

Fit evaluation of soft milled zirconia and CoCr by microcomputed tomography.

Purpose. To evaluate the absolute marginal fit of presintered Co-Cr and zirconia FDPs by using micro-CT

Material and Methods

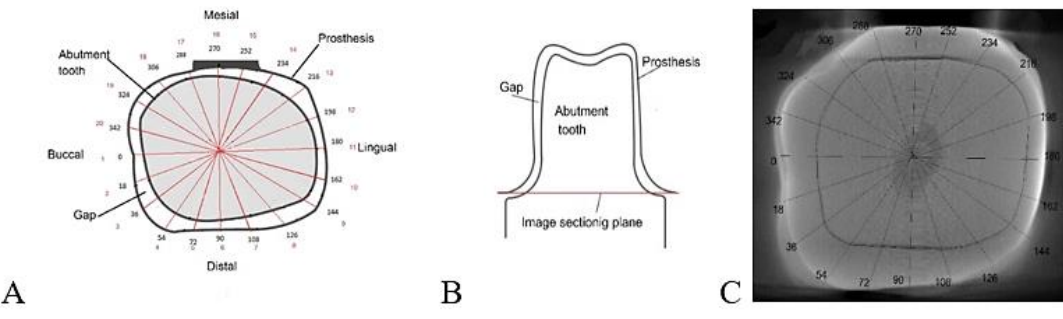
- Maxillary first premolar and first molar prepared (1.2-mm chamfer, 2-mm occlusal reduction) → Metal model generated (N=12).
- Dies scanned and assigned to 1 of 2 groups to receive prostheses from presintered Co-Cr or zirconia .
- Each framework seated on its model without load application.
- Abutments scanned using micro-CT.
- Circle with 10 diameters and 18-degree step projected at the images center.
- Absolute marginal discrepancy and marginal gap mean values measured.
- Over- and under-extended margins determined.

Statistical Analysis

- Equality of variances using Levene test.
- Materials and abutments compared using t test.
- ANOVA and Bonferroni correction for multiple pairwise comparisons. ($\alpha=.05$)

Null hypotheses

- No significant difference in marginal fit measurements between materials.
- Perfect adaptation between restorations margins and teeth finish lines

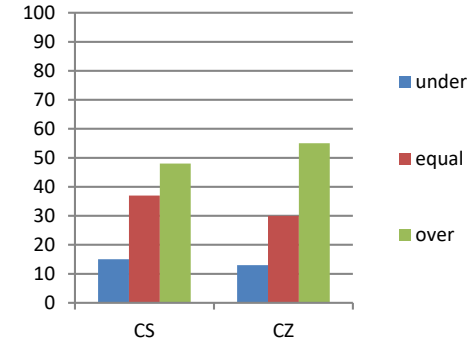


Circle with 10 diameters positioned on 2D horizontal image. A, Schematic representation. B,. Sectioning plane position. C, Micro-CT image with circle projection.

Discussion and Conclusions

1. Presintered materials presented clinically acceptable fit.
2. Post-milling sintering process did not induce a detectable distortion of the FDPs.
3. Accurate scanning and margins precise localization can reduce restorations marginal overextensions.

Results



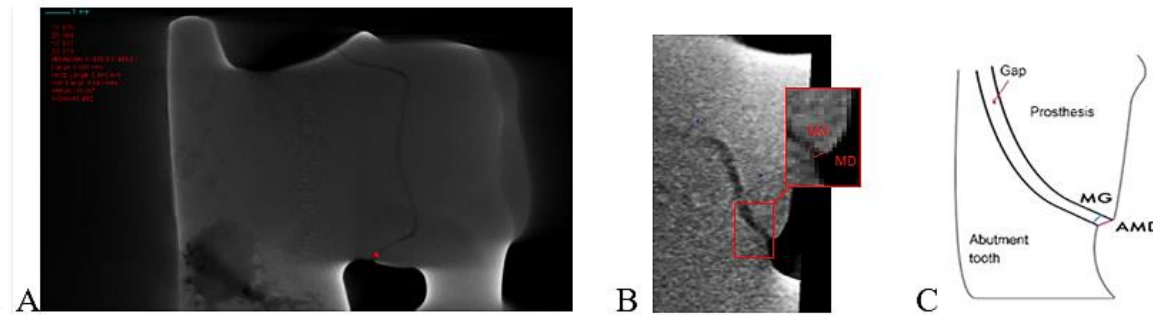
Framework margin extension over tooth preparation margin (%) for Ceramill Si (CS) and Ceramill Zi (CZ).

Comparison	AMD	MG
Ceramill Si	66 ±14	45 ±9
Ceramill Zi	61 ±12	39 ±7
<i>P</i>	.939	.939

Comparison of absolute marginal discrepancy (AMD) and marginal gap (MG) (mean ±SD) (μm). ($\alpha=.05$)

Comparison of absolute marginal discrepancy (mean ±SD) between groups for each abutment (μm). ($\alpha=.05$)

Comparison	All materials	Ceramill Sintron	Ceramill Zi	<i>P</i>
Premolar	69 ±12	62 ±13	64 ±12	.10
Molar	41 ±9	53 ±10	41 ±10	.385
<i>P</i>	<.001			



Marginal gap (MG) and absolute marginal discrepancy (AMD) representations. A,B: Micro-CT images, C: Schematic image