



CASE STUDY

FABRICATION OF COMPLETE DENTURE IN OSTEOARTHRITIC PATIENTS IN THREE APPOINTMENTS

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ABSTRACT

Diseases of the joints, particularly osteoarthritis, restrain a geriatric patient from visiting the clinic multiple times for the fabrication of complete denture in a conventional manner. The present case describes a unique but simplified technique to fabricate a new complete denture in three appointments using an existing prosthesis. This results in reduced number of appointments and chair-side time while keeping in mind all the basic steps of denture fabrication.

INTRODUCTION

Osteoarthritis is a disease of weight bearing joints which mostly affect the knees, spine, hips, the terminal joint of fingers and also temporomandibular joints (Rahn and Heartwell, 1993). These patients face great difficulty in mobility of joint so travelling to the dental office frequently is a great challenge for them. These facts emphasize the need for reduction in the number of visits to the dental clinic for fabrication of complete dentures (Vecchia *et al.*, 2014). This case report describes a simplified technique for fabrication of complete dentures in three appointments using an existing prosthesis in a patient with osteoarthritis.

Case History

An 86 years old male patient reported to the Department of Prosthodontics, Vokkaligara Sangha Dental College, and Hospital, Bangalore with the chief complaint of broken mandibular denture while having breakfast and wanted to get it replaced with new one. On examination, the mandibular denture was broken along the midline. Both the maxillary and mandibular dentures were loose and the teeth were severely attrited. The medical history revealed that the patient has been suffering from osteoarthritis from past 12 years and

hypertension from past 5 years. Keeping in mind the medical condition of the patient and his inability to visit the dental clinic multiple times for fabrication of complete denture in a conventional manner it was decided to fabricate a new set of complete denture in 3 visits using the existing prosthesis. The two parts of the broken mandibular denture were joined together by sticky wax and Type II dental stone was poured into it after applying petroleum jelly. The cast was carefully removed once it was set and cold mold seal was applied. Grooves were made on the broken borders of denture and then it was placed back on to the cast. The denture was repaired with self-cure autopolymerizing resin using sprinkle on method. The existing maxillary and mandibular prosthesis was then evaluated for the stability and adequate coverage of denture bearing tissues (Figure 1). Borders were trimmed 2mm except in the posterior palatal seal and retromolar pad areas. Border molding was carried out using existing prosthesis in a similar manner as is performed with special trays during final impression procedure when following the conventional method. The adequate seal and retention were verified in maxillary and mandibular dentures. The maxillary and mandibular dentures were inserted in the mouth and evaluated for any need to restore occlusal vertical dimension (OVD) loss, by recording the difference between vertical dimensions at rest and occlusion, and phonetic and esthetic assessment. The amount of OVD required was estimated. Usually, there will be a need to restore the OVD lost due to attrition of teeth and settling of bases due to residual ridge resorption.

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Figure 1. Pre-surgical intra-oral view with existing denture

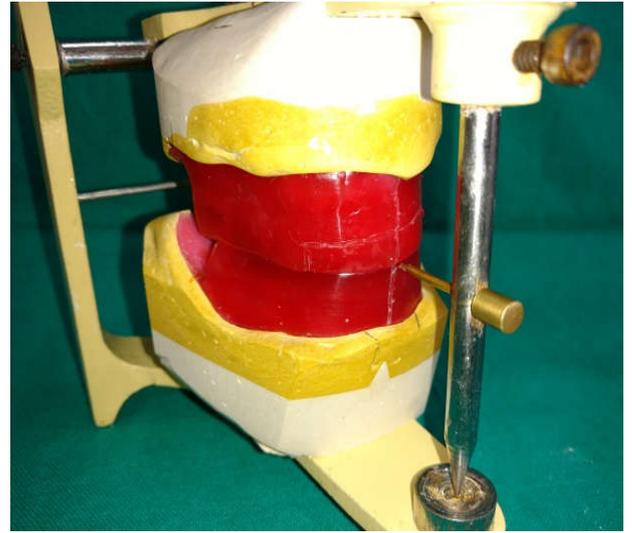


Figure 4. Fabricated occlusal rim on a new record base



Figure 2. Jaw relation with border molded dentures



Figure 5. Try-in



Figure 3. Mounting on the mean value articulator



Figure 6. Post-surgical intra-oral view

The plane of occlusion on maxillary denture was established using base plate wax following esthetic, phonetic and anatomic guidelines. A layer of soft base plate wax was added on the mandibular denture, and OVD was established (Figure 2). The patient was trained to close in centric relation using bimanual palpation technique and the centric jaw relation was recorded using nick and notch method using Jetbite (Coltene/Whaledent) Polyvinyl siloxane occlusal registration material.

Maxillary and mandibular final impressions were made with light body PVS material (Reprosil, Dentsply) using the closed-mouth impression technique. With the dentures sealed in centric record, the master casts were fabricated by first pouring the maxillary denture base and subsequently mandibular denture base. The casts were mounted on the mean value articulator without separating them from the denture (Figure 3). Wax was added where nick and notch was done to reestablish the complete occlusal plane. The midline was marked on the maxillary and mandibular cast by extending it from the occlusal rim and then the overjet was measured to use

it as a reference for transferring the same to fabricate the new occlusal rim. The maxillary denture with the cast was kept in warm water to separate the old maxillary denture from the cast which was then retrieved and cleaned. A new temporary records base was fabricated using sprinkle on method and a maxillary wax rim was fabricated and the occlusal plane was established using the mandibular rim of denture base as a guide. The mandibular wax rim was fabricated in a similar manner and then the midline and overjet were transferred (Figure 4). The arrangement of teeth was carried out following established guidelines. The try-in of waxed-up dentures was done in the second appointment and extension of record bases, esthetics, and OVD was evaluated and any minor corrections required were performed (Figure 5). The denture was processed in a conventional manner and it was retrieved, finished and polished. The denture insertion was done in the third appointment and any occlusal adjustment if required was carried out and phonetics, esthetics, and OVD were evaluated (Figure 6). The recall was done after 24 hours and the required correction was made.

DISCUSSION

Geriatric patients often suffer from many chronic systemic condition out of which osteoarthritis is a common problem affecting the weight bearing joints. Conventional complete denture fabrication requires a minimum of five appointments which makes it difficult for the patient to visit the dental clinic. Many researchers have tried to simplify the procedure of complete denture fabrication which involves a reduction in the number of impressions (single impression with irreversible hydrocolloid in stock trays), the omission of facebow record, anterior try-in, articulator programming, and balanced occlusion (Vecchia *et al.*, 2014; Kawai *et al.*, 2005). Few researchers have used the old denture as a custom tray for border molding and wash impression and also for vertical jaw relation record but it was technique sensitive and time consuming (Murthy *et al.*, 2012; Kulkarni *et al.*, 2017; Giusti and Pitigoi-aron, 2007). The present technique involves all the basic steps of conventional complete denture fabrication like border-molded wash impression, jaw relation, and try-in which were completed in only three visits. Thus an effective reduction in the chair side time and cost of treatment was possible, without compromising the quality of the dentures.

Conclusion

The present technique can be a boon for geriatric patients and those suffering from chronic systemic diseases like osteoarthritis which often limits their ability to visit the dental clinic multiple times for complete denture fabrication.

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