IMMEDIATE OVERDENTURE: TAKING ADVANTAGE OF TWO SPECIALIZED PROCEDURES

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Abstract

Overdentures and immediate complete dentures have many advantages in comparison to conventional complete denture., Immediate complete dentures preserve the natural appearance of a person, whereas overdentures preserve the alveolar ridge. An immediate overdenture utilizes the advantages of both these specialized techniques. This paper reports the clinical and technical steps in completing an immediate overdenture.

Key words: Immediate denture, Overdenture, Immediate overdenture.

Introduction

Advances in therapy have helped patients with periodontal disease retain part of their natural dentition for an extended period of time. These patients can be well served by properly designed removable partial dentures. At some point the periodontal condition of the remaining teeth may deteriorate to the extent that a complete denture should be considered. For the patient facing the loss of all his or her remaining natural teeth, there are following treatment options. One is for the patient to have all remaining teeth extracted and wait six to eight weeks for the extraction sites to heal. The complete denture is made following healing, leaving the patient without teeth not only during the healing phase, but also during the time required for the fabrication of the complete denture. A second option is to convert an existing removable partial denture into an interim complete denture. A third option is to making overdenture by retaining atleast two teeth which after intentional endodontic therapy can be reduced in height to improve crown-root ratio thus reducing their mobility, making them serve as overdenture abutment. And the fourth option is to make a conventional immediate complete denture. Patient can also be rehabilitated by means of implant supported overdentures or implant supported fixed complete dentures.

However, in this case report we are presenting a specialized treatment option of immediate overdenture, which has the advantages of both the immediate dentures as well as overdenture.

The "Glossary of Prosthodontic Terms" defines an immediate denture as *"any removable dental prosthesis fabricated for placement immediately following the removal of a natural tooth/teeth."* Whereas, the overdenture is defined as *"any removable dental prosthesis that covers and rests on one or more remaining natural teeth, the roots of natural teeth, and/or dental implants; a dental prosthesis that covers and is partially supported by natural teeth, natural tooth roots, and/or dental implants.* __ called also overlay denture, overlay prosthesis, superimposed prosthesis.[1]

Case report

A fifty two years old male patient reported to the Department of Prosthodontics with the complain of missing lower anterior teeth & loosening of posterior teeth and he desired to replace them. He lost his anterior teeth 6 months back and had difficulty in chewing due to mobile mandibular posteior teeth. Extra oral exmination revealed no loss of facial height. Temperomandibular movements were smooth & co-ordinated. Intraoral examination revealed completely dentulous maxillary arch. (Figure 1) In mandibular arch teeth 32, 33, 34, 35, 36, 37, 38, 42, 43, 44, 45, 46, 47, 48 were remaining. (Figure 2) Of these teeth, except 34,45 all teeth were extremely mobile (grade 3 mobility). Only two teeth 34 and 45 were having grade 1 mobility.

Figure 1: Maxillary Arch.

Figure 2: Mandibular Arch.

Investigations

Diagnostic radiographs like orthopantomogram [OPG] (Figure 3) and intraoral periapical (IOPA) radiographs were made.

Figure 3: Pre-Operative Orthopantomograph.

Treatment Plan

On thorough assessment of radiographs mandibular left first premolar (34) and mandibular right second premolar (45) were found to have good alveolar bone support. It was planned to retain them as abutments for overdenture, after intentional endodontic therapy. As remaining other teeth were having very poor bone support and were grade III mobile, they were not salvageable; so, it was decided to extract them. A thorough oral prophylaxis for maxillary arch and around 34 and 45, followed by fabrication of immediate overdenture for mandibular arch was planned.

Treatment procedures

Oral prophylaxis and intentional endodontic treatment was advised for 34 and 45. Mean while extremely mobile posterior teeth were extracted. After healing and endodontic treatment patient was recalled for abutment teeth preparation for over denture. 34 and 45 were prepared to receive metal copings. (Figure 4)

Figure 4: Endodontically treated and prepared 34 & 45.

Metal copings were cemented using glass inomer luting cement. (Figure 5 and figure 6) Primary impressions of the maxillary & mandibular arches were made using irreversible hydrocolloid impression material. The casts were obtained by pouring dental stone in the impressions. The cast, thus obtained, was used to fabricate custom impression tray for mandibular arch without covering remaining anterior teeth. This would record the edentulous distal extension region of the arch. Border molding was done on distal extension region using this custom made tray and secondary impression was made using fast-setting zinc oxide eugenol (ZOE) impression material. (Figure 7)

Figure 5: Occlusal view – Metal copings on 34 and 45

Figure 6: Frontal View – Metal Coping Cemented with GIC

Figure 7: Sectional andibular Final Impression

The pick-up impression was made with irreversible hydrocolloid. This impression covered the anterior teeth and the posterior edentulous impression. (Figure 8)

Figure 8: Final Pick-Up impression made with alginate

The picked up impression was poured in dental stone and master cast was retrieved. Self-cured temporary denture base and occlusal rim was fabricated on the final cast. Face bow transfer was done using Hanau springbow (Figure 9) and jaw relations were registered and transferred to semiadjustable Hanau H2 articulator and using centric relation records master casts were mounted.

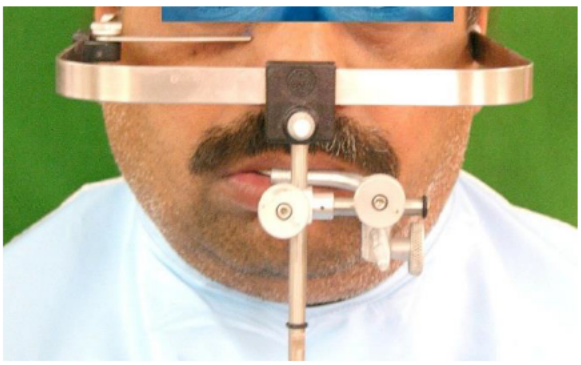

Figure 9: Orientation jaw relation record using Hanau Springbow

The teeth present provided the vertical stop. Selection as well as arrangement of teeth was done to mimic patient's natural teeth. Pre-operaive photograph and pre-operative diagnostic cast were of great help in doing so. Posterior teeth were arranged and posterior try-in was done. Mandibular anterior trial was not possible and patient was informed about it.

Trial bases were transferred back to articulator and mandibular anterior teeth were trimmed on the cast which were to go for extraction (32,33,35,42,43,44), The cast was modified to mimic the shape of the post-extraction residual alveolar ridges, as per the guidelines suggested by Jerbi FC.[2]

Clear acrylic resin was used to fabricate surgical template on modified mandibular cast. This surgical template helped to perform conservative alvelologlasty while extracting the remaining anterior teeth. [2,3] (Figure 10 and figure 11)

Figure 10: Surgical templates prepared in clear acrylic resin

Anterior teeth arrangement was done on the articulator followed by waxing and carving. Waxed up mandibular overdenture was processed and laboratory remounting was done (Figure 12) and denture was finished and polished. Finished and polished mandibular overdenture was examined for any roughness that may irritate the extraction wounds. The mandibular overdenture and surgical template were disinfected in 2% glutaraldehyde solution for 2 hours.

Figure11: Surgical template placed intraorally

Figure 12: Laboratory remounting of processed immediate overdenture

Anterior teeth (32,33,42,43) and 35, 44 were extracted under local anaesthesia and conservative alveoloplasty was done using surgical template The areas of binding were clearly identified by blanching of the underlying soft tissues. The mandibular immediate overdenture was now inserted intraorally. (Figure 13)

Necessary occlusal adjustments were done. Patient was informed about the mild discomfort which he may have with immediate overdenture. He was instructed not to remove the denture for the first 24 hours. He was also instructed not to spit during this period. Immediately after extractions, cold packs were given to patient. Patient was advised to have liquid diet for that day and was recalled after 24 hours. (Figure 14)

At the recall visit the overdenture was removed carefully and tissues were thoroughly checked for any redness, ulcer etc. Instructions regarding eating, speaking, denture

cleanliness were given to the patient. Patient was also explained about the possibility to reline or remake the denture in future.

Figure 13: Mandibular immediate overdenture inserted intraorally

Figure 14: Post-operative Frontal View (After 24 Hrs)

Discussion

Extreme resorption of the mandibular denture bearing areas results in unstable and non-retentive dentures with resultant pain and discomfort. The loose and unstable lower complete denture is one of the most common problems faced by denture patients.[4]

Overdentures and immediate overdentures can definitely overcome these problems as retention of teeth or tooth roots in the alveolar bone can improve bone maintenance around them. Bone maintenance is the most significant advantage of a tooth-borne mandibular complete overdenture treatment because the maintenance of bone volume and vertical height can produce improved prosthesis retention and stability.

The use of remaining roots of teeth enhances denture stability and retention. Teeth previously considered hopeless can now be used successfully as an aid in denture retention.[5]

When it becomes necessary to remove teeth, an immediate denture will enable the patient to continue to engage in social and business activities without an embarrassing period in which they have neither natural nor artificial teeth.[6]

Immediate dentures and overdentures play a significant role in smooth psychological and physiological transition from dentulous state to edentulous state. A multidisciplinary approach should be utilized to gain the maximum combined advantages of immediate denture and overdenture.[7]

Conclusion

Mandibular immediate overdenture treatment is a hybrid concept of utilizing potential benifits and advantages of both immediate dentures as well as of overdentures. A thorough assessment, carefully designed treatment plan can result in success with this treatment concept.

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