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Case Report

# Complete Denture Treatment With a Flat Ridge Using Semi-adjustable Articulator

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***ABSTRACT***

***Background:*** *Complete denture is a removable denture replacing all the missing teeth and tissue in the upper jaw and lower jaw. The purpose of making complete denture is to improve the function of chewing, aesthetic functions and maintaining patient's oral health. Complete edentulous ridge will causes resorption, until it become flat. A flat ridge is associated with difficulties in providing successful dentures*. ***Purpose:*** *This case report aims to reported the treatment of complete edentulous maxillary and mandibular with a flat ridge using semi-adjustable articulator*. ***Case(s):*** *A 63-year-old male patient visited the Prosthodontic Clinic of Dentistry Faculty, Airlangga University with complete edentulous maxillary and mandibular, also flat ridge in his mandibular.* ***Case Management****: This case is using semi-adjustable articulator (Stratos 300). Some accessories in Stratos 300 were used in this case, such as centric tray to help determine the height of bite, gnathometer M to help the process of functional impression and bite block, also tooth arrangement with 2D templates.* ***Conclusion:*** *The use of semi-adjustable articulator (Stratos 300) could restore stomatognathic function in accordance with patient's condition.*

***Keywords:*** *complete denture, flat ridge, semi-adjustable articulator*

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## INTRODUCTION

Complete denture is a removable denture replacing all the missing teeth and tissue in the upper jaw and lower jaw. The purpose of making complete denture is to improve the function of chewing, aesthetic and maintaining patient's oral health.[1]

Patients who have lost their teeth, if they do not immediately use denture there will be resorption or atrophy in their residual ridge. The resorption that occurs continuously in the alveolar ridge can cause a flat ridge. Sometimes followed by a knife edge ridge that covered by thin mucosa and superficial retromylohyoid fossa.[2]

Complete denture in patient with flat ridge can cause problems for them such as unstable non retentive dentures associated with pain and discomfort. So that, a flat ridge is associated with difficulties in providing successful dentures.[3]

Semi-adjustable articulator is using in this case in order to make the new denture more precision in patient's mouth. This case report aims to reported the treatment of complete edentulous maxillary and mandibular with a flat ridge using semi-adjustable articulator.

## CASE(S)

A 63-year-old male patient visited the Prosthodontic Clinic of Airlangga University Dental Hospital with complete edentulous maxillary and mandibular, also flat ridge in his mandibular (Figure1 and 2). Patients want to make new complete denture, because the old denture does not fit anymore. The right upper back teeth were removed 6 years ago. Patient does not have systemic disease.

## CASE MANAGEMENT(S)

The initial step was taking primary impressions with an irreversible hydrocolloid impression material (alginate) to make the diagnostic model. Determine the height of the bite by using a centric tray with putty material (Figure 3). Then transfer the position of the maxilla using the UTS Universal Stratos 300 transfer facebow which attached to the centric tray and mount the model on a semi-adjustable

articulator with guidance from the centric tray (Figure 4).

The individual tray with light tray (lumamat) was made by dental laboratory and use gnatometer to apply that tray in the patient's mouth (Figure 5). Functional impression was done by using elastomer (polivinylsiloxane) regular body with closed mouth method.

The bite position of patient was determined using Gnathometer M. Patient is guided to do protrusive movement, lateral and retrusive movement. Then the shape of reverse arrow which is called "gothic arch" will show up on the Gnathometer M (Figure 6). The point between the three lines is a centric relation position. After that, do a bite registration.

Final model of the maxillary dan mandibulary is obtained from individual molds that filled with type IV dental stone. The model was mount in the articulator using the horizontal guide tool (Figure 7).

The denture teeth is arranged and try in wax was done on a trial of the denture. After that, acrylic packing was done. Then do remounting, selective grinding I and polishing. Intermaxillary record with a bite registration (polyvinyl siloxane) was made, then continue with selective grinding II and final polishing. And then do insertion of the denture (Figure 8).

Figure 1. Patient's profile

Figure 2. Intraoral's patient

Figure 3. Centric tray in patient's mouth

Figure 4. Facebow transfer

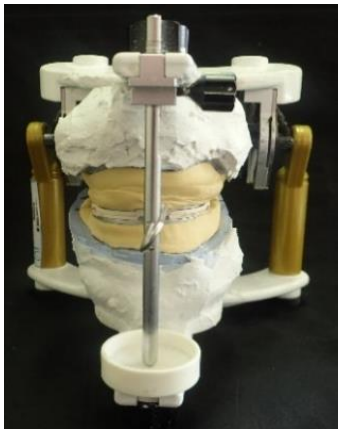

Figure 5. Individual tray & Gnatometer in articulator

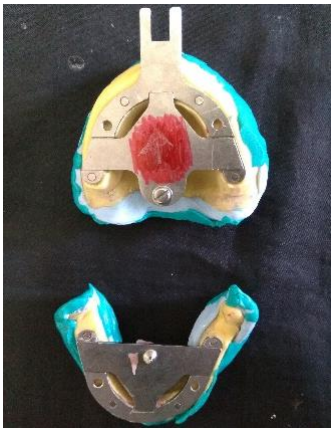

Figure 6. Gothic arch tracing

Figure 7. Final model with bitefork

Figure 8. Denture insertion

## DISCUSSION

Complete denture with a flat ridge needs good management in the manufacturing process. Dentures must provide a good chewing, aesthetic and phonetic functions to the patients. In making complete dentures, there are large clinical challenges so that treatment can be successful. One of the keys to the success of complete denture is good impression of oral cavity.[4]

Making accurate final impression for complete dentures is a multistage process that involves a preliminary impression, a customized final impression tray and a final border impression. It is important to thoroughly examine the patient's mouth and select the most appropriate impression technique. A major requirement for final impression of complete dentures is to develop the peripheral contours to accommodate normal muscular function and to ensure peripheral adaptation without allowing air penetration between the future denture base and the mucous membrane.[5]

After the impression was done, the patient is measured to bite by using a centric tray. The bite height of the patient was determined using the Niswonger technique. Centric tray makes it easy to determine the vertical relation between the patient's maxilla and lower jaw. After that with facebow transfer and fixed 3d joint, the anatomical model is mounted into a semiadjustable articulator (Stratos 300) with a high bite according to the results of the centic tray.[6]

The Stratos Articulator is an Archon-type articulator, semi-adjustable, equipped with a wide range of accessories. Stratos can register individual data from the patient through the facial bow. It can achieve bilateral balanced occlusion and simultaneous contact during different movements.[7]

One of the most important requirements for successful complete dentures is a balanced articulation. An adequate occlusal scheme allows better distribution of masticatory forces, improves denture efficiency and stability. In order to achieve this, it is necessary to reproduce centric relation and use an adequate articulator.[8]

In this case, semi-adjustable articulators (Stratos 300) are used. Semi adjustable articulators seem to be the most adequate effective tool for complete dentures. These

articulators have been found to be easy to handle and allow in achieving a full balanced occlusion during mandibular excursions, accommodating individual characteristics of each patient.[8]

Complete denture with a flat ridge needs good management during the manufacturing process. According to Syafrinani (2001) retention in flat ridge cases in the mandible can be obtained by making additional retention in the retromylohyoid region with closed mouth impression techniques.[9]

The use of gnathometer m in this case can determine the gothic arch and the height of the bite of the patient. Another advantage is that the dentist's interference with the movement of the mandible from the patient does not exist, because the patient performs the mandibular movement alone. The movement made to get a Gothic arch is to do the movement of protrusion, retrusion and lateral movement. Getting the bite and height of the right bite in the complete denture case will greatly help stabilize the occlusion of the patient.[10] The case showed that the use of semiadjustable articulator (Stratos 300) could restore stomatognathic function in accordance with patient's condition.

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