

Prosthetic Case of the Month

Customized Implant Abutment with Titanium Laser Welding

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Abstract

Background: Customized dental implant abutments provide the restoring dentist and laboratory technician an opportunity to make subtle changes to the final implant restoration position. Such modifications assist in the achievement of maximum aesthetics.

Methods: A customized dental implant abutment was fabricated for replacement of a congenitally missing maxillary lateral incisor. An abutment designed for cementation was tightened in a working model, reducing it or adding

wax when necessary to provide for optimal restoration placement and maximum porcelain support. This waxed structure was cast in grade-2 titanium and laser welded to the abutment at the apical joint prior to porcelain stacking.

Results: The final implant restoration achieved superior aesthetics while retaining maximum porcelain support.

Conclusion: Customized implant abutments with titanium laser welding provide exceptional porcelain support while still achieving superior aesthetics.



KEY WORDS: Dental implant abutment, dental implant, dental prosthetics

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Following orthodontic treatment, an 18-year old female patient presented with a congenitally missing left maxillary lateral incisor and requested a single fixed implant-supported restoration. The implant was placed during orthodontic treatment with a surgical template and osteotomes. Plasma rich in growth factors with calcium sulphate was added to the buccal plate in order to achieve more bone volume. A provisional restoration was screwed directly to the implant after 4 months. When orthodontic space closure was finished achieving an adequate mesio-distal width for the final restoration, the provisional restoration was modified in order to achieve aesthetics that closely mimicked that of the planned final restoration in regard to emergence profile, interdental contours, contact points, and gingival contour at the facial margin.

After 4 months, these goals were achieved and a fixture-level impression was taken. A lateral incisor was waxed-up on the master cast and a facial/lingual index of the expected final restoration was created. An abutment designed for cementation was tightened in the working model, reducing it or adding wax when necessary to provide enough metal to support porcelain. A silicone index was utilized to verify that enough space for aesthetic porcelain was allowed. This waxed structure was cast in grade-2 titanium and laser welded to the abutment at the apical joint. After confirming clinically the precise and correct form of the customized metal abutment, special porcelain for titanium was applied. The final aesthetics of the restoration demonstrated improved integration, shape and shade.

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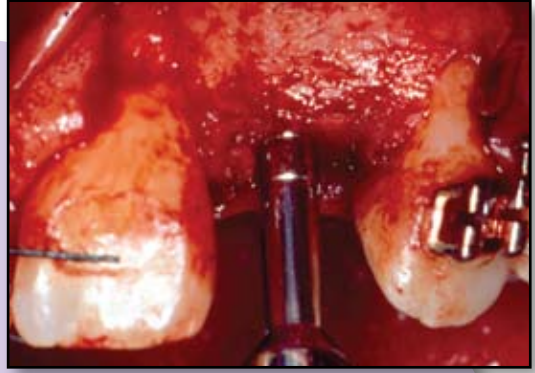
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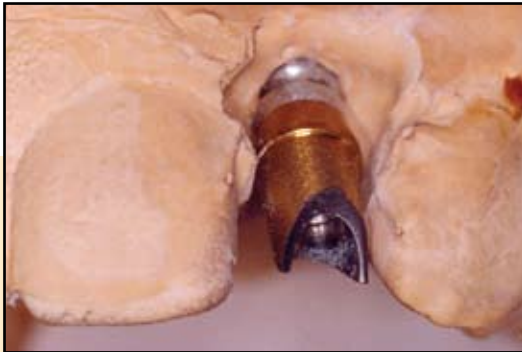
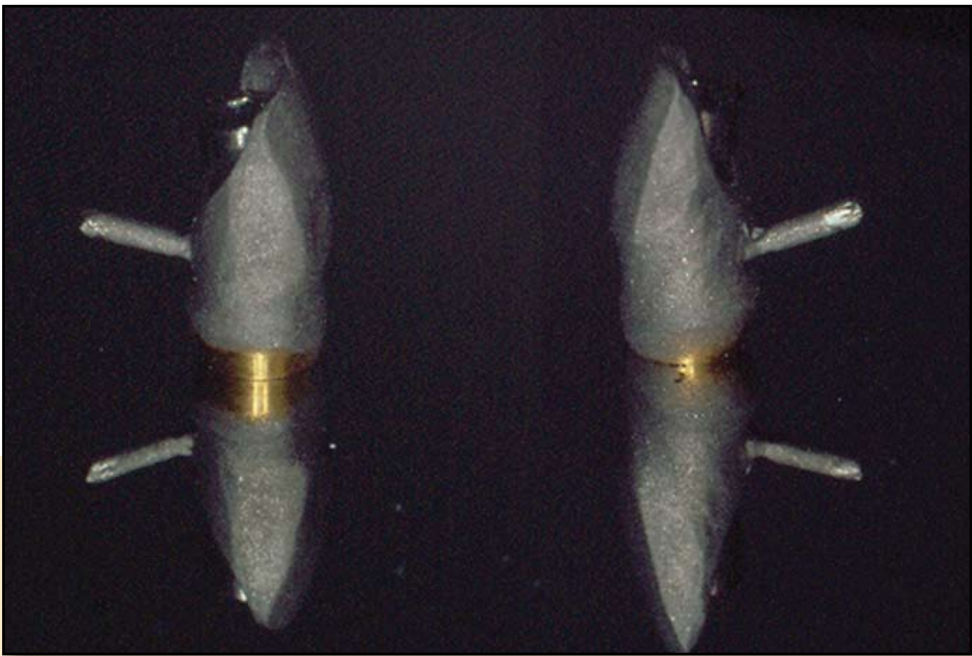
Disclosure

The author reports no conflicts of interest with anything mentioned in this article.

Acknowledgement

The author mentions his gratitude to Pedro Lorente, DDS for the orthodontic treatment depicted, and to Pedro Moreno CDT and Nuria Pérez CDT for their technical assistance.







Products used for this case

- Biomet-3i™ Osseotite MicroMiniplant
- Lifecore Biomedical Inc, Calmatrix calcium sulphate
- Biomet-3i™ GingiHue abutment
- Orotig grade 2 titanium
- Orotig Titec 60L laser welder
- Orotig TiKron porcelain