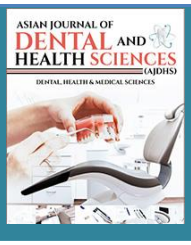

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The keys to succeed an immediate maxillary complete denture : a case report

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Abstract

The transition from partial to total edentulism is a delicate situation for certain patients that involves the practitioner in the management process. The immediate complete prosthesis is therefore an effective solution capable of removing the constraint of appearing totally edentulous by delivering a prosthesis on the day of extraction of the remaining teeth. A partially edentulous patient consulted us with the typical indication for this immediate prosthesis with four remaining maxillary incisors and a major aesthetic concern. The prosthetic production chain is particular concerning firstly the presence of a bilateral terminal edentulism, the confection of the individual impression tray, the orientation of the anterior occlusion plane while anterior teeth remaining on the arch, the fitting of the prosthetic anterior teeth following the working model rectification as well as the surgical phase on the day of denture insertion. Surgical guide would be very useful when bone regularization is imperative. The post-prosthetic follow-up phase is important in order to optimize tissue integration of the prosthesis, while taking into consideration the rebasing that is often unavoidable after a few months. Blood problems, a protracted healing process, significant bone loss, mental illness, or emotional problems contraindicate this type of prosthesis. The dentist and the laboratory technician are invited to master the clinical and laboratory stages of this prosthesis in order to appropriate the result aesthetically and functionally.

Keywords: Edentulism; Aesthetics, Immediate prosthesis, Anterior teeth, Occlusion plane, Surgical guide, Individual impression tray

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Introduction

An immediate complete denture is a dental prosthesis constructed to replace the lost dentition and associated structures of the maxillae and/or mandible and inserted immediately following removal of the remaining natural teeth [1]. Thanks to clinical practice and the number of cases treated, we can conclude that this method is a reliable therapy that enables the transition from partial to full edentulism [2].

Dentists are frequently expected to create immediate dentures, and patients are requesting them more often for psychological and aesthetic purposes. The appropriate indication and careful execution of clinical and laboratory fabrication are essential to the success of immediate dentures. While some patients may experience significant challenges during the first year of wearing dentures immediately, most patients report general satisfaction [3,4]. The aim of this article is to expose, through a clinical case, the particularities of the technical and clinical realization in order to obtain an immediate prosthesis that is well adapted and satisfying for both the patient and the practitioner.

Observation

A 52-year-old patient with arhythmia consulted us for aesthetic and functional prosthetic rehabilitation. The dento periodontal examination showed moderate mobility of the four remaining upper incisors on the maxillary arch, while the lower teeth were well implanted. Examination of the osteomucosal surfaces revealed a moderately deep palate, Class I tuberosities and well-formed ridges. Given the patient's aesthetic concerns, the prosthetic decision was to perform an immediate complete denture in the maxilla and a partial removable denture in the mandible. Primary impressions were taken using an irreversible hydrocolloid (Algin major Alginate, Major, Italy) to make two individual impression trays for the secondary impressions (Fig.1)

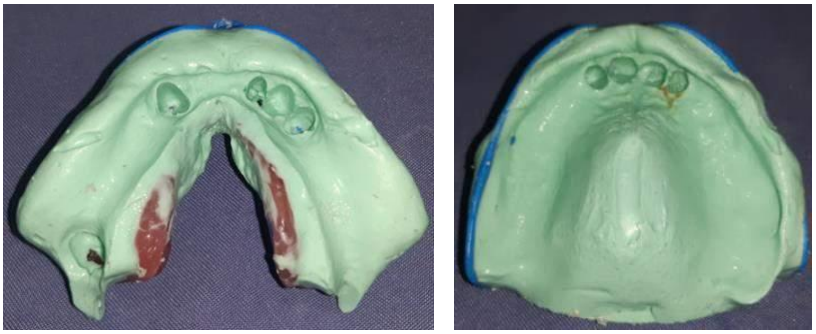

Figure 1: Maxillary and mandibular primary impressions

The limit of the maxillary individual impression tray was located 2mm from the vestibule floor, even with regard to the remaining teeth. The maxillary peripheral seal was made with Kerr® thermoplastic paste in the posterior and lateral regions, while the anterior region was realized with an elastomer that is polyether (Fig.2).

Impressions of both arches were then taken using medium-viscosity polysulfide in the maxilla (Fig.3).

Two occlusion recording base were prepared in the laboratory, then a recording of the intermaxillary relation was made in centric relation and at the correct occlusal vertical dimension (OVD) (Fig.4).

Figure 2: maxillary individual impression tray with anterior joint made of polyether

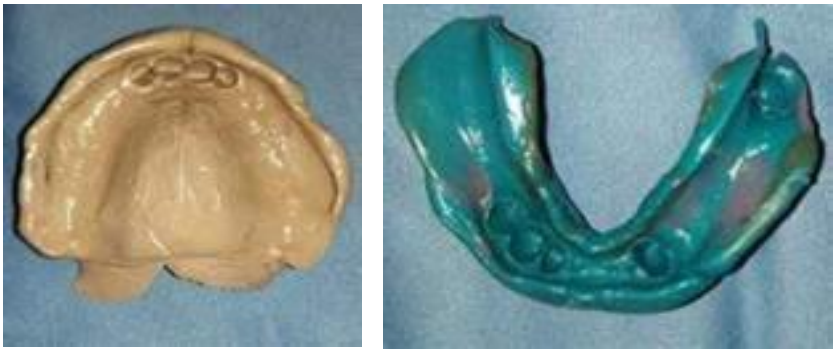

Figure 3 : Maxillary and mandibular working impressions

Figure 4: recording of the intermaxillary relation

The orientation of the anterior occlusal plane was made according to the level of the remaining teeth, given that their positions were correct respecting aesthetic and phonetic imperatives. The posterior occlusal plane was positioned parallel to the camper plane using the Fox plane (Fig.5). a wax try-in was performed allowing to confirm the OVD and molar occlusion (Fig.6).

Figure 5: orientation of the anterior occlusal plane

Figure 6: The wax-up try-in

The anterior maxillary prosthetic teeth were fitted in the position of the remaining plaster teeth, using a silicone key and choosing a prosthetic tooth dimension and shape close to that of the natural teeth as well as waxing of the stabilizing polished surfaces (Fig.7).

The prosthesis was then polymerized with heat-cured acrylic resin in the laboratory and properly polished. Tooth extraction was then initiated (Fig.8) then the prosthesis was tried in and the static occlusion was adjusted using an articulating paper.

Figure 7: fitting the anterior maxillary prosthetic teeth using a silicone key

Figure 8: teeth extraction

A tissue conditioner was applied to the prosthesis to optimize healing (Fig.9). After delivery of the immediate complete prosthesis (Fig.10), the patient was instructed not to remove the prosthesis for 24 hours and asked to return for a follow-up appointment the following day.

Signs of soft tissue trauma due to the prosthesis were checked and dynamic balancing according to the balanced occlusion concept was performed. Instructions for insertion and removal of the prosthesis, as well as instructions for hygiene of the prosthesis, were given.

Figure 9: relining with tissue conditioner

Figure 10: final denture

Control and follow-up appointments were scheduled at 5 days, 10 days and 20 days from the day of prosthesis delivery. These close monitoring sessions allow the patient to feel secure and well cared for, ensuring better psychosomatic integration of this new prosthesis and strengthening the trusting relationship between patient and practitioner. these sessions consist of listening to the patient's complaints to relieve them, replacing the tissue conditioner every week, and motivating the patient in terms of hygiene and maintenance. then monthly appointments will be sufficient until 6 months when the prosthesis may become unstable following final bone healing thus requiring relining.

Discussion:

The indication for an immediate prosthesis depends essentially on the patient's social and psychological conditions. This type of prosthesis is particularly recommended for patients who are embarrassed by appearing edentulous, for patients who work in a profession that requires contact with the public, or in an emergency before a trip or vacation. However, there are always contraindications, such as patients suffering from blood disorders, prolonged healing, severe bone loss, emotional disorders or mental incapacity not allowing them to understand the purpose of the treatment [5,1].

The design of an immediate complete denture involves a chain of clinical and laboratory steps that is unique and often delicate. Examination of the remaining teeth in both arches is important for planning the prosthetic sequence. Only the anterior maxillary teeth will be preserved, so the posterior ridges must be edentulous and healed to ensure stable osteomucosal support for the occlusion recording bases in the working phase. The maxillary arch should therefore be prepared in Kennedey Applegate Class I [6]. Premolars are preferentially retained if they have an antagonist to serve as a reference for the OVD if this is conserved [4]. Significant vestibuloversion of the maxillary incisors indicates the need for a fenestrated individual impression tray to facilitate insertion, as its boundary facing the remaining teeth must cross the convexity of the alveolar process to be located 2 mm from the vestibular floor. In addition, fenestration minimizes the risk of plaster teeth fracture during demolding of the impression [6,7]. Advanced mobility of the remaining teeth must be taken into account to prevent their accidental extraction when the impression is disinserted, so filling the interdental spaces with soft wax or high viscosity silicone or even composite resin helps to avoid this problem [5]. For the lower arch, we need to detect the presence of egressions in order to correct them and re-establish a correct occlusal plane.

Thanks to its elasticity and rigidity after setting, the use of polyether for the anterior joint, prevents damage to this region and easy removal of the working impression, while ensuring good registration of the joint, unlike Kerr thermoplastic paste, which can break when crossing the convexity of the alveolar process [2,6].

Aesthetic and phonetic imperatives dictate the orientation of the anterior occlusal plane: the edge of the maxillary incisors should be 2 mm below the rest lip position, parallel to the bi-pupillary plane touching the wet line of the lower lip for the “F” and “V” sounds. If the teeth are extruded, the correct level can be marked on the working model. If the teeth are short, we can make an anterior supra-dental wax margin to orientate the occlusal plane correctly.

Interincisal point must coincide with the median sagittal plane (MSP) [2]. If it is shifted, transfer the correct position of the MSP to the working model.

Wax-up of posterior prosthetic teeth validates intermaxillary relationship and OVD. The anterior maxillary teeth can be fitted according to the references indicated by the practitioner during the bite registration phase, choosing a suitable shape, color and dimensions.

Regularization of the extraction sites can be combined with teeth extraction, previously simulated by rectifying the working cast. A transparent resin surgical template derived from the polymerized prosthesis is used to guide the surgical phase by visualizing compression zones. “Occlusal” guides improve surgical corrections, as they confirm perfect prosthesis placement thanks to the prosthetic occlusion obtained by posterior tooth sectors [6,2]. A comparative study by Michael et al. showed that simple extraction of the tooth is to be preferred to any other surgical technique for immediate prostheses guaranteeing better stability of bone resoption, and that when alveoloplasty is required for aesthetic reasons, intraseptal alveoloplasty is preferable to alveoloplasty of the vestibular cortical bone [8].

Wearing the prosthesis immediately after extraction ensures rigorous haemostasis and improved postoperative follow-up. The denture serves as a bandage to help assist bleeding, to prevent damage from the tongue, food, or teeth. This prosthesis guides and accelerates healing by protecting the blood clot, and provides immediate esthetics, enabling the patient to carry out social and professional activities without discomfort, as well as restoring masticatory and phonetic function [5,4].

Patients should be instructed after healing that the dentures should be removed at least eight of every twenty-four hours to allow the tissues to rest [1]. Check-ups should be made weekly for the first month, followed by visits at 3 months, 6 months and one year [6].

The inevitable resorption of the alveolar ridge may influence prosthetic retention and stability, so relining after six months of prosthesis wear is recommended [8].

Conclusion:

The immediate total prosthesis is the treatment of choice for the transition from partial to total edentulism especially when the anterior teeth are remaining. This type of rehabilitation, although challenging for the practitioner, will always remain in force and occupy a crucial position in our field. Thus, it is essential to master all the stages of its clinical and laboratory execution.

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