



Comparative Study of the Polyvinyl Siloxane Technique With Resin-Splinted Transfer Copings Used for Multiple Implant Abutment Impressions

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The primary function of a dental implant is to act as an abutment for a prosthetic device, similar to that of a natural tooth root and crown.¹ However, implant-supported prostheses, in contrast with natural teeth, in which the periodontal ligament allows a vertical movement of 28 μm and horizontal movement from 56 to 108 μm , can only move 2 to 3 μm vertically and 12 to 66 μm in a labio-lingual direction, due to the lack of periodontal ligament and bone deflection.^{2,3} This implies the need of a excellent impression and cast, because the implants do not tolerate discrepancies accepted by natural teeth.

When the prosthesis is placed onto an osseointegrated implant, a connection produces a unified structure in which the restoration, the implants, and the investing bone act as a

Statements of Problem: The lack of passivity in implant dentistry may result in failures. Therefore, impression is the first procedure in the fabrication of a passive prosthesis. The aim of this study is to compare the polyvinyl siloxane technique with a resin-splinted transfer copings used for multiple implant abutment impression.

Methods: A master cast was obtained from an edentate ridge. From the master cast, 30 casts were obtained using 3 different impression techniques. Control technique was made with polyvinyl siloxane. Resin-splinted transfer copings in condensation siloxane

or irreversible hydrocolloid were used as test. The distances between analogs were obtained using a profile projector. Statistical analysis was carried out using 1-way analysis of variance.

Results: No significant difference among the 3 impression techniques ($P > 0.05$) was observed.

Conclusion: Resin-splinted transfer copings in condensation siloxane or irreversible hydrocolloid produced impressions as accurately as polyvinyl siloxane. (Implant Dent 2012;21:72–76)

Key Words: dental prosthesis, implant-supported, dental implants, dental impression technique

unit.⁴ Once the prosthesis applies functional loads on the implant, a certain amount of conical resorption⁵ may result from biomechanical adaptation of bone to stress. However, as bone resorption progresses, the increasing stresses in the cancellous bone and implant under lateral load may result in implant failure.⁴ The lack of passive fit between prosthesis and implant may submit these components to strain, and consequently, result in their failure, fracture of the implant, or microfracture of the bone that surrounds the implant, and bone loss.^{6–11}

Although passivity can be clinically evaluated by the prosthesis adaptation to the implant platform, it is

difficult to measure gaps of $<60 \mu\text{m}$.¹² The luting agents used for crown cementation produce a film of $<25 \mu\text{m}$ ¹³ to $41.6 \pm 46.6 \mu\text{m}$ ¹⁴ thickness acting as a compensating factor. Thus, one of the major concerns in implant-retained prostheses is with regard to the accuracy of impressions. This plays an essential role in prosthesis-implant fit.

According to Lorenzoni et al, the original implant position must be reproduced in the working cast so that prosthesis fit may be achieved without interfering in the path of prosthesis placement.¹⁵

Although there are many studies^{14–20} in the literature comparing dif-

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