

Case Report

Immediate denture and tooth supported overdenture in a trismus case

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ABSTRACT:

Both immediate and overdenture are prosthetic options that benefit patient psychologically, although one is at the expense of extracting all teeth and the other is planned to save as many teeth as possible. When both are indicated in a patient, it is challenging to plan the sequence of treatment and wearing. We present a unique case of an elderly patient who was indicated for an immediate denture in the maxillary arch and a tooth supported overdenture in the mandibular arch. The overdenture treatment was initiated first till the stage of definitive impressions, following which the immediate denture construction also started. On the day of delivery, the maxillary teeth were removed and the patient was given the maxillary denture only. Overdenture was inserted later once the initial healing of immediate denture was over. The patient was highly satisfied with the treatment outcome.

Keywords- residual alveolar ridge, implant overdenture, Endodontics, bone resorption, proprioception

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INTRODUCTION

As the teeth erupt in the oral cavity, the alveolar bone also enlarges as it has to accommodate the width and length of the underlying natural teeth. Once the tooth is lost, the bone that is left undergoes resorption and the facial tissues lose its primary support, thereby affecting facial aesthetics. Different populations of the world have been studied so as to determine the pattern of tooth loss [1], since it is important to understand the resulting effect of such loss on stomatognathic system. In the state of partial edentulism, a genuine effort that every dentist must make is to preserve as many natural teeth or roots as possible. Most of the teeth that are even mobile can be used to support a prosthesis called overdenture. During the last few decades, the importance of overdentures supported by natural teeth has not only grown [2], but it is also seen very popular with those who practice implant dentistry [3]. The use of two implant supported overdenture in the mandibular arch is now considered a minimum health requirement even in poor nations [4]. It has been stated that teeth within the range of grade 1 or 2 mobility must be used to support overdenture if periodontal gingiva (attached) is intact [5]. From patients' point of view,

the loss of important teeth like posteriors on one side without replacing should be considered a form of self-neglect along with other features associated with the condition [6], [7].

Many general practitioners do consider making of an overdenture as a speciality treatment option, since they are not well versed with the use of delicate and sensitive precision attachments [8]. Irrespective of the use of precision or semi precision attachments, the main advantages of retaining the natural teeth are tactile sensitivity to load, dimensional perception, directional sensitivity, periodontal support and improved occlusal forces that enhance masticatory efficiency [9]. Natural teeth possess special senses, which provide sufficient information in the form of tactile sensory input to the CNS [10].

Trismus, represent multiple physiological or pathological conditions which result in the limited mouth opening. In countries where tobacco chewing is highly prevalent, it results in premalignant conditions, the commonest being oral submucous fibrosis [11]. Circumoral musculature primarily orbicularis oris, undergoes fibrosis secondary to fibrosis of the cheek muscles. Fibrosis may also occur secondary to other conditions [12]. Fabrication of

immediate denture and overdenture in the same patient has been reported earlier [13], [14] but there are no reports of such oral rehabilitation if the patient is having trismus. This article in the form of a case report presents one such case.

CLINICAL CASE REPORT

A 60-year-old patient who had recently recovered from coronavirus infection, reported to the department of prosthetic dentistry for complete rehabilitation of the oral cavity. The patient was partially edentulous in both maxillary and mandibular arches with most of the teeth having grade 2 or grade 3 mobility. The patient's chief complaint was the inability to masticate. Medical history revealed that one month back, he had contracted covid 19 diseases and had recovered on his own after a period of 15 days. The patient was not vaccinated, but looked weak physically. Extra oral examination revealed normal clinical features while intra oral examination revealed 5 maxillary natural teeth in both anterior and posterior regions with wide spaces and severe supraeruption. Mandibular arch showed the presence of 4 teeth in anterior region which were firm. The patient also presented limited mouth opening due to oral submucous fibrosis and was undergoing treatment in the oral medicine department of the same institute. After making diagnostic impressions (CA 37; Cavex, Haarlem, Holland) and mounting on programmed articulator (Artex Rotofix-Facebow; Girrbach Dental, Pforzheim, Germany), the patient was presented with the treatment option of immediate denture for maxillary arch and overdenture for mandibular arch. Other treatment options that were rejected by the patient included an implant supported fixed prosthesis, implant overdenture for maxillary arch. The patient consented for the first option. All clinical and laboratory procedures were followed with strict guidelines for managing Prosthodontic patients during covid 19 diseases [15].

Since different treatment procedures are undertaken for two treatment options, for convenience, individual arch rehabilitation will be presented. For maxillary immediate denture routine clinical procedures were undertaken and a denture was fabricated before the teeth would be removed. On the day of extraction of teeth (Fig A1), a clear self-cure acrylic surgical template (Fortex; Lucite Intl, Durham) was inserted (Fig A2) to evaluate the necessary amount of alveoloplasty to be performed. This was followed by suturing (continuous) (Linex, Monofilament) of the surgical wounds (Fig A3) and insertion of the complete denture. To minimize the effect of residual free monomer, the surgical template was immersed for 24 hours in water as recommended in the literature [16]. For, mandibular arch all the remaining natural teeth were endodontically treated after removal of caries (Fig B1), following which a locator (Bredent attachment systems, USA) attachment (5mm) was placed within the root canals of two distal

abutments on either side (Fig B2). The remaining two teeth were kept flush with the bone so that they support the overdenture passively. The corresponding clip of the attachment was fitted in the overdenture directly in the patient's mouth (Fig B3). After routine clinical procedures, both dentures were inserted followed by giving instructions for maintenance. The maxillary immediate denture was followed up after 1 and 7 days initially followed by relining after 6 months. The mandibular overdenture was followed up for 2 years. The patient was highly satisfied with the outcome of both dentures.

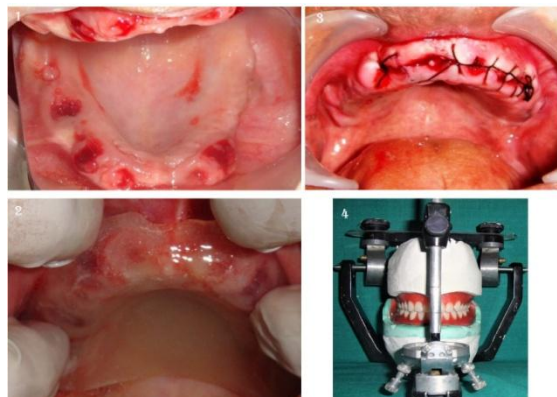


Figure A: (1) Maxillary teeth extracted on day of denture delivery (2) Surgical template (3) Continuous interrupted sutures in place (4) Complete denture design



Figure B: (1) Endodontically treated teeth (2) Placement of precision attachment (3) Retrofitting of attachment clips (4) Both prosthesis worn by the patient

DISCUSSION

Immediate denture is a type of denture that is constructed in presence of teeth, but pushed into service immediately after removal of teeth. While overdenture is the one that is primarily supported by either natural teeth/roots or implants[17]. A hybrid of the two (combined) is called as immediate overdenture in which both procedures are to be carried in the same arch [18]. One of the main drawbacks of immediate denture is that it does not allow the clinician to perform a denture trial of entire complete denture, although it may permit trial of partial dentures. The main reason being trial denture

cannot be accommodated in the presence of natural teeth unless denture base in that region is removed [19]. The use of overdenture is mainly perceived as the use of complex attachments, which tends it to be a speciality practice rather than a general practice [20]. The attachments vary and can be either precision, semi precision or customized [21]. The materials that are used for fabrication of these attachments are mainly gold alloys, platinum and iridoplatinium [22]. One of the main clinical and practical advantages of overdenture is the efficiency of mastication for the patient, which is improved since advantages of periodontal ligament receptors do exist in such treatment option [23]. For long term success of any complete denture, proper estimation of vertical dimensions of occlusion (increases vertical dimensions = increased bone loss) [24] and type of occlusion given [25] are two essential factors that should be kept in mind. The present day overdenture is mainly related to implant supported and are actually inspired by clinical performance of tooth supported overdentures. Principally, a tooth supported overdenture provides more advantages than implant supported, [26] that is why every effort to save the tooth should be made [27].

In this case the main problems were fabricated of the two different prostheses at the same time. The planning was to first complete endo treatment and then till final impressions, no effort was made to start procedures for immediate denture. After completing final impressions for both arches, the teeth on the mounted maxillary cast were scrapped and then denture base was fabricated. Since there was no denture trial for maxillary arch, it was not possible to conduct the trial in total. However, a preliminary trial of mandibular overdenture was performed after seating the precision attachments in the canals.

CONCLUSIONS

Both immediate and overdenture are patient friendly prosthesis that offers a vast array of advantages to the patient. Among them the increased masticatory efficiency stands apart. The use of overdenture and immediate denture is cumbersome initially, since one arch is healing, therefore in this case we did not give mandibular overdenture to the patient for a period of 10 days. This was to allow initial healing of the extracted wounds.

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