matrix® SCIENTIFIC WHITE-PAPER

Mechanical stability of fully personalized, abutment-free zirconia implant crowns on a novel implant-crown interface

An in vitro study

Investigators


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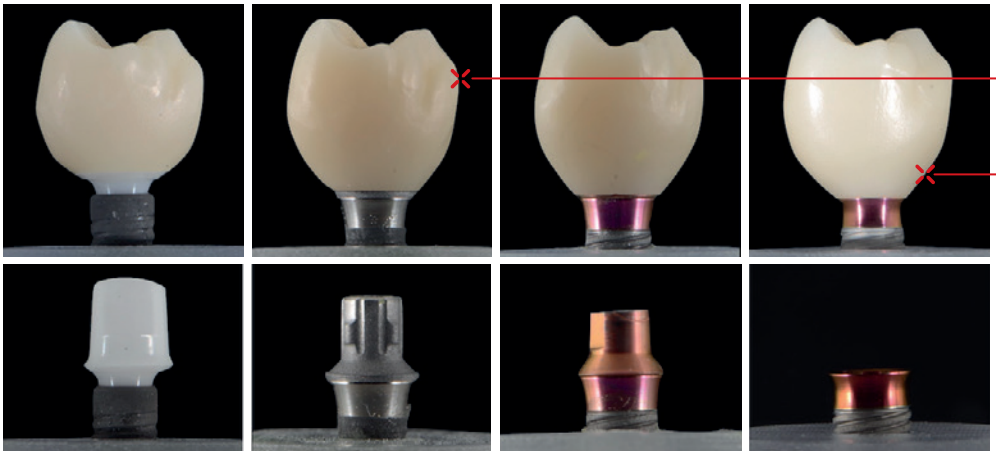
Objective

To test failure load and failure mode of a novel implant-crown interface specifically designed for the fabrication of fully personalized and abutment-free monolithic zirconia CAD-CAM crowns compared to conventional implant-abutment interfaces involving prefabricated or centrally manufactured abutments for zirconia CAD-CAM crowns.

Materials



Straumann® Zr Abutment | Straumann® Variobase | TRI® Ti-Base | matrix® Abutment-Free

All implants restored with monolithic CAD-CAM zirconia crown.

N=12 each group

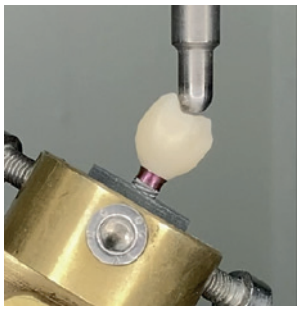
Strong as an Abutment

CONCLUSION

Based on the findings of conducted in vitro study, the authors conclude that the abutment-free **matrix®** implant system offers similar mechanical stability compared to conventional abutments.

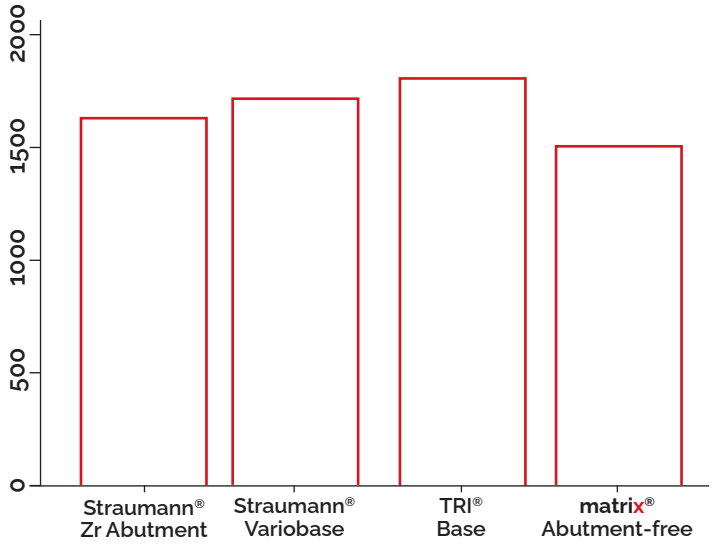
Methods

Artificial Ageing
- **1.2 million** cycles
- **30°** angulation
- Thermocycling **5-50°C**



Measurement of failure load
- Set-up according to **ISO 14801**.
- **30°** angulation.
- Static load increase until failure.

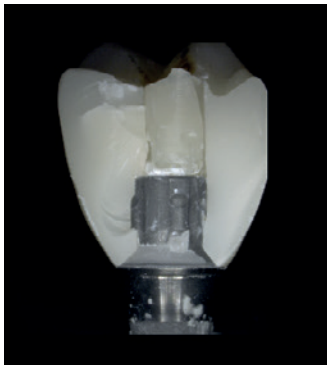
Results



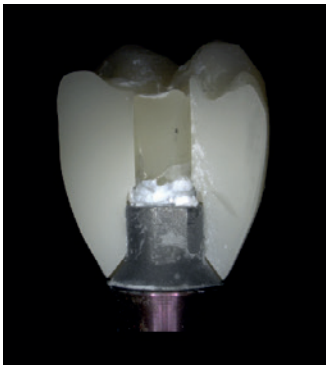
- All groups exhibited high failure loads.
- No statistical difference between **matrix®** and Straumann® Vario-base and Zr Abutment.
- **0%** screw loosing of TRI®-Base, **16.7%** of screw looseing with Straumann® Variobase.
- **83.3%** of Straumann® Zr Abutments had broken cone before crown was fractured.

Pictures

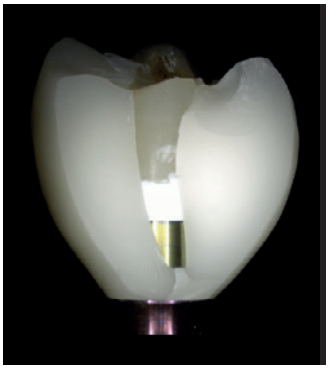
Straumann® Zr Abutment



Straumann® Variobase



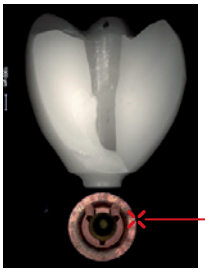
TRI® Base



matrix® Abutment-free

Findings

83.3% of Straumann® Zr. Abutments had abutment fracture below implant shoulder



matrix® interface intact or crown fracture extending into connection

Learn more on www.tri.swiss