

# In Vitro Study Confirms Superior Positional Accuracy of Thommen Medical Keyless Guided Surgery System

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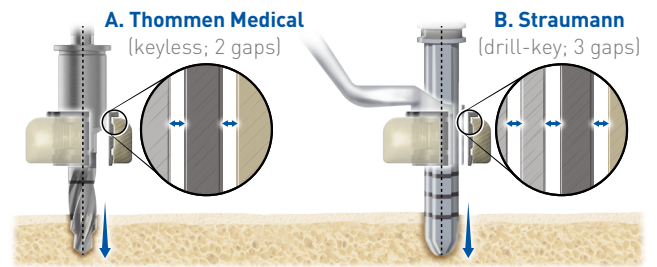
## Background



Static computer-assisted implant surgery (sCAIS) has improved the accuracy of dental implant positioning versus free-handed placement



There is little evidence on the accuracy of freehand placement compared to sCAIS placement with keyless and drill-key systems



## Aim



Compare accuracy of free-hand and sCAIS placement with implant systems from Thommen Medical and Straumann\* using keyless and drill-key designs in fresh and healed sites in partially edentulous maxillary in vitro models\*\*



## Study Design

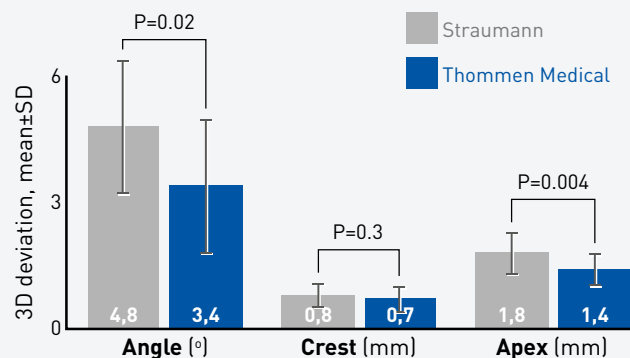
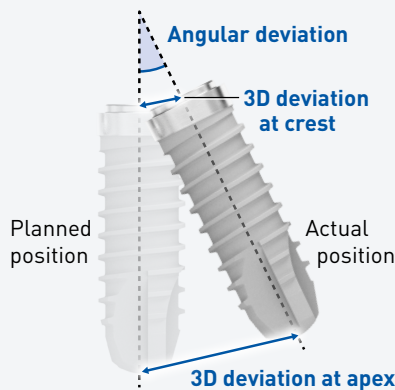
Implant placement protocol†	sCAIS
Thommen Medical (keyless)	n=18
Straumann (drill-key)	n=18

## Results



Higher implant positional accuracy with Thommen Medical keyless versus drill-key system††

### Significantly smaller 3D deviation with keyless versus drill-key system in fresh extraction sockets



Overall, **significantly higher implant positional accuracy** was found with the Thommen Medical keyless system for angular (P=0.03) and apical deviations (P=0.045)

**When only considering healed sites**, no statistically significant difference was found between the systems

## Key Takeaways



✓ This in vitro study found significantly **higher implant positional accuracy with the Thommen Medical keyless guided surgery versus a competitor's drill-key system**. This was pronounced in **extraction sockets**, while no significant difference between the systems was observed in healed ridges.

✓ Differences between the systems may be due to drilling system design and protocol; the additional gap in the drill-key versus keyless system may add movement, providing tolerances between the surgical components and affecting the final implant position.

\*The implants tested were parallel-walled and self-tapping with a shallow thread depth of 0.8 mm (Straumann, Bone Level 4.1x12 mm RC) and 1 mm (Thommen Medical, ELEMENT MC 4x12.5 mm).  
 \*\*The study used partially edentulous maxillary models simulating natural bone density D2 with a cortico-spongius architecture. †The study also compared the accuracy with freehand placement and a sleeveless guide-hole design; for more information, please see the full publication. ††The freehand placement protocol showed the highest deviations. For more information, please see the full publication.