

An alternative technique to obtain a stabilized cross-arch interocclusal record

*Chaimongkon Peampring**

Abstract

An important step of full-mouth reconstruction is the diagnosis and treatment planning. Multiple sets of mounted diagnostic casts on the articulators are required for the treatment analysis and diagnostic wax up. An interocclusal record must be accurate and stable over time so that it can be used to mount multiple sets of casts with minimal damage. This article describes an alternative technique to record the cross-arch interocclusal relation by using a rigid acrylic plate and impression compound.

Keywords: *Interocclusal record, Centric relation, Impression compound*

**Department of Prosthetic Dentistry, Faculty of Dentistry, Prince of Songkla University, Thailand.*

Introduction

Diagnosis and treatment planning is an important step in full-mouth reconstruction cases. The process requires gathering data by acquiring patient's history and performing clinical examination. This data is then organized and analyzed into a list of clinical problems. A suitable treatment plan is then formulated.¹ The first clinical step is an evaluation of centric relation (CR). Most patients must be restored in CR because it is a maxilomandibular relationship that is independent of tooth contact or interference and is a repeatable position. Multiple sets of mounted diagnostic casts are mounted on an articulator in CR and are necessary for designing a properly created artificial occlusion.^{1, 2} The Lucia Jig is a technique that uses an anterior stop to deprogram the masticatory muscles and separate the posterior teeth that could cause occlusal interference during CR record. When the posterior teeth separate, the interocclusal registration material is placed in between upper and lower teeth to make tooth indentation for CR record.^{3, 4} Elastomeric materials such as polyvinyl siloxanes and polyethers are commonly used for capturing interocclusal relationship because of their high accuracy and dimensional stability.^{5, 6} However, these material to the casts that can result in mounting errors.⁵

Eriksson *et al.* introduced a modified interocclusal registration technique that uses a combination of impression material and stabilizing tray. The stabilizing tray reinforces the impression material when it is used for capturing CR in patient's mouth and during mounting procedure. Accuracy of the mounted casts using this technique was not significantly different from the conventional technique.⁷ However, recording CR using this technique may not be feasible in routine clinical practice if the special design-stabilizing tray is not

available. There is also no anterior space available for Lucia Jig while making the interocclusal registration. This article describes an alternative technique to capture cross-arch interocclusal relation using light-polymerized acrylic resin (Lightplast-platten, Dreve Dentamid GMBH, Unna, Germany) as a stabilizing plate and impression compound (Impression Compound, Kerr, Orange, CA, USA) as an interocclusal registration material.

Technique

1. Fabricate a Lucia Jig using self-polymerized acrylic resin (Pattern Resin, GC Corp, Tokyo, Japan) on maxillary study cast covering the upper central incisors. Insert the Lucia Jig in patient's mouth and adjust the occluding surface to contact the lower incisors at 90° allowing the remaining posterior teeth to disclude upon closure. (Figure 1)
2. Prepare a stabilizing plate by cutting light-polymerized acrylic resin (Lightplast-platten, Dreve Dentamid GMBH, Unna, Germany) into rectangular shape. Verify that there is no contact of teeth on the plate while the patient bites. Make retention slots for impression compound on both sides of the plate. (Figure 2)
3. Apply the impression compound on both sides of the plate (Impression Compound, Kerr, Orange, CA, USA). (Figure 3)
4. Soften the impression compound in water bath and adapt it to the plate with compound on the maxillary teeth.
5. Make the patient to bite on Lucia Jig and verify that the mandibular teeth come in contact with the compound.
6. Allow the compound to cool down and then remove the plate from patient's mouth.



Figure 1 Lucia Jig fabricated directly on a study cast.



Figure 2 Light-polymerized acrylic plate with retention slots on both sides



Figure 3 Light-polymerized acrylic plate with impression compound

7. Mount the maxillary and mandibular casts using the interocclusal plate with the compound on the articulator.

Discussion

There are several techniques for recording CR in complex prosthodontic reconstruction cases. The technique described in this article has some advantages. Firstly, the interocclusal registration material can be stabilized by a rigid light-polymerized acrylic plate, which can be easily fabricated at chairside. Secondly, the use of compound as an interocclusal registration material is easy to control because compound can be softened to a moderate consistency while recording CR and gets hard in the mouth. If the interocclusal registration is not done correctly it can be recaptured again by heating up the compound and taking the bite without wasting more material. Moreover, impression compound showed the acceptable accuracy and dimensional stability.^{8, 9} Lastly, the interocclusal plate with compound is stable and rigid over time and therefore it can be used to mount multiple sets of casts with minimal damage of the bite.

Summary

The interocclusal technique described in this article requires a rigid acrylic plate to stabilize bilateral interocclusal records. It is an alternative way to make interocclusal registration that has advantages first allowing a stable interocclusal record that can be use multiple times with minimal damage of the bite, and second, using of compound as an interocclusal medium is easy to control the accuracy is acceptable.

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Corresponding author
Chaimongkon Peampring
Department of Prosthetic Dentistry
Faculty of Dentistry, Prince of Songkla
University
Hat Yai, Thailand 90110
E-mail: chaimongk@hotmail.com

เทคนิคทางเลือกสำหรับการบันทึกการสบฟันทั้งปากอย่างมีเสถียรภาพ

ชัยมงคล เปี่ยมพริ้ง*

บทคัดย่อ

ขั้นตอนสำคัญของการฟื้นฟูช่องปากด้วยการบูรณะฟันทั้งปากคือการวินิจฉัยและวางแผนการรักษาซึ่งจำเป็นต้องอาศัยการเตรียมแบบหล่อหลักหลายชุดที่ยึดอยู่ในกลอุปรณ์ขากรรไกรจำลองเพื่อใช้ในการวิเคราะห์การรักษาและการวินิจฉัยซึ่งการบันทึกการสบฟันจำเป็นที่จะต้องถูกต้องและมีเสถียรภาพในช่วงเวลาเพื่อที่จะสามารถนำมาใช้ได้หลายครั้ง โดยความเสียหายน้อยที่สุดบทความนี้อธิบายถึงเทคนิคทางเลือกสำหรับการบันทึกการสบฟันทั้งปากอย่างมีเสถียรภาพโดยใช้แผ่นอะคริลิกแข็งและร่วมกับวัสดุคอมพาวด์

คำสำคัญ: การบันทึกการสบฟัน วัสดุคอมพาวด์

*ภาควิชาทันตกรรมประดิษฐ์ คณะทันตแพทยศาสตร์ มหาวิทยาลัยสงขลานครินทร์