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Case Report

Immediate Maxillary Complete Denture: A Case Report

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Abstract: The immediate complete denture is an accepted method of restoration for the patient whose last remaining teeth are to be removed. The prosthesis is fabricated before the removal of the teeth and is inserted immediately following the extractions. It is used to enhance esthetics, protect the extraction wound and provide function during the healing period. However, this prosthetic act remains very difficult to perfect as it presents several difficulties in managing all clinical stages. The presence of poorly positioned teeth, always moving is the main problem that complicates all prosthetic steps and that all other problems are connected. The aim of this paper is to present clinical and laboratory procedures required for the construction of an immediate complete maxillary denture with good retention, support, stability, and aesthetic result. The present case reports the clinical and technical steps in completing an immediate complete denture.

Keywords: Immediate Complete Denture, Clinical and Laboratory Procedures, Surgical Guide.

INTRODUCTION

An immediate complete denture is a restoration fabricated prior to the extraction of a tooth, which is placed in the patient's mouth immediately following the removal of the remaining teeth. They are fabricated increasingly nowadays, mainly for aesthetic and psychological reasons [1].

According to Rahn and Heartwell, the immediate complete denture should satisfy the following requirements: Compatibility with the surrounding oral environment, restoration of masticatory efficiency within limits, harmony with the functions of speech, respiration, and deglutition, esthetic acceptability, and preservation of the remaining hard and soft tissue support [2].

The success of immediate dentures depends on correct indication and precise execution of clinical and laboratory fabrication procedures. Usually posterior teeth are removed, leaving the six anterior teeth in position and allowed for an adequate healing period of 8 to 12 weeks before the final impressions are made for the definitive prostheses [3].

CASE REPORT

A 66-year-old female was referred to the department of Prosthodontics, in the Dental Clinic of Monastir with the complaint of missing multiple teeth that she desired to replace them.

The intra-oral examination revealed a completely edentulous mandible arch and a Class I Kennedy maxillary edentation, with remaining anterior teeth, which were protruding and periodontally compromised. The Orthopantomogram X-ray revealed a deteriorating teeth with hopeless prognosis (figure 1).

She wanted esthetic replacement and was particular that she could not remain edentulous for an extended period of time. she was given the option of immediate denture and informed about their limitations. She was cooperative and agreed to proceed with the immediate complete denture. Maxillary and mandibular primary impressions were made with irreversible hydrocolloid impression material and stone casts were prepared the areas of the upper cast with remaining teeth are blocked out with wax and then Special trays were fabricated with auto polymerizing polymethylmethacrylate resin (figure 2).

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Figure 1: Pre-operativ Orthopantomogram X-ray

Figure 2: Tray fabrication: the areas of the upper cast with remaining teeth are blocked out with wax

Final Impression

Border molding was done in a conventional manner using thermoplastic compound for posterior zone and silicone heavy body for the antrior region. Before taking impression, a wax was used to block out large interdental diastema to allow for easy removal of tray (figure 3). Impressions were made with an elastomeric material (silicone light body) and poured into dental stone to make a master cast (figure 4).

Figure 3: Fill the large interdental diastema with wax to allow for easy removal of tray

Figure 4: Upper secondary impression

Maxillomandibular Relationship Records

Denture bases were fabricated with auto polymerizing polymethylmethacrylate resin (figure 5 A), and occlusion rims were made to establish occlusal relationship. After determining maxillomandibular relationships in centric relation and correct occlusal vertical dimension, the casts are mounted on the articulator (figure 5 B).

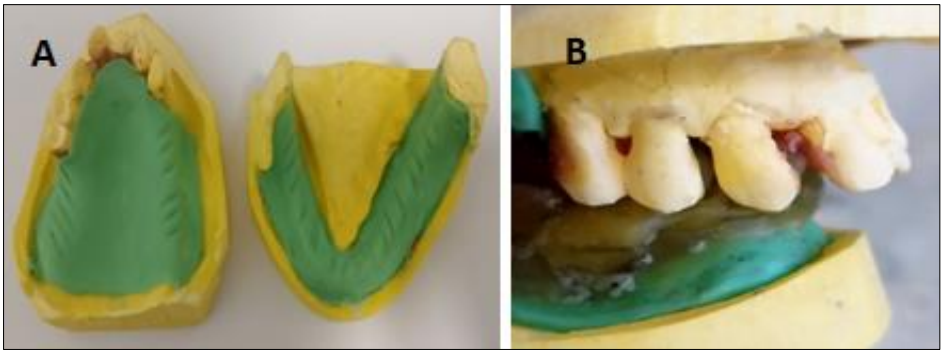

Figure 5: A: Fabrication of recording base to establish occlusal relationship, B: Jaw relation in the articulator

Selection and Placement of Posterior Artificial Teeth

The remaining natural teeth facilitate the selection of artificial teeth (dimension and tint) (figure 6 A). The Patient was called for posterior teeth try in prior to extraction of the remaining teeth to ensure that the appropriate vertical dimension and centric occlusion positions have been established (figure 6 B).

Figure 6: A: Posterior artificial teeth arrangement, B: Posterior try-in

Cast Preparation

In this case, the immediate denture require a modification of remaining teeth on the stone cast to establish the situation of the new occlusal plane which was disturbed with dental egression (figure 7). Silicone index was fabricated and marked with new midline to guide incisal teeth placement (figure 8).

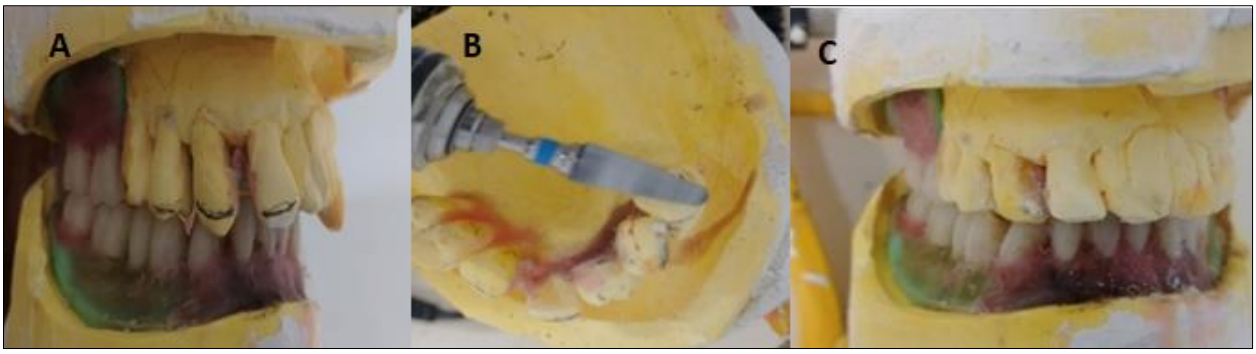

Figure 7: A, B, C: Modification of the anterior maxillary teeth to identify occlusal plane : tracing the new occlusal

Figure 8: Silicone index to guide incisal teeth placement

Laboratory Procedures

***Cast Modification**

The cast was modified to represent the anticipated changes in contour that will occur with surgical removal of teeth and anterior alveolectomy, cast should be trimmed according to esthetic requirements (figure 9). The preliminary step in cast modification is the dental midline established by removing the central incisor and coinciding with the facial midline. The midline is marked in pencil on the cast.

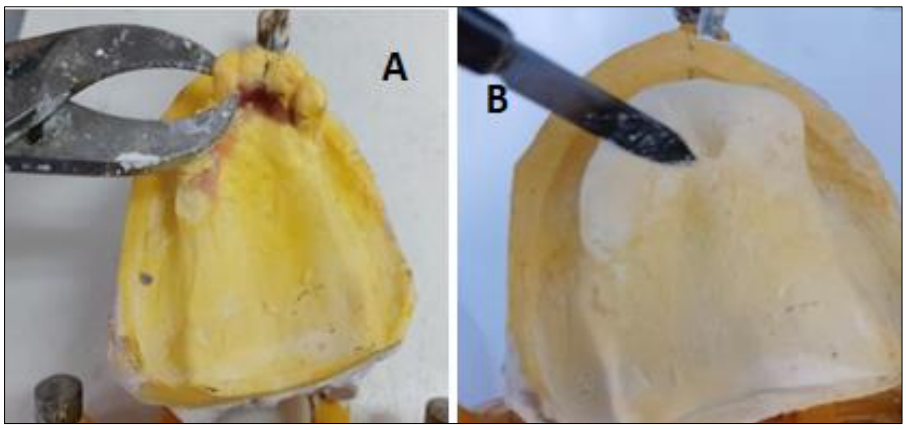

Figure 9: A, B: procedure of cast trimming: trim the extraction site on the cast, as if the tooth has been removed, and anterior alveolectomy was simulated on the cast

***Anterior Artificial Tooth Arrangement**

Once "cast surgery" has been performed and the irregularities on the cast have been corrected through smoothing and polishing, the remaining denture teeth may be arranged at the prosthetic space referring to the silicone index (figure 10).

Figure 10: The prosthetic space referring to the silicone index

***Processing and Finishing**

After all teeth have been placed, the denture is prepared and polymerized. The immediate maxillary denture is processed and finished in the usual manner used with conventional complete denture (figure 11).

Figure 11: Final complete denture fnished and polished

***Surgical Template Confection**

The surgical template is made from duplicating the immediate complete denture. It should be Transparent with Two millimeters thick to provide rigidity and uniform transparency and is used as a guide for surgically shaping the alveolar process (figure 12).

The surgical template will be inserted before closure of the surgical site and any areas of tissue blanching, which will be evident through the clear template, should be corrected by minor alveoloplasty.

Figure 12: The maxillary surgical template

Surgery and Insertion of the Denture

the surgical template is used as a guide to ensure that the prescribed bone trimming is done adequately,

bone and soft tissues are trimmed until the template seats uniformly and completely (figure 13 B). After realising surgical sutures (figure 13 C), dentures were delivered to the patient. The aim was to protect the surgical wounds, minimize swelling and prevent bleeding. The patient was given instructions to wear dentures continuously for 48 hours, and she was recalled after 24 h for follow up.

The patient was very satisfied and delighted with this result (figure 14).

Figure 13: A: Extraction of the remaining teeth, B: Insertion of the surgical template before closure of the surgical site, C: Surgical sutures

Figure 14: Aesthetic outcome of the Conventional immediate denture

DISCUSSION

Prosthodontic rehabilitation with complete immediate dentures provides numerous advantages over rehabilitation with conventional dentures with delayed loading [4].

Following extraction, immediate dentures can serve as a splint, as an aid to control bleeding, and for protection of the extraction site from trauma. From the clinical appearance of alveolar ridges after placement of immediate dentures, it may be noted that bone resorption is slower, and tissue softness is also preserved when stimulation is supplied by a denture base [5].

Besides beneficial effect on post-extraction healing, these dentures preserve vertical occlusal dimension. Patients with immediate prosthesis can regain adequate function in speech, deglutition, and mastication much sooner compared to conventional complete denture. Shah *et al*., suggested an advantage of the immediate denture as a temporary and preventive solution in order to preserve and prepare the alveolar ridge for implant placement [6].

It is important to mention that the quality of rehabilitation correlates with patient satisfaction [7, 8]. A significant social component for the patient is the avoidance of the period of complete edentulism necessary for osseous consolidation in conventional complete dentures. Furthermore, shape, position and shade of the natural teeth can be copied, which leads to patient's faster biological adaptation [9,10].

Literature-based evidence suggested that extractions should be done at two stages [10]. In the first stage, it would be preferable to extract posterior teeth and those with signs of acute infection. The second stage includes teeth extraction before denture delivery.

About the disadvantages of an immediate denture, the main inconvenient lies in the inability to accomplish a denture tooth try-in in advance to extractions, There is no opportunity to observe the anterior teeth at the try-in appointment; therefore, the esthetic result cannot be evaluated until the dentures are inserted [11, 12].

CONCLUSION

Immediate denture fabrication may be more challenging for the dentist to attain good esthetics and patient acceptance as there may be no opportunity for anterior try in. The procedures may be more time

consuming, and require more appointments particularly during the adjustment phase.

The patient should be carefully selected for immediate dentures, and explained about its limitations before starting the treatment procedure. A properly fabricated immediate denture can help the patient in a smoother transition to a complete denture.

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