracted from the cast upto gingival level and about 1mm of labial portion of maxillary anterior ridge portion was trimmed in order to eliminate severe undercut and achieve desired path of insertion. The cast was duplicated to fabricate a surgical template of thermoplastic sheet to be used during extraction in order to perform any osteoplasty if needed. The teeth were arranged with the help of putty index and Bilateral Balanced Occlusal scheme was developed. The dentures were processed and kept ready to be inserted immediately post-extraction.

The teeth were extracted atraumatically and the buccal cortex was compressed to eliminate excessive undercut following which verification was done by seating the template in place. Sutures were given and dentures were inserted into patient's mouth (Fig.5 & 6).



Figure 5: Surgical Template in place after extraction



Figure 6: Post-operative Smile

Occlusal discrepancies were eliminated. Patient was instructed not to remove the dentures for the next 24 hours. Recalls were scheduled at 24hrs, 72hrs, 1<sup>st</sup> week (Fig.7) and 4<sup>th</sup> week post extraction following which monthly recalls were scheduled. The patient was immensely satisfied with esthetics of the denture and got acclimatized within a week. The healing occurred uneventfully and at a much faster rate than usual. The maxillary denture was relined after 6<sup>th</sup> month to counteract the resorption.



Figure 7: Rapid Healing of extraction sites after 1 week

## DISCUSSION

The psychological impact on patient and social isolation following edentulousness has been well recognized in the literature.<sup>3</sup> Life becomes miserable during the transitional post extraction phase for complete dentures as the patient has to be edentulous for several weeks so that dentures are made on well healed ridges and thus provide to achieve good stability, support and retention. The patient's high self-esteem did not allowed her to look edentulous at any time for which an immediate denture protocol was selected. Keeping in mind the principle of preserving the remaining tooth structure, the esthetic as well as biological factors were weighed, 13 and 23 were used as abutment so as to harness the advantages of both immediate denture and tooth supported overdenture<sup>4</sup>.

The periodontal status and healthy tooth structure of 13 and 23, low caries index and expected improvement in crown root ratio following their reduction lead to their selection as overdenture abutment without any copings and hence were reduced to a height of 2mm above gingiva before final impressions. This provides support for the denture, improves crown root ratio, reduces lateral forces on teeth and maintains

the proprioception thus preventing ridge resorption and also giving satisfaction to patient.<sup>5</sup> A surgical template was made after the teeth were scraped off so as to confirm its proper seating following tooth extraction and perform any osteoplasty if needed.<sup>6</sup> The dentures are not removed for the first 24 hours to protect wound areas and prevent clot dislodgement.

The advantages of an immediate denture include the immediate replacement of extracted teeth along with restoration of esthetics and functions such as mastication, speech and deglutition. It simultaneously acts like a bandage to prevent haemorrhage and protect the wound. A positive psychological impact is created with this modality as it motivates the patient and imparts a sense of confidence. However, the patient and the dentist must bear in mind that ridge resorption is bound to occur which requires a relining procedure after approximately 4 - 6 months.<sup>7</sup> The philosophy of overdentures is based upon preservation of the residual ridges and also proprioception. Crum and Rooney<sup>8</sup> (1978) concluded that the resorption of bone is reduced to eight times if teeth are retained underneath dentures while Pacer and Bowman<sup>5</sup> suggested the increased amount of proprioception in overdenture wearers as compared to complete denture wearers. Keeping all the aspects in mind, the patient was treated with an immediate tooth supported overdenture. A minimum amount of resorption was evident as retaining canines supported the dentures as well as prevented resorption.

## CONCLUSION

Immediate denture service has been overlooked and restricted in practice merely because of increased follow-up appointments and relining procedure required within few months. The merits have been well accepted and when practiced with proper diagnosis and planning, undoubtedly gives immense satisfaction to the patient facilitating a smooth transition to the edentulous state. Preserving the teeth and providing an immediate overdenture sum up the advantages of both, thus fulfilling the objectives of preservation of what is remaining and restoration of what is lost. Follow up care plays a vital role in the success of an immediate overdenture. Contemplating the advantages of Immediate overdenture service can surely make it a treatment of choice whenever possible to "Change the smile in a while".

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