Influence of Print Angulation, Layer Thickness, and Post-processing to the Dimension of Stereolithographic Implant Surgical Guides

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Introduction

- In office 3D printers allow us to print implant guides ourselves.
- While 3D printers are now readily available, not much literature on the printing accuracy of these in office printed implant guides.
- More importantly, lack of training and technical knowledge can lead to an inaccuray of these guides.
- This study examined the influence of printing angulations, printing layers, and post-processing methods to implant guides tube and guide dimesional accuracy.

Materials & Methods

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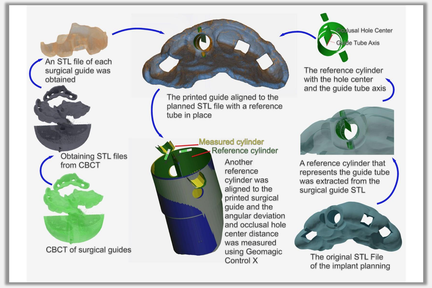

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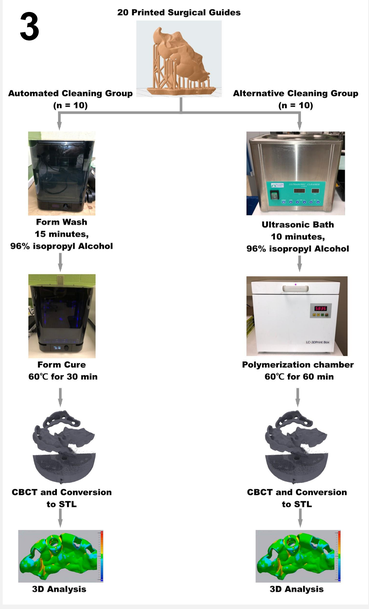

Results

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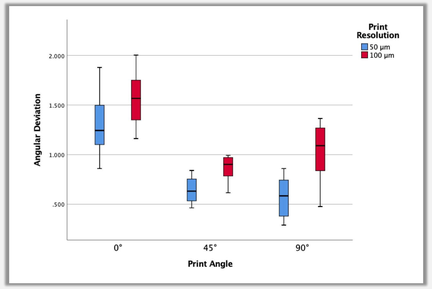

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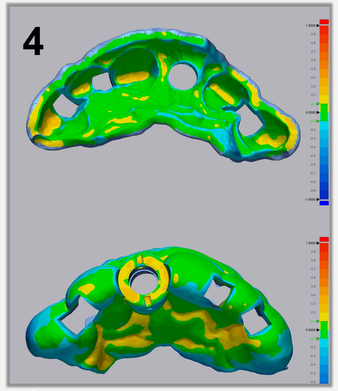

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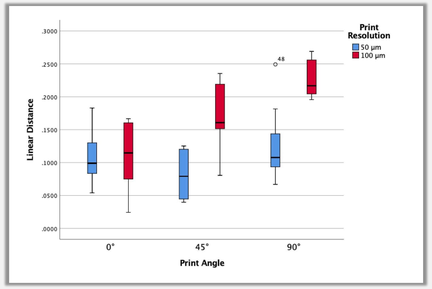

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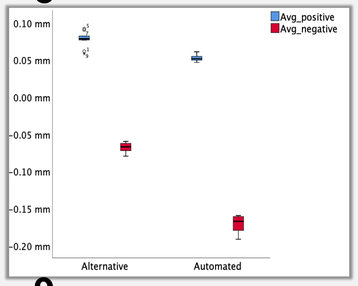

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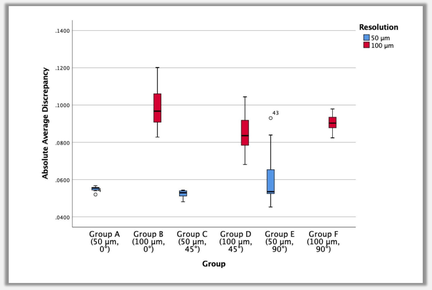

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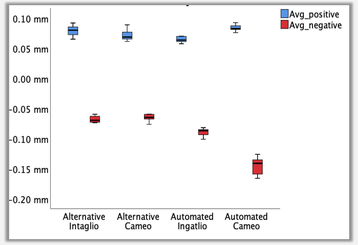

Discussion

- Interm of guide tube deviations, printing at 50µm is better than 100µm.
- The influence of angulation printing is less with 50µm printing
- Angulation printing at 45° and 90° changes more angulational deviation than linear deviation.
- 0°gives the best linear but theworst angulation.
- Automated post-processing produces more negative error by removing more material especially in the cameo surface.
- Hand wash in combination with ultrasonics provides preserve better guide dimension especially in the area of intaglio surface
- The results highlights the important of staff training for in office guide fabrication.
- However, the in patient results may be different than this in vitro study.

Conclusion

- Printing layer, printing angulation, and post-processing can have an effect on the guide tube as well as guide dimension.
- Clinicians should train their staff well to understand the effects of these factors when fabricating implant guides in office.

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