

“

Intrasubject comparison of digital vs. conventional workflow for screw-retained single-implant crowns: Prosthodontic and patient-centered outcomes

Vincent Delize¹; Alice Bouhy¹; France Lambert²; Marc Lamy¹.

Abstract

Objectives: The aim of this intrasubject clinical study was to measure and compare prosthodontic and patient-reported outcome measures (PROMs) in the fabrication of implant-supported, all-ceramic single crowns with a full digital workflow and a conventional workflow.

Material and methods: All patients were treated with V3 or C1 implants (MIS Implants Technologies). Thirty one patients were subjected to first a digital (test group) and then a conventional impression (control group) at the same visit. From the intraoral optical scanner data (IOS), a screw retained, monolithic crown was delivered according to a complete digital workflow (no master cast). The technician digitally designed the monolithic Zi crowns, using a CAD software (TRIOS®, 3Shape); STL files and shades were then sent to the CAM production center (M-Center, MIS Implants Technologies). In the control group a veneered crown on a zirconia (Zi) frame was fabricated. Both crowns were assessed during the clinical

stages of try-in. Prosthodontic outcomes (contact points, occlusion, PROMs, and esthetic results using the white esthetic score [WES]) were assessed.

Results: Occlusion and interproximal contacts showed comparable results for the two workflows ($p = 0.37$ and $p = 0.36$, respectively), whereas the global WES was significantly higher ($p < 0.0001$) in the control group. Patient-reported outcome measures (PROMs), using visual analog scales (VAS), were significantly better for IOS than for conventional impressions ($p = 0.0098$). On the contrary, patients' perception of the esthetic outcomes showed significantly higher value ($p < 0.0001$) in the control group.

Conclusions: Both workflows allowed the delivery of ceramic crowns within two appointments. The clinical fit was acceptable in both groups. A better esthetic outcome, in both patients' and clinicians' opinions, was found in the control group. PROMs showed higher satisfaction with the IOS.

Fig. 1 Conventional workflow (Control) versus digital workflow (Test)

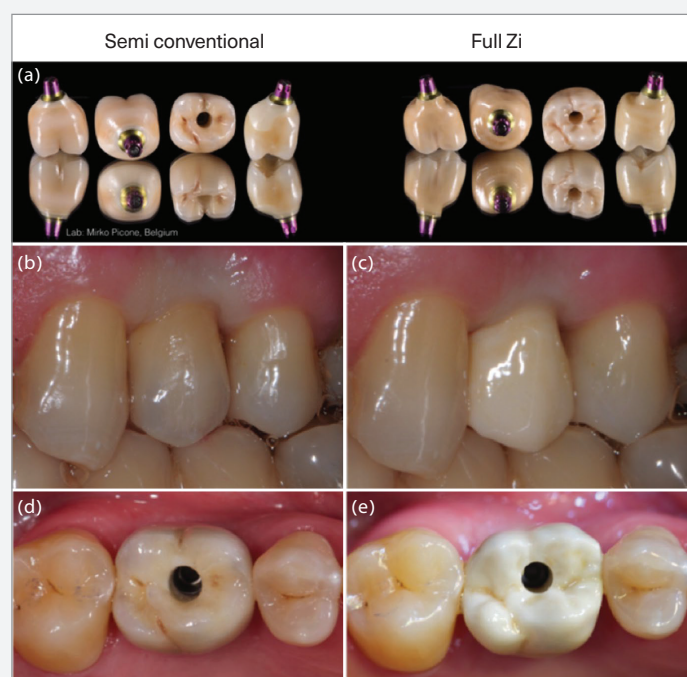
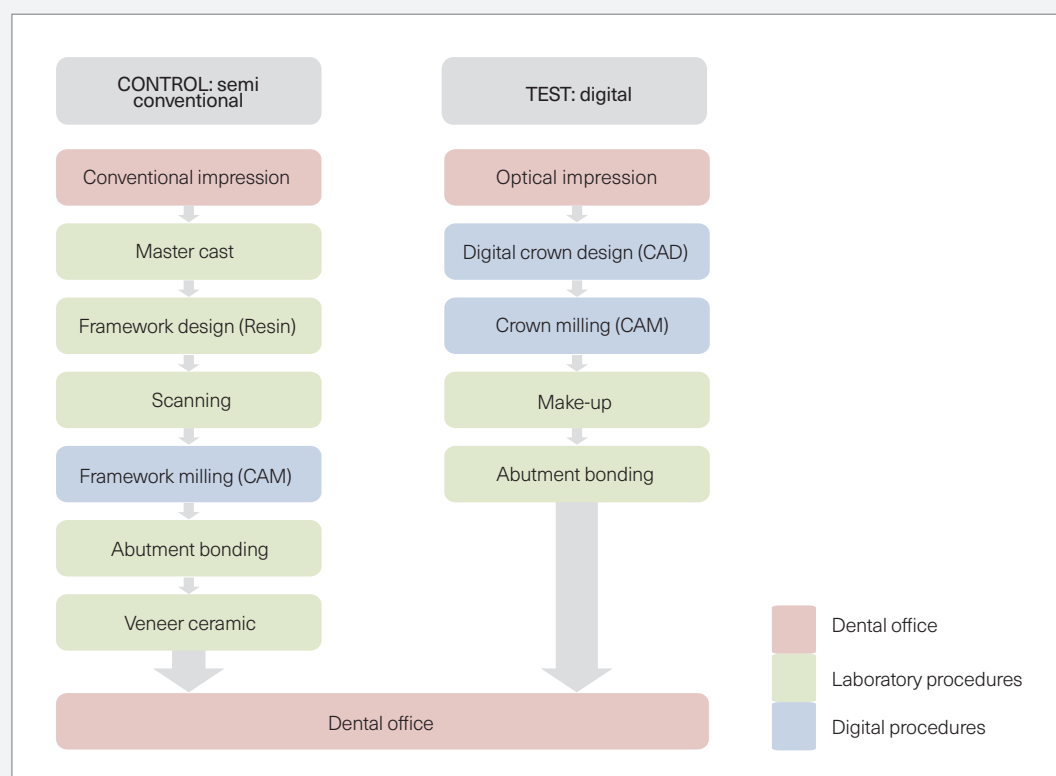


Fig. 2 Comparisons of digital (a, c, and e) and conventional (a, b, and d) crowns for two patients (lateral and occlusal views)

Authors' affiliations

¹Department of Removable Prosthodontics, Faculty of Medicine, University of Liege, Liege, Belgium

²Dental Biomaterials Research Unit, Department of Periodontology and Oral Surgery, CHU of Liege, Faculty of Medicine, University of Liege, Liege, Belgium