



Rehabilitation of Patient with Immediate Cast Partial Denture Using Patient's Natural Maxillary Anterior Teeth

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Abstract

In dental practice immediate denture is commonly used before extracting all the remaining teeth. There are many advantages of using this denture such as esthetics, speech, occlusion, maintaining the facial height, muscle tone and tongue size. Maxillary anterior teeth as patient's natural teeth are used due to improving the self-esteem, esthetics, smile and confidence of a patient. Also as natural teeth retain their hue and strength for sufficient period of time. Removable partial denture can be used but Cast partial denture is a better option as it provides better fit and hygiene and it is an alternative to the patient who are not willing to get fixed prosthesis done or in whom FDP is not indicated. Hence Immediate cast partial denture is the choice of treatment in such cases. In this case patient's natural maxillary teeth is used to form immediate cast partial denture, together with replacement of missing teeth in maxillary and mandibular arches.

Keywords: Immediate Cast Partial Denture; Immediate Partial Denture; Natural Teeth; Cast Metal Framework; Maxillary Anterior Teeth

Introduction

Numerous reasons are there of teeth loss such as dental caries, periodontal problems, trauma and etc. [1]. Additionally, there are many methods of replacement of missing teeth such as complete denture, removable partial denture, cast partial denture, fixed prosthesis. The concept of immediate partial denture was introduced for patients who will become partially edentulous due to extracted damaged teeth. And this solves the problem of esthetics and mastication. Immediate denture is fabricated before all the extracted teeth have been removed. Immediate denture is any removable dental prosthesis fabricated for placement immediately following the removal of natural tooth/teeth. Its advantages include maintenance of a patient's esthetics, normal speech, position of teeth, facial height, muscle tone and reduction of postoperative pain, pressure to soft tissue to prevent tissue collapse, protection

of extraction sites, reduced bleeding and post extraction pain [2]. If the patient is female and in very young patients, the anterior edentulism cannot be tolerated due to it being the esthetic zone as speech, smile and self-esteem. Various studies shows that main replacement option was acrylic removable denture [3]. However replacing acrylic with metal denture base provides with many advantages: accurate tissue adaptation, easy to clean, strong and heat conductivity (physiologic tissue stimulation) and better stability.

Case Report

A 57Yr old female was referred to the department of Prosthodontics of K. M. Shah Dental College and Hospital, Vadodara. The patient complained of difficulty in chewing, multiple missing teeth and mobile upper front two teeth. The patient wanted extraction and immediate replacement of the front two teeth and all the miss-

ing teeth. Oral Examination showed missing 12, 13, 14, 15, 16, 17, 36, 46, 47 and Grade.1 mobility with 11, 21. There was no significant medical history of the patient. Diagnosis was Kennedy's Class.I with maxillary arch and Class. II Mod.1 with mandibular arch. Treatment planning was to fabricate immediate cast partial denture and with mandibular cast partial denture.

Procedure:

- Irreversible hydrocolloid impressions of maxillary and mandibular dentition were made according to the conventional technique and poured in dental stone (Primary Casts) (Image a, b, c).
- The Primary casts or the diagnostic casts were surveyed on the dental surveyor to identify the contours of the teeth and tissues and to plan the modifications of the teeth and tissues (Image d, e).
- The cast partial denture framework was designed on the surveyed casts (Image f).
- Secondary impressions were made using green stick compound for border moulding and light body for making final impression (Image g).
- The master cast was poured in Type IV die stone (Image h).
- The master cast was again surveyed and the frame work model preparation was made using the dental surveyor for better retention and stability (Image i).
- The metal framework was placed first on the master cast and adjusted for any placement interferences and any sharp margins (Image j).
- The metal framework was tried in the patient's mouth and adjusted for any sharp edges and checked for occlusal interferences (Image k).
- Jaw relations with metal framework was done softening the occlusal rims and asking the patient to swallow and bite with the occlusal rims placed on the maxillary and mandibular metal frameworks (Image l).
- Teeth 11, 21 were removed from the master cast and carefully trimmed the ridge so that modification can be done for placement of extracted original teeth afterwards (Image m).
- Metal frame work was modified by incorporating 2 loops in 11, 21 region so that the extracted original teeth can have attachment groves for better incorporation in the denture base and metal framework (Image n).
- Fabrication of duplicate teeth 11, 21 was made for incorporating in the teeth arrangement by making an impression of the extracted stone teeth from the cast and pouring the impressions with self-cure clear acrylic resin (Image o).
- Teeth arrangement was done using teeth set and the duplicate 11, 21 teeth (Image p).
- The teeth 11, 21 to be extracted were cut off from the cast and slight amount of trimming of edentulous portion of cast was done to approximately simulate the amount of bone that will be lost after extraction.
- The design of the denture base was decided.
- The patient was given local infiltration in the maxillary right central region and both the teeth 11, 21 were extracted atraumatically. Patient was asked to bite on sterile cotton for 30min for bleeding to stop (Image q).
- Teeth 11, 21 were properly washed with water to remove any granulation tissue or blood, then they were disinfected in 2% gluteraldehyde solution or 0.3% hydrogen peroxide (Image r, s).
- The roots were removed 1mm or 2mm below the cemento-enamel junction toward root apex with a cutting disc.
- The pulpal tissue of each tooth was extirpated using barbed broach or with a bur and the empty pulpal space was filled with clear autopolymerising acrylic resin or sealed using type I glass ionomer cement to provide strength to the remaining tooth structure (Image t).
- Both the teeth 11, 21 were then set, dewaxing and flashing and cured at the appropriate position on the processed partial denture using pink autopolymerising acrylic resin, keeping esthetic and occlusion in mind (Image u, v).
- Immediate cast partial denture was rinsed in disinfectant solution and placed in the patient's mouth (Image w).
- The patient was given instructions for the immediate cast partial denture care and recalled after 24hours to evaluate any basal seat error or for occlusal adjustment. Patient had sore spots, which was relieved. And further instructions were given.
- Patient was recalled again after 72hours and 1 week for evaluation. Patient did not report any problems and was getting comfortable in CPD wearing.



Image a: Preoperative Photos.

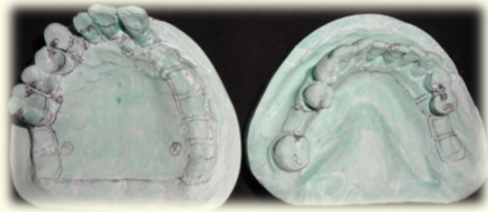


Image f: Framework designed on the cast.

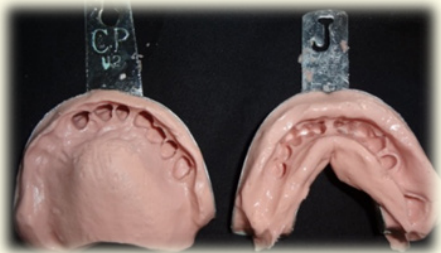


Image b: Primary Impressions.



Image g: Light Body Impression.



Image c: Primary Casts.



Image h: Master Cast.

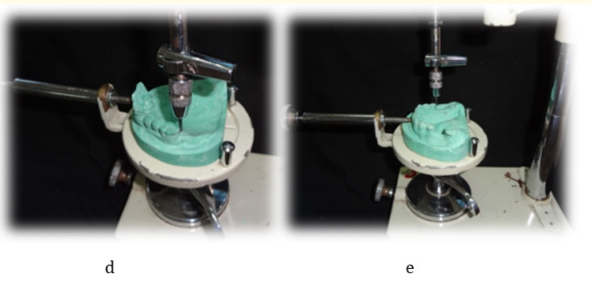


Image d and e: Surveying of Diagnostic Casts.



Image i: Surveying Master Cast



Image j: Metal Framework on the cast.



Image n: Metal frame work modified by incorporating 2 loops in 11, 21 region.

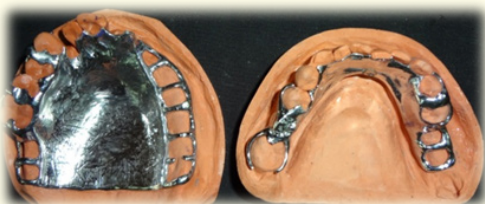


Image k: Metal Framework try-in.

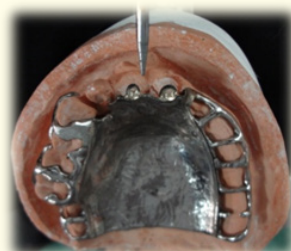


Image o: Fabrication of duplicate teeth 11, 21 for incorporating in the teeth arrangement.



Image l: Jaw relation with metal framework.



Image p: Teeth arrangement.



Image m: 11, 21 removed from the cast.



Image q: Extraction with 11, 21.



Image r: Dewaxing.



Image v: Immediate CPD for maxillary arch and Mandibular arch.



Image s: Extracted 11, 21.



Image t: Treated 11, 21.



Image u: Flasking done with originally extracted teeth with 11, 21.



Image w: Immediate CPD Insertion.

Discussion

Immediate cast partial denture is indicated in many cases such as where there is a need of prosthesis to overcome extra financial limitations, in medically compromised patients, in patients who are not willing to get FPD done, where the fixed prosthesis option is not available and in geriatric patients [4]. Most importantly where the requirement of replacement of teeth is immediate so that it satisfies the patients need.

Immediate cast partial denture was used because this denture helps in the recovery of function and esthetics of a patient without providing discomfort. This is due to a good retention and adaptation on working models which can be formed by CPD and in return except the same in a patient's mouth. This also serves as a wound splint at the time of extraction [5].

In general, cast partial denture should be used instead of normal removable partial denture due to many reasons such as it has high impact strength, compressive strength of the alloys with acrylic resins [6]. It has more advantages of being self-cleansing, has less plaque accumulation, good retention, preserve esthetics and time, patient comfort, durability, biocompatibility, stress breaking function, greater longevity, increased resistance and enhanced stability [7]. Also these quality of the denture will improve the patients nutrition [8].

Natural teeth are used as they retain their hue and strength for sufficient period of time, the denture compliance improves and patient's esthetics is preserved as it's the patient's original teeth [9].

Maxillary upper anterior are only indicated to be used as a patient's natural teeth in an immediate denture as they are strong, big, anterior teeth which can be disinfected properly without breaking or getting destroyed [10]. They are important in speech and esthetics. It's very important to wash, treat and disinfect the natural teeth before using it in a denture. Otherwise it will cause decay in the denture.

Conclusion

To conclude, immediate CPD provides good retention, preserve esthetics and time. Together with using a patient's natural teeth adds advantage of increasing patient's compliance for wearing the denture. This adds to the physiological well-being of a patient using their own teeth. Hence, this treatment modality is highly accepted by a patient and works very well.

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