

Simultaneous final impression making and recording occlusal plane orientation by using face-bow for maxillary edentulous jaw: A Case Report

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Abstract

Complete denture treatment for elderly edentulous patients needs multiple clinical visits. Chair-side time may also prolong according to the procedures. Most of the elderly patients are dependent on their family and they have transportation difficulties to attend the regular appointments to the dental clinics. Additionally, elderly patients are less tolerable for some prolonged dental procedures. In this case report, final impression making, occlusal plane orientation, face-bow transfer, jaw relation registration were made in a single visit. Many clinical visits and laboratory procedures were reduced.

Keywords

Complete dentures, complete edentulism, elderly, final impression, four visits denture, jaw relation registration.

Introduction

Edentulism has a strong relationship with aging, about 30% of the elderly population above the age of 65 years are suffering a partial or complete loss of natural teeth globally [1]. Complete edentulism is severe and irreversible process in elderly patients which is also associated with limitation of available foods and dietary insufficiency [2]. This condition is also complexed with different levels of socio-economic factors [3]. Impairment of nutrition may affect the general health of the patients and it may be much more severe in those with underlying medical conditions. Complete loss of natural teeth may result in reduction of facial height, shrunken cheek and lips, and impaired

phonetics [4]. Totally edentulous patients need complete dentures to restore their teeth for reestablishment of function, aesthetic, and speech.

Complete denture treatment for elderly edentulous patient needs multiple clinical visits. Complete denture construction in conventional methods is a multiple steps procedure and involves at least five clinical visits in which preliminary impression, final impression, maxilla-mandibular relation record, trial denture; and denture insertion [5]. In traditional way, complete denture fabrication needs two appointments for final impression and recording maxilla-mandibular relationship [6]. Most of the elderly patients are dependent for their family and they have difficulties in transportation to attend regular appointment to dental clinic. Many elderly patients are living alone at institutions, and sometimes they lack financial support for dental treatment. Additionally, elderly

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patients are less tolerable to some of prolong dental procedures. Many authors try to simplify the denture construction by combining some clinical steps in one visit [7,8]. The aim of this case report is to minimize clinical visits and to reduce total chair-side time for the elderly edentulous patient.

Materials and methods

In this case report, 54 years old patient who was in good general health with fully edentulous maxillary and mandibular jaws came to University of Dental Medicine, Mandalay for restoring his teeth. He had no experience of wearing denture. This clinical procedure was performed in Department of Prosthodontics.

On the first visit, history taking, extraoral and intraoral examinations were done. Primary impression taking was made for both jaws using irreversible hydrocolloid impression material in edentulous stock trays. After making the primary cast, rigid acrylic base plates were

rigid acrylic base plates to construct the record blocks.

On the patient's second visit, final impression making, jaw relation registration record, and facebow record were made. The guidelines for setting the anterior teeth were determined. Record blocks were inserted in the mouth. The anterior occlusal plane was made to parallel with the Camper's plane. The patient's vertical dimension was measured both for during the rest and occlusion. The midline, canine line and smile lines were marked on both record blocks. Final impressions were taken polyvinyl siloxane using the rigid base plates of the record blocks as the special trays. At the time of pouring the master casts from the impressions, the anatomic landmarks for facebow registration were marked on the patient's face. After removing the impression material from the record block, jaw registration record was made using fast set polyvinyl siloxane bite material in centric relation position. Then, separate the records block and the facebow registration

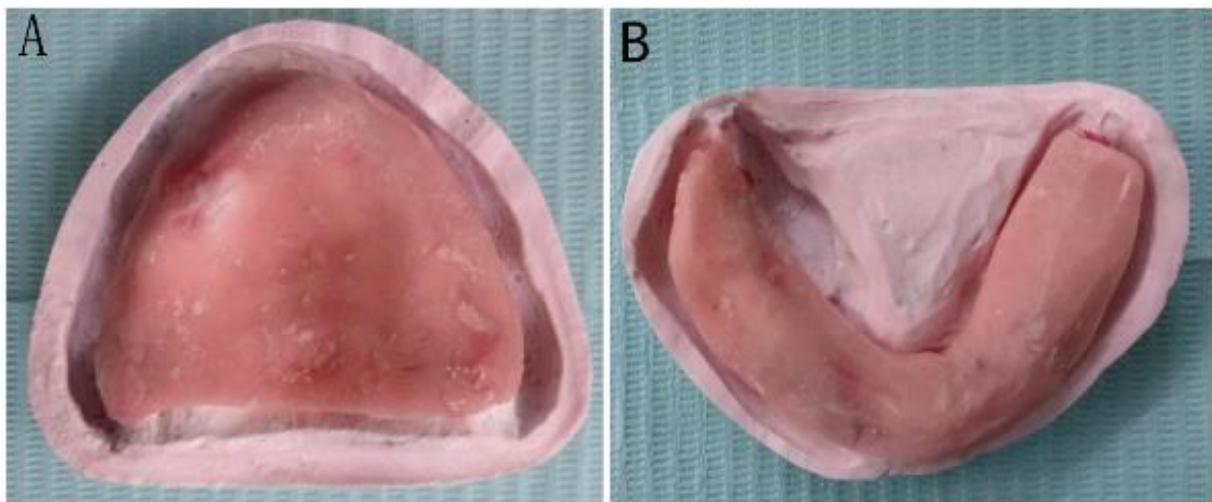


Figure 1. Acrylic base plates for (A) maxillary edentulous arch and (B) mandibular edentulous arch

made with auto polymerizing acrylic resin to use both for the special tray and the base plate of the maxillary and mandibular record blocks (Figure 1).

Maxillary and mandibular occlusion rims were constructed over the

was made to get the accurate relationship of the maxilla to the base of the skull (Figure 2).

At the laboratory, facebow transfer was made to a semi-adjustable articulator for mounting the maxillary cast in correct

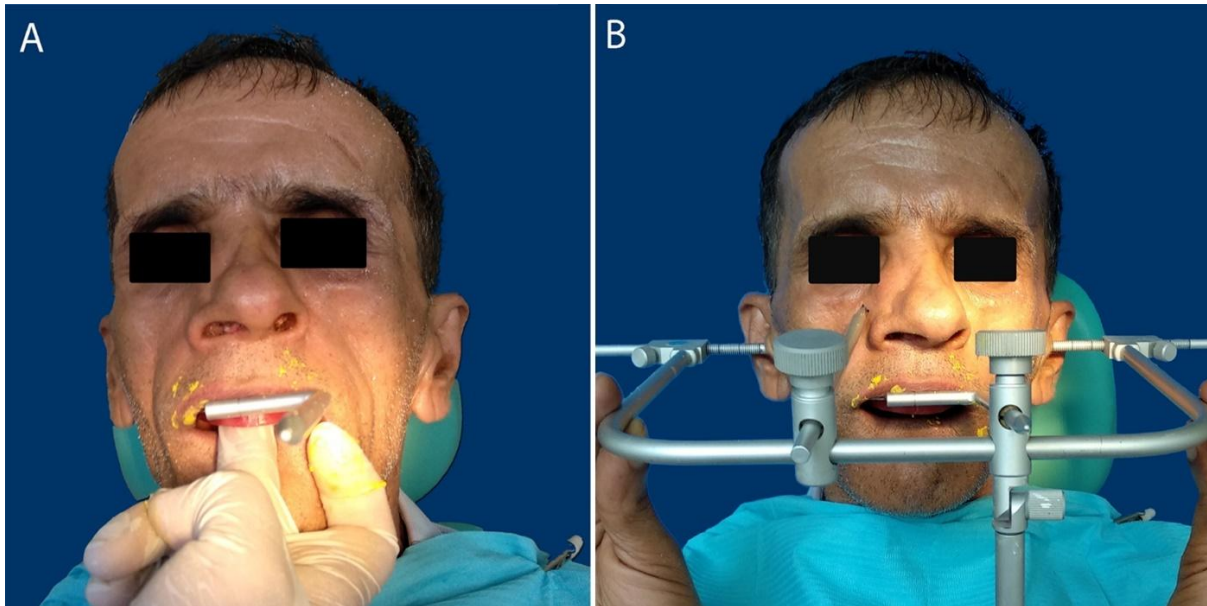


Figure 2. (A) Final impression taking using maxillary record block, (B) facebow registration

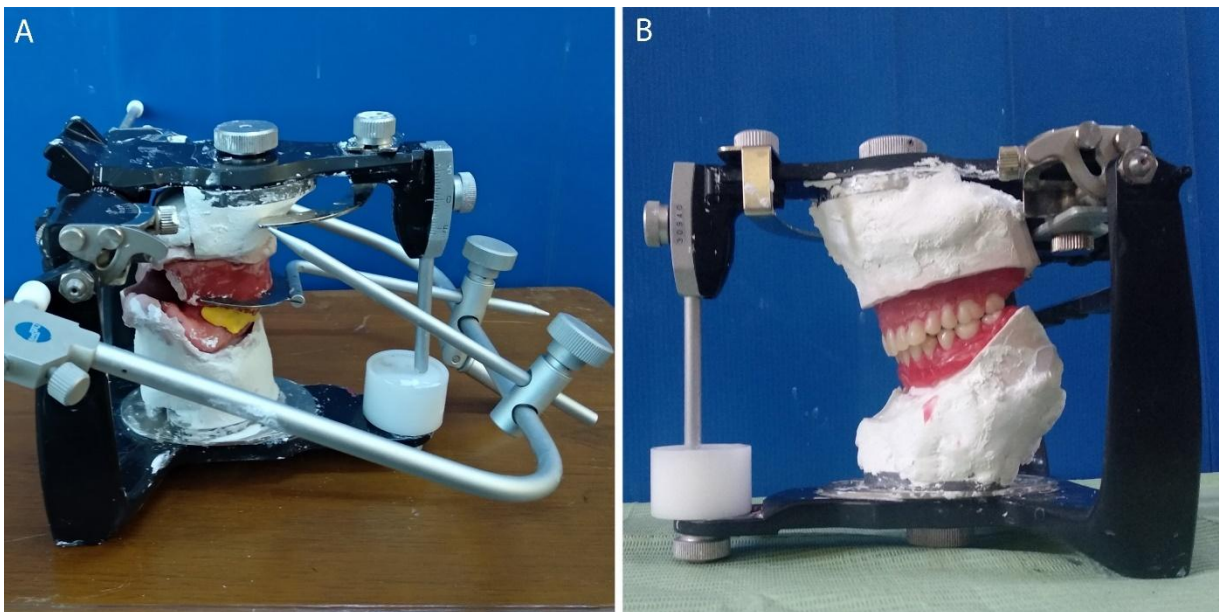


Figure 3. (A) Mounting of the casts to articulator using facebow transfer, (B) Setting-up of the artificial teeth

replication of the patient's anatomy. The mandibular cast was mounted on the articulator using the centric relation record. Setting up of the teeth were made on the semi-adjustable articulator (Figure 3).

On the third visit, trying in wax trial denture was done and made necessary adjustments. On the fourth visit, complete dentures for both jaws were delivered and verified (Figure 4). Instructions for the

new denture wearers and maintenance procedures for the dentures were explained.

Results

On the visit of denture insertion, the patient was satisfied with his complete dentures in both esthetic and comfort. Retention and stability of the dentures were also satisfactory. After one-week

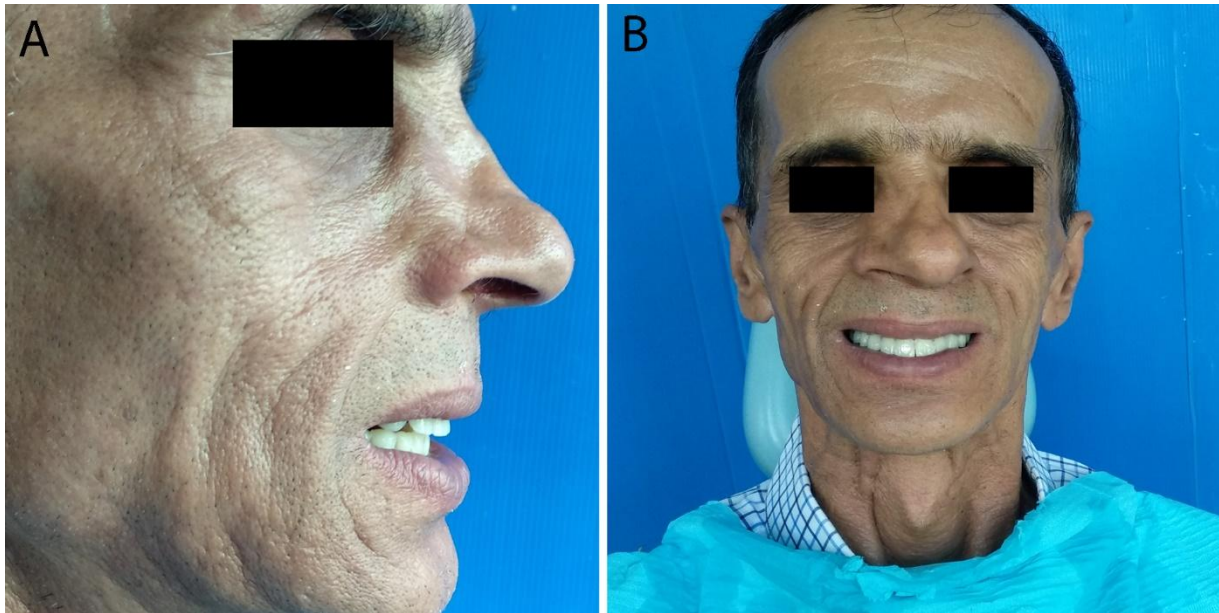


Figure 4. (A) Extraoral profile view, and (B) frontal view of the patient with final dentures

follow-up, the patient's perception to denture and adaptation were improved. His masticatory functions, swallowing and speech were also improved.

Discussion

Impression making, recording occlusal plane orientation, and face-bow transfer including jaw relation registration, cast mounting on articulator are the multi-steps procedure for complete denture treatment. By combining clinical steps of final impression making, jaw relation registration, and facebow transfer in one visit, the clinical visits can be reduced.

Treatment success for the complete denture depends upon several criteria in which solving and prevention of further functional problems including mastication, swallowing, and speech are of utmost importance. Adaptability to complete denture for mastication is a learned process and it takes a few weeks to develop. This nature of difficulties should be addressed and explained to the patient beforehand. Edentulous patients experience difficulties in pronouncing certain words due to the loss of teeth. An improperly constructed denture can further deteriorate speech problems. However, a well-constructed complete denture can

restore the patient's natural speech by the patient's adaptation and exercise [9].

Using simplified clinical and laboratory procedures have no deleterious effects on the success of complete denture outcomes and quality [10]. By following prosthetic principles and performing steps by step procedures for each step, satisfactory results and treatment success for a complete denture can be achieved as in conventional methods.

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