Espertise™ Scientific Facts

# Clinical Performance of the Lava™ Chairside Oral Scanner C.O.S. Part 2: Results of the Clinical Evaluation

## Investigators

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## Aim of the Study

Aim of this clinical study was to compare the fit of all-ceramic posterior crowns resulting from Lava C.O.S. scans with crowns resulting from traditional impression technique.

## Study Design at a Glance

**Design:** randomized, examiner blinded
**Test Device:** Lava Chairside Oral Scanner C.O.S.
**Control Material:** Express™2 Penta Putty / Express™ 2 Ultra Light Body Quick
**Number of Patients:**18
**Number of Restorations:** 36 Lava Crowns
**Clinical Procedure:** Crown preparation for all-ceramic crowns (one preparation per patient), placement of retraction cords, scanning of prepared tooth/adjacent teeth/antagonists (quadrant scans), bite registration scan, 2-step impression of prepared tooth, antagonistic impression. Randomized allocation of impression procedure sequence (first scan or first impression). In case of Lava C.O.S.: Fabrication of a stereolithographic model (SLA) and concurrently a Lava Zirkonia coping. In case of 2-step impression: Pouring of impression, scanning of the gypsum model by means of Lava Scan ST, fabrication of a Lava Zirkonia coping.

**Evaluation Procedure:** Intraoral evaluation of Lava crowns generated from Lava C.O.S scans and conventional impressions by 2 calibrated and blinded examiners. Forced consensus in case of disagreement between examiners. Evaluation criteria: Marginal contour, marginal gap, occlusion and interproximal contacts. Evaluation instruments: dental probes with defined tip diameters (Deppeler, Switzerland), occlusion foil, dental floss, dental mirror.

First lower molar, prepared for a Lava™ crown

Scan of the first lower molar. Buccal view with antagonists.

Lava™ crown after luting with RelyX™ Unicem.

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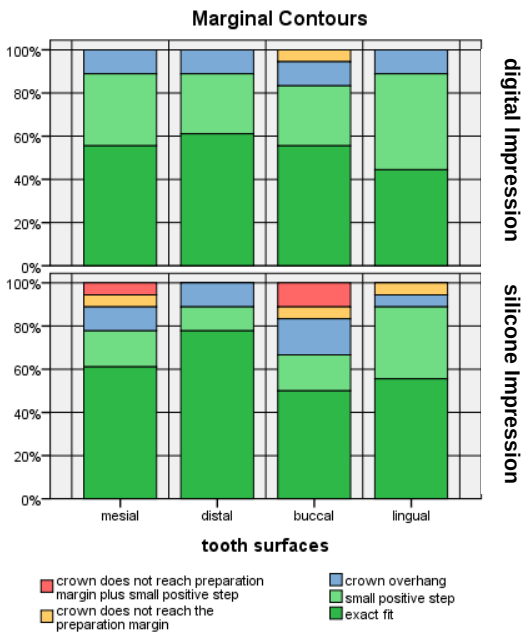
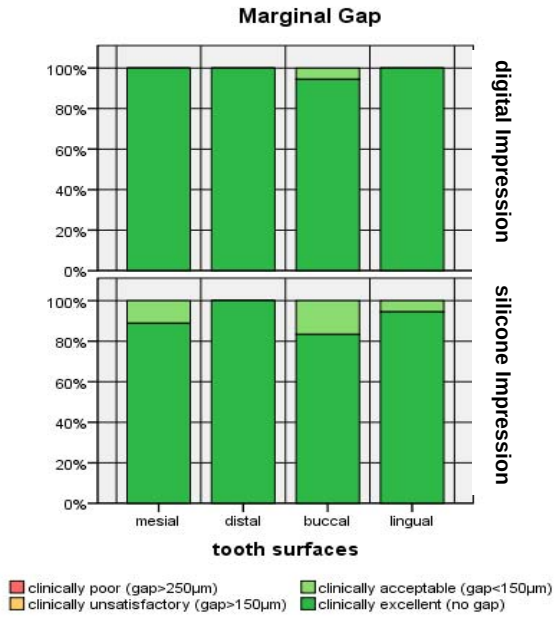
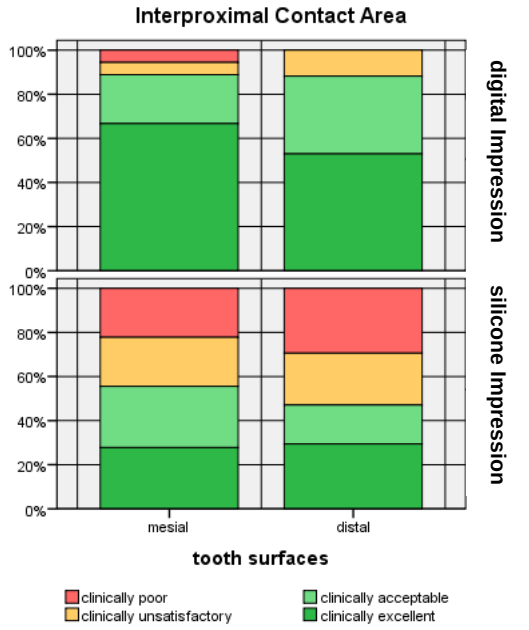
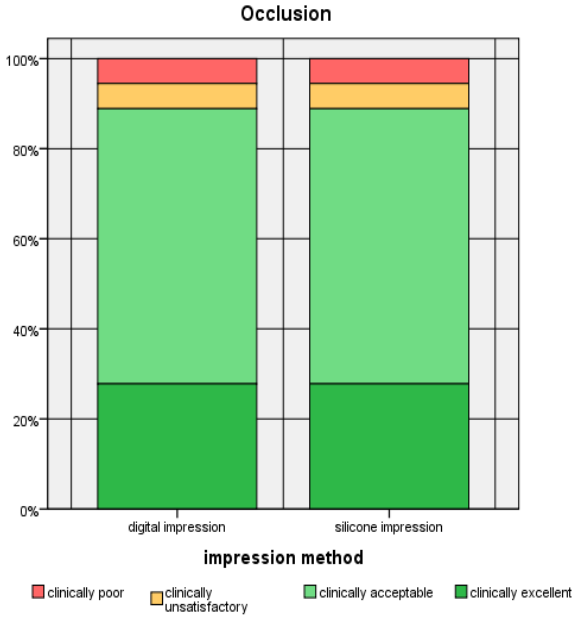
## Results




## Conclusions from Report

1. There was a clear trend towards better marginal quality for crowns generated from Lava C.O.S. scans, which can be explained by the fact that in the Lava C.O.S. group the Zirkonia copings were designed directly from the Lava C.O.S. scan data, while in the conventional impression group first a gypsum model was created, which was then scanned as the basis for the Zirkonia coping.
2. The interproximal contact quality was better in the Lava C.O.S. group compared to the control group.
3. There was no difference in the occlusal quality between the two groups.
4. If marginal gaps occured, they were below 150 µm, which is considered to be clinically acceptable.

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