



## Determine the exact length of the veneers through programming the condylar inclination of the semi-adjustable articulator. Case report

### Determinación de la longitud exacta de carillas mediante la programación de la inclinación condilar del articulador semiajustable. Reporte de un caso

Juan Del Valle Lovato<sup>1-a</sup> | Jorge Balcazar<sup>2-b</sup> |

<sup>1</sup> iD | Professor, Department of Restorative Dentistry, School of Dentistry, Central University of Ecuador. Quito, Ecuador.

<sup>2</sup> iD | Owner, Dental Technik laboratory. Quito, Ecuador.

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#### KEY WORDS

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#### ORCID

<sup>a</sup> <https://orcid.org/0000-0001-6105-5660>

<sup>b</sup> <https://orcid.org/0009-0003-3423-2598>

#### CORRESPONDENCIA AUTOR

SCHOOL OF DENTISTRY, CENTRAL UNIVERSITY OF ECUADOR. QUITO, ECUADOR.

E-MAIL: JUANPADEL\_@HOTMAIL.COM

#### ABSTRACT

**Purpose:** Various aspects of veneers have been described in literature, such as preparation, material, manufacturing method, bonding technique, remaining dental structure color, among others. The length of veneers incisal edge, that has been determined through photos or videos doing a functional evaluation, creating an anterior guide by mockup in addition to the diagnostic elements mentioned above, the veneers were exactly length based on the condyle inclination. **Materials and methods:** The technique shown in the following clinical case report, aims to customize the length of the veneers by programming the condylar inclination and the incisal plate of the semi-adjustable articulator. **Results:** The veneers made with the present technique was accurately. **Conclusion:** Customize the length of the veneers demonstrated avoid wear, fracture or breakdown of the bond.

#### RESUMEN

**Propósito:** Varios aspectos de las carillas han sido descritos en la literatura, tales como preparación, material, método de fabricación, técnica de adhesión, color de la estructura dental remanente, entre otros. La longitud de las carillas borde incisal, que se ha determinado a través de fotos o videos haciendo una evaluación funcional, la creación de una guía anterior por maqueta, además de los elementos de diagnóstico mencionados anteriormente, las carillas eran exactamente la longitud basada en la inclinación del cóndilo. **Materiales y métodos:** La técnica mostrada en el siguiente reporte de caso clínico, tiene como objetivo personalizar la longitud de las carillas programando la inclinación condilar y la placa incisal del articulador semiajustable. **Resultados:** Las carillas realizadas con la presente técnica fueron precisas. **Conclusiones:** Personalizar la longitud de las carillas demostradas evita el desgaste, fractura o rotura de la unión.

## INTRODUCCIÓN

Laminate veneers are a safe dental treatment since the 1980s, when enamel etching and porcelain surface treatments improved the predictability of bonding.<sup>1</sup> Today Laminate veneers are esthetic and predictable treatment in cases of malposition, malformed, discolored, wear, etc<sup>1-3</sup>.

Various aspects of veneers have been characterized across the literature, such as design preparation<sup>4,5</sup>, veneer fabrication technique, bonding technique<sup>6,7</sup> colour<sup>8</sup>, veneer with and without incisal coverage<sup>2</sup>, material and manufacturing methods<sup>9,10</sup>, novel design<sup>11</sup>. Additionally, several articles explain further about the length of the veneers such as the design of the incisal palatal finish<sup>12</sup>, and Palatal shape<sup>13</sup>, but nothing has been discussed regarding the length of the upper veneers through condylar inclination.

To determine the length of the veneers using wax-up, a wide variety of diagnostic elements are applied, such as intra and extra oral photographs, video recording, impressions, jaw relation record, among others to make a functional, aesthetic, and biomechanical analysis<sup>14</sup>. In complex cases, it has been recommended the use of dental cast articulated in a semi-adjustable articulator, facial bow, centric relation, and Bennett programming with the help of an Axiograph with mutually protected occlusion<sup>6</sup>. Further, through the wax-up can be analyzed: length of teeth, the location of the facial bulkiness and its effects on the lip structure, phonetics, and occlusion<sup>15</sup>.

In this article, in addition to the diagnostic elements mentioned above, it is proposed to use the condylar inclination to program the incisal plate and thus accurately determine the length of the anterior veneers. The use of the condylar inclination to set the incisal plate has been described<sup>16,17</sup>. In addition, the importance to determine a correct length has been described to avoid gingival recession, occlusal stress, wear, fracture or breakdown of the bond<sup>8</sup>.

### CASE PRESENTATION

A 28-year-old woman presented at a private consultation requesting a prosthesis to central upper incisors. Clinical and radiographic examination revealed that central incisors had good bone support, maxillary left central incisor has a short root canal filling and a fiber post with secondary decay, maxillary right central incisor has a composite veneer (Fig.1). Additionally, the patient has an occlusal equilibration. The following options were considered for treatment: One option was root canal retreatment, new post, core and ceramic crown on maxillary left central incisor, ceramic veneer on maxillary right central incisor. The alternative was an implant to replace maxillary left central incisor and ceramic veneer on maxillary right central incisor. The patient opted for the first option after signing an informed consent.

Impression was made with polyvinylsiloxane (EliteHD; Zhermac. Polinesi. Italia); and poured in dental stone (Silky-rock; Whip mix. EEUU) the casts were articulated in a semi-adjustable articulator (Modular; Hanau). Intraoral records in centric relation (RC) and in protrusive movement were made for articulator program Figure 2.

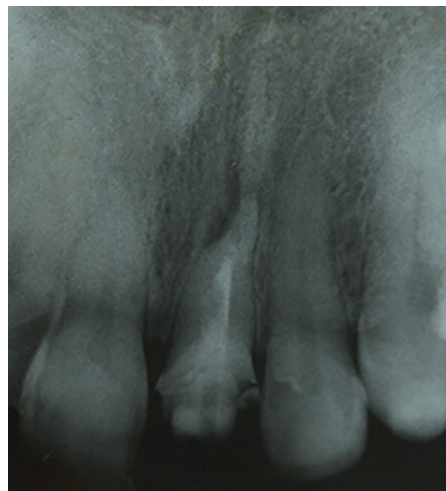
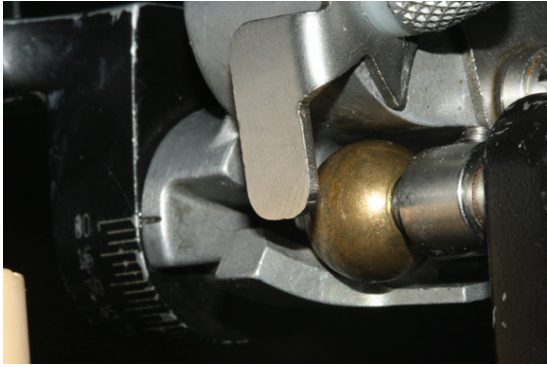


Figura 1. Periapical radiography.

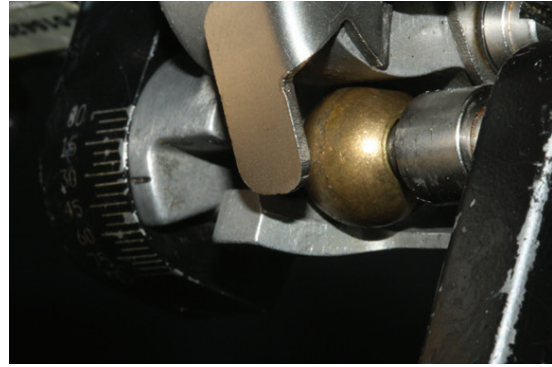


Figura 2. Protrusive record.

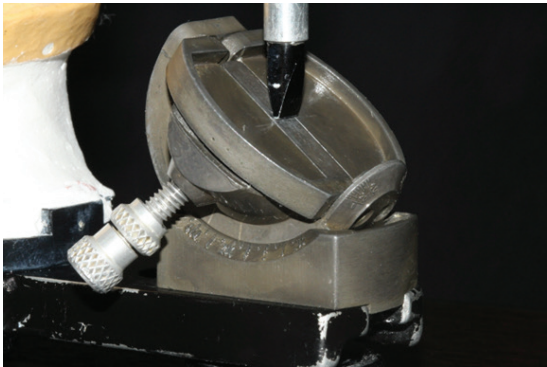
When protrusive record is on casts and when condylar track is a space between condylar guidance and condyle is seen (Fig. 3), then the condylar guidance must be lowered until it touches the condyle (Fig. 4). The incisal plate was programmed based on condylar inclination (Fig. 5). The incisal length were waxed until the incisal pin touched the incisal plate (Fig. 6). Maximum incisal length, the master casts were scanned with and without wax (S600 ARTI; zirkozahn). Dental prosthesis was designed virtually (MOLDELLIER; Zirkozahn. Alemania). (Fig.7) The prosthesis was milled in a wax (wax; Zirkozahn. Alemania.) then injected in ceramic (IPS e.Max press; Ivoclar Vivadent. Liechtenstein) The prosthesis were cemented with a dual cement (U200;3M. St Paul. MN. EEUU.) tooth 9 and white light-curing cement (Variolink Esthetic LC; Ivoclar Vivadent. Liechtenstein) (Fig. 8). Occlusal contacts were adjusted and was instructed in maintenance and hygiene.



**Figura 3.** Space between condylar guidance and condyle.



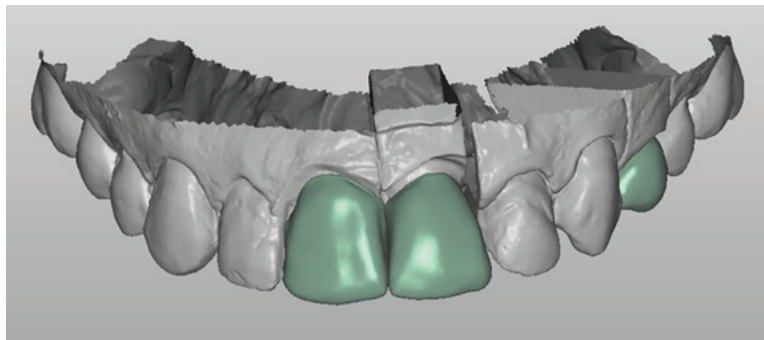
**Figura 4.** Condylar guidance touches the condyle.



**Figura 5.** Incisal plate programming.



**Figura 6.** Wax-up.



**Figura 7.** Prosthesis digital design.



**Figura 8.** Final restorations.

## DISCUSSION

The digital era of dentistry has facilitated the use procedures such as master cast, design, diagnostic casting, milled or sintered, fixed and removable prostheses in a simple way, however the prostheses must be also done in harmony with mandibular movements to avoid wear or fracture of the veneers<sup>16</sup>.

To obtain the veneers length through wax-up and then mock-up is important to: analyze frontal and lateral portrait photographs, with and without facebow, as well as photographs taken when the mouth is slightly opened and the upper lip relaxed; capture video recordings, in which the patient freely associates and, for example, counts from 50 to 55 or pronounce Mississippi<sup>14</sup>; examine smile and facial view, by examining the teeth at a 45 degrees angle, aesthetic occlusal plane<sup>15</sup> or digital tools<sup>4</sup>. Further it is also suggested to program the incisal table to obtain a precise veneers length.

In the initial phases, the veneers were mainly produced using sintering technology on a platinum foil or a refractory dye, howe-

ver prostheses made with fixed CAD-CAM result in a mean interfacial gap between the tooth and the restoration that is considerably wider than other system even though this gap is filled with cement<sup>6</sup>. Further, it has also been shown that overall survival rate of the veneers is similar to the conventional method<sup>7,1</sup>. The length of the veneers is a feature that has not been taken into account in marginal discoloration, breakdown of the bond, wear or fracture<sup>1,2</sup>. Nevertheless, the length is important so that these restorations are in harmony with the mandibular dynamics<sup>8,16</sup>, thus guarantee their survival.

For this patient, digital tools were combined with conventional techniques to rebuild the anterior guide through program the incisal table in order to customize condylar inclination and determine the accuracy length of the anterior veneers.

## Summary

Exact length of the veneers was made by programming the condylar inclination and the incisal plate of the semi-adjustable articulator.

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