



The Accuracy of Tilted and Axial Guided Implant Placement in the Edentulous Mandible

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Introduction

- The prevalence of dental implants has increased rapidly and provide a greater improvement in OHRQoL than traditional prosthodontics.
- Advanced surgical and prosthodontic techniques have been developed to provide more patients with access to this treatment modality.
- Fully guided surgery has been proposed to reduce surgical complications
- Accuracy of guided implants has been ascertained in fully edentulous implants, but there has not been an evaluation of the accuracy of intentionally tilted implants.

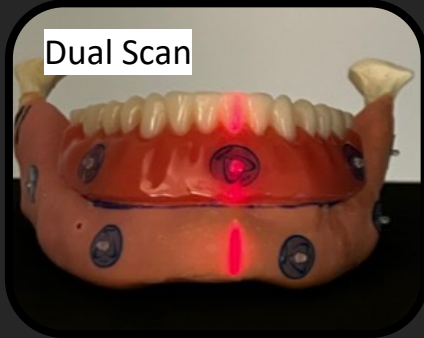
Objective: The aim of this lab-based study is to compare the accuracy of tilted to axial implants using a guided surgical approach in an edentulous model.



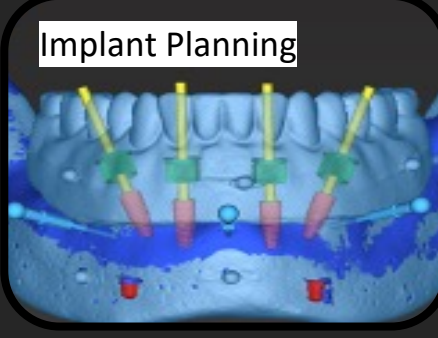
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Material and Methods

Dual Scan



Implant Planning



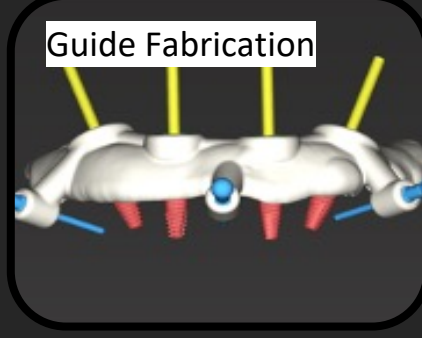
Test Group:

Seven models planned with the two distal implants in a *tilted* orientation

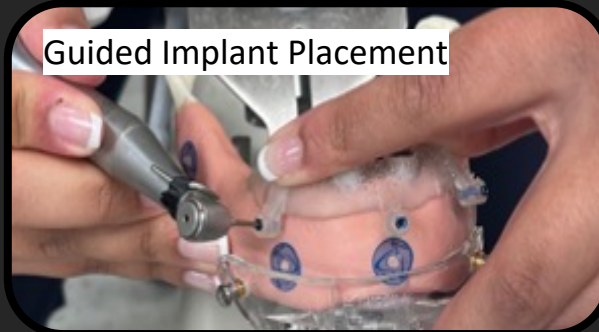
Control Group:

Seven models planned with the two distal implants in an *axial* orientation

Guide Fabrication



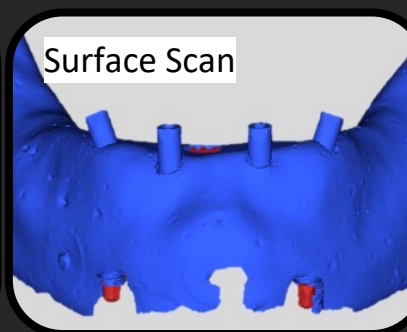
Guided Implant Placement



Scanbody Placement



Surface Scan



Treatment Evaluation

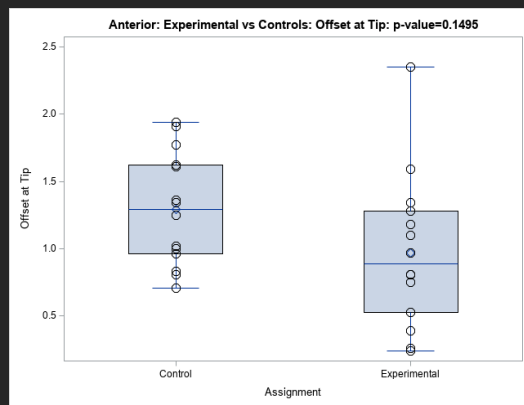
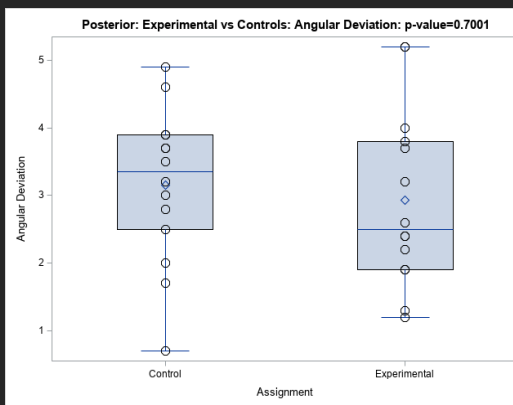
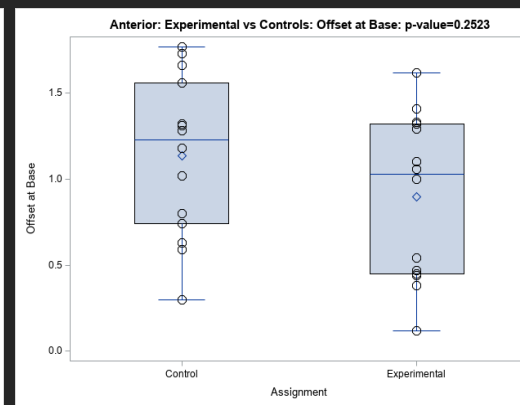


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Results

- No significant differences were observed between the experimental and control groups in terms of Angular Deviation, Offset at Base, or Offset at Tip.
- Secondary analysis reveals NSSD, except anterior to posterior implant comparisons of the experimental condition.

Exp Vs. Cont Deviations	Control Mean	Experimental Mean	Difference	p-value
Angular Deviation (°)	3.15	2.93	0.22	0.7001
Offset at Base (mm)	1.18	1.28	-0.10	0.6409
Offset at Tip (mm)	1.33	1.42	-0.09	0.6931



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Discussion

- NSSD's were noted between control and experimental groups for the primary outcome
- The deviation values recorded for this in vitro study are comparable to previously reported values.

Conclusions

- Intentionally tilted implants may not be less accurate using a fully guided protocol than axially oriented implants.
- Existing safety margins in planning may be adequate to safely place intentionally tilted implants in an edentulous model
- Further in vivo research is warranted to fully answer this clinical question

References

