

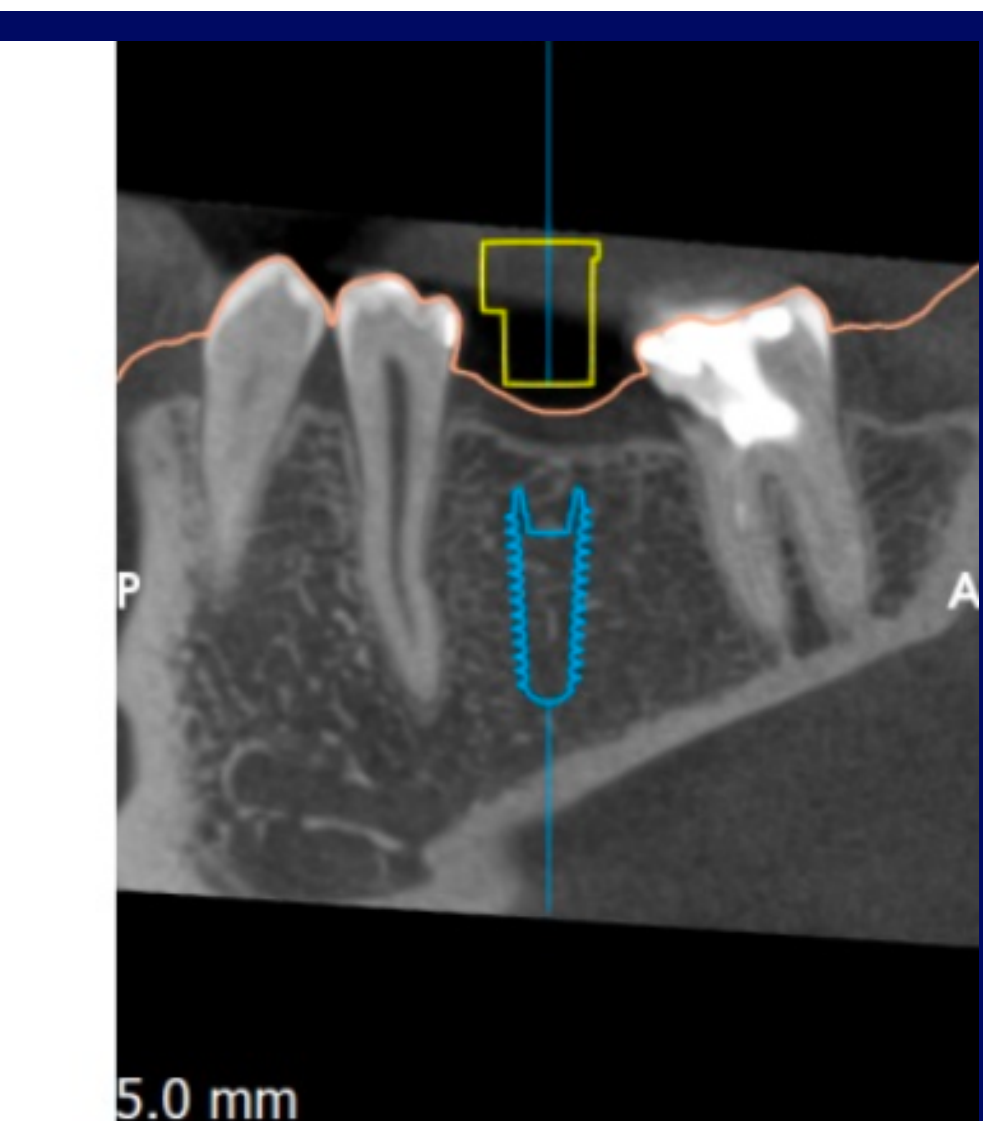
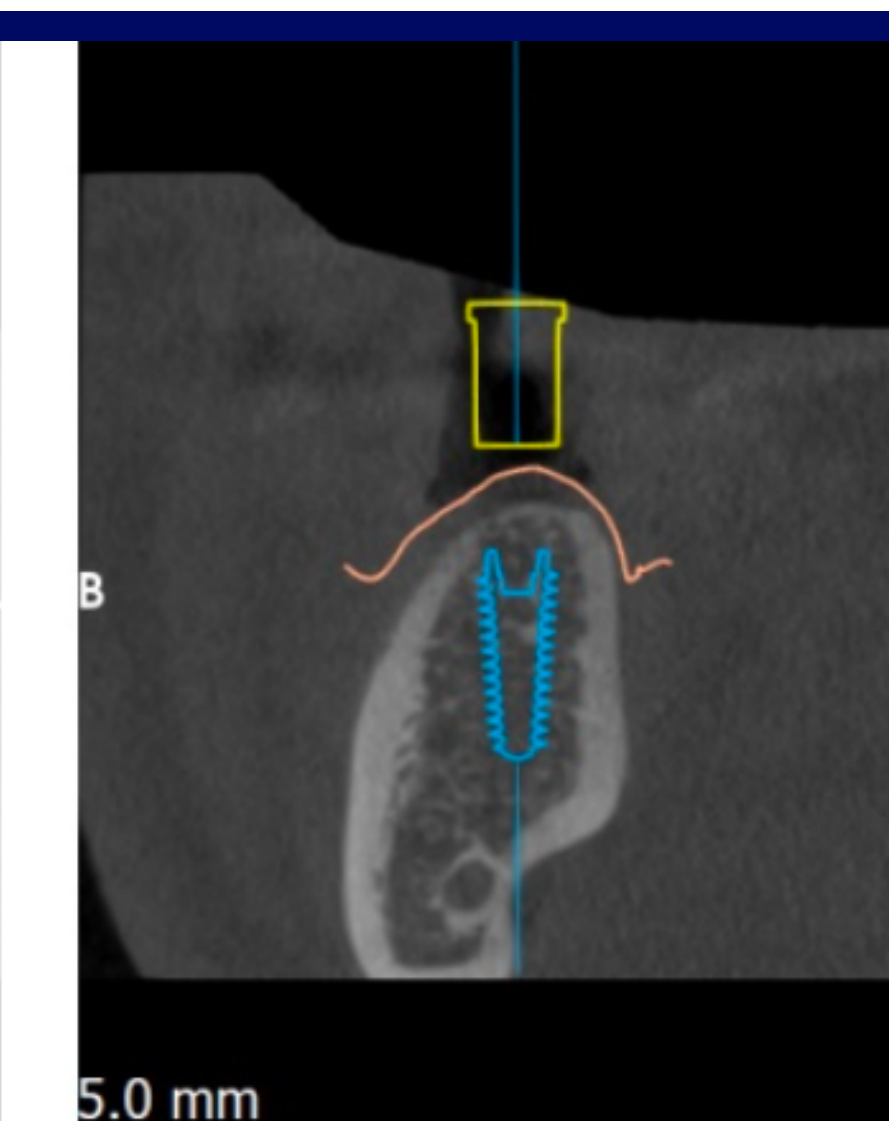
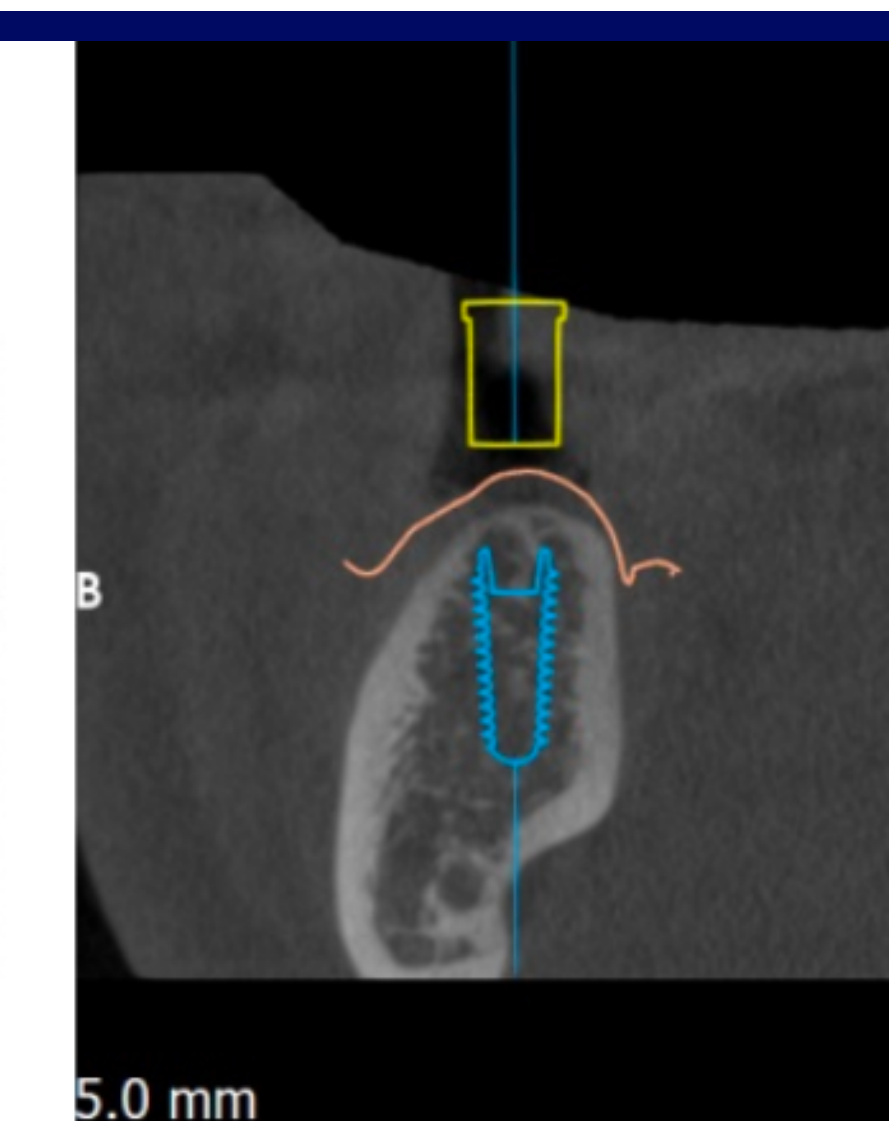
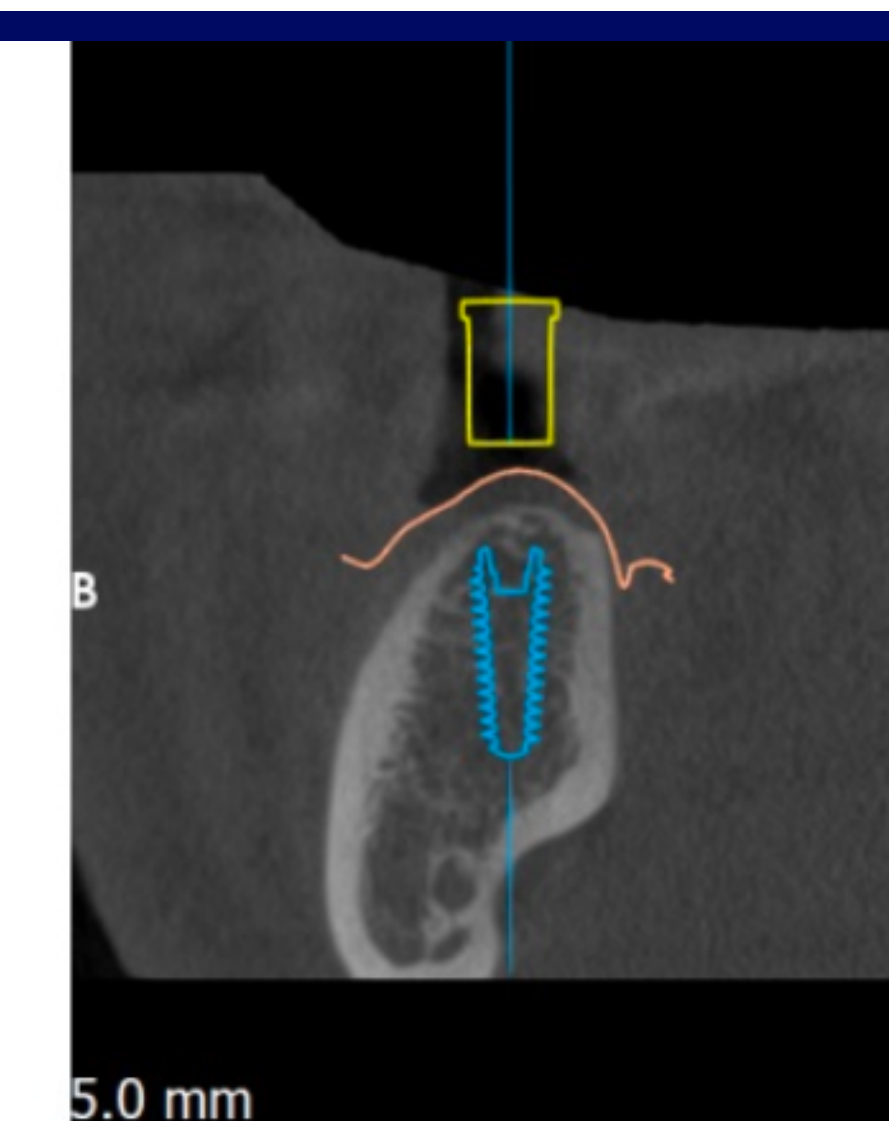
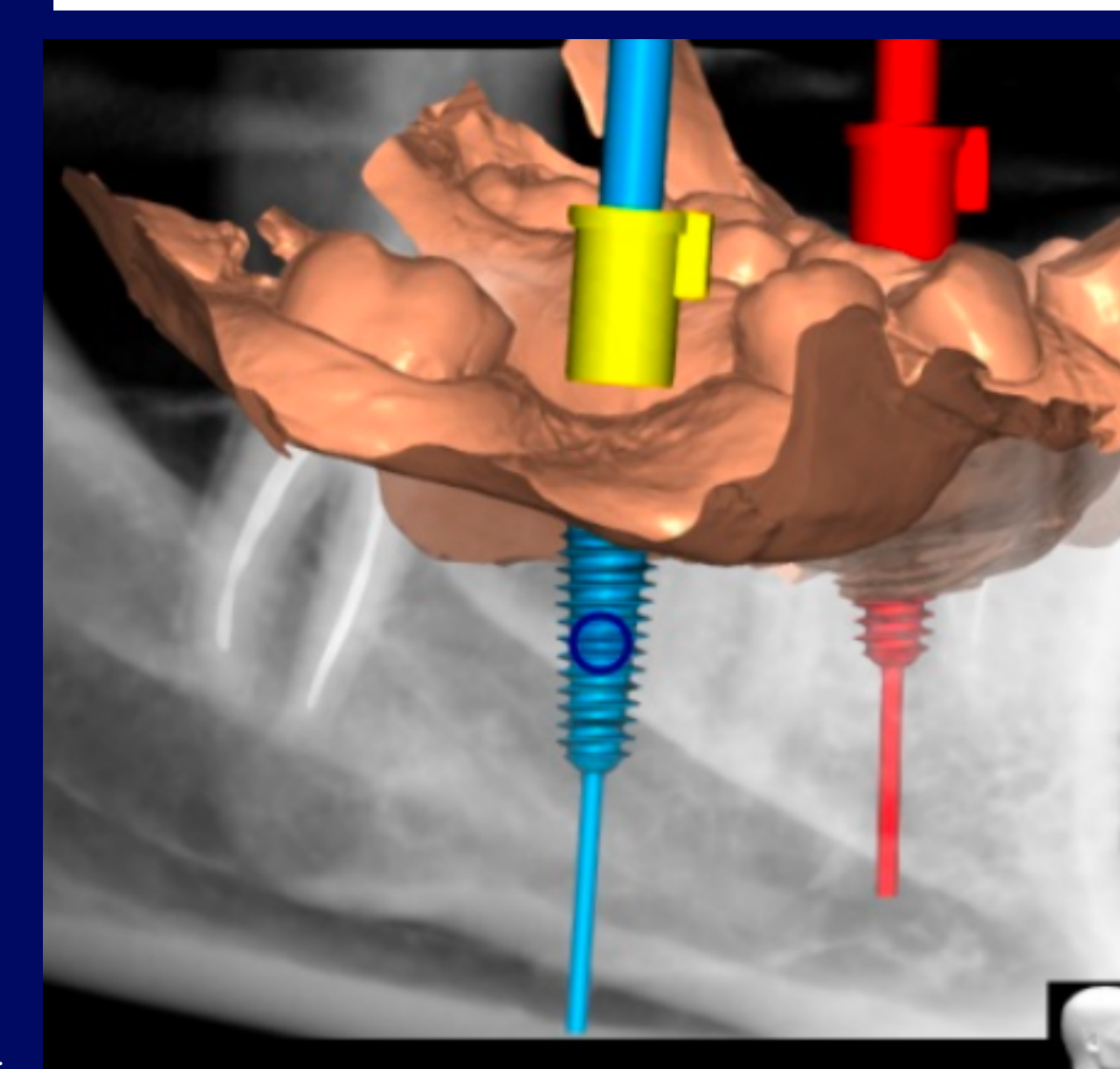
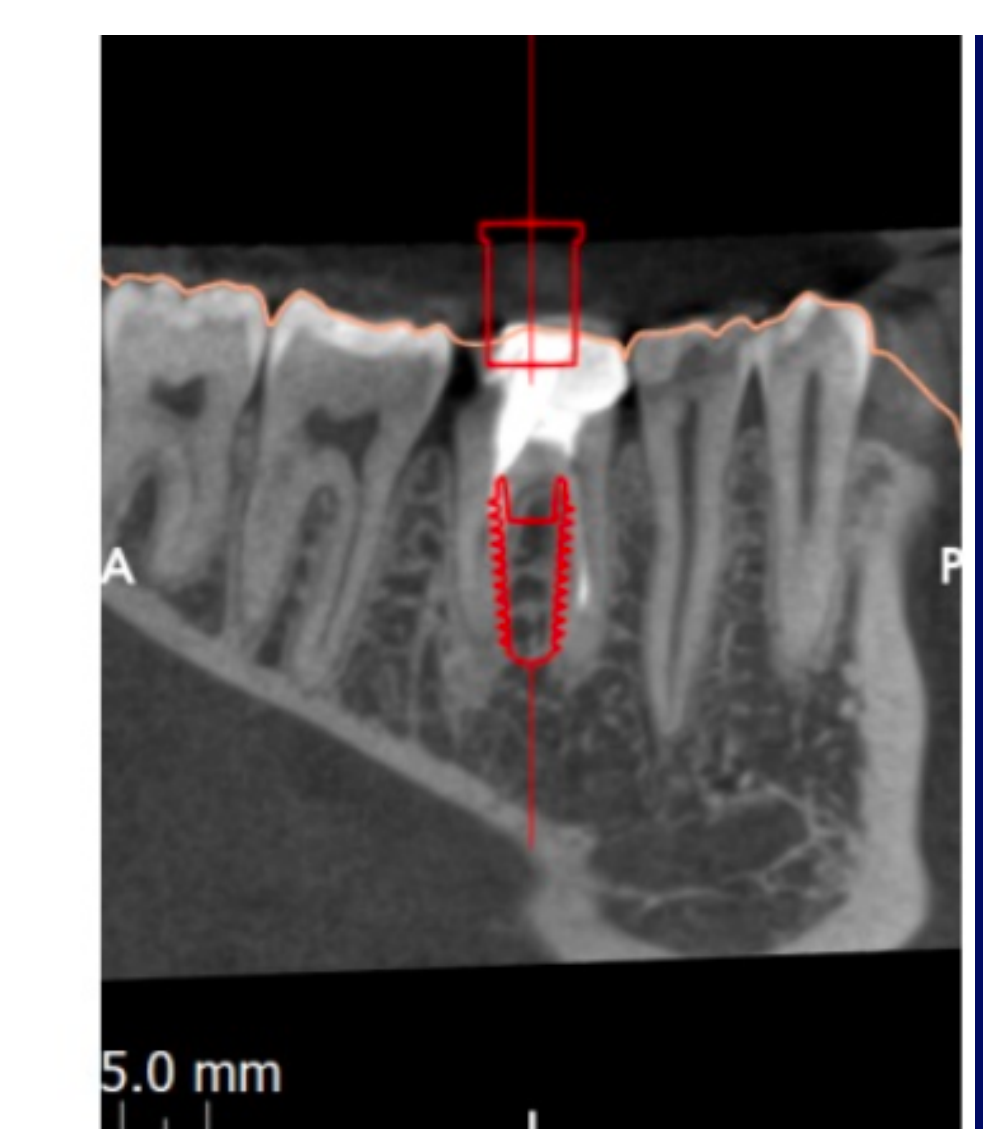
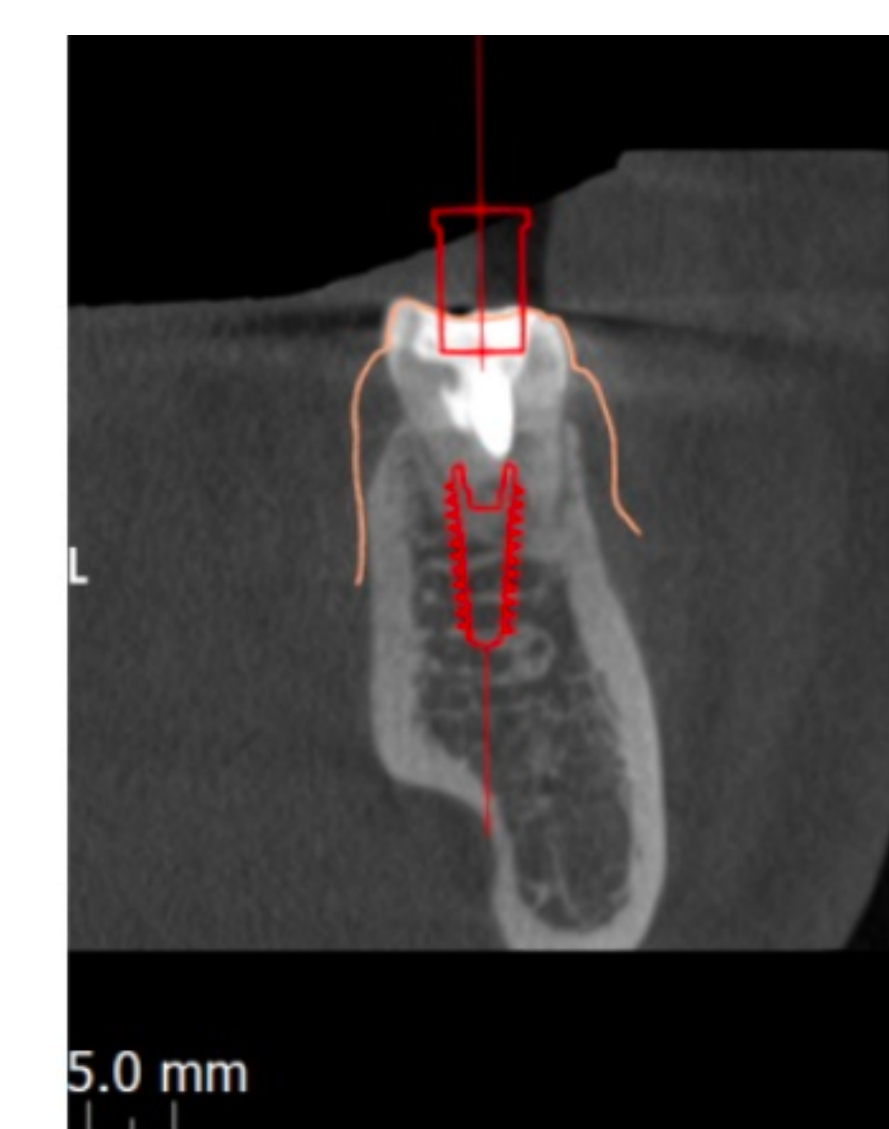
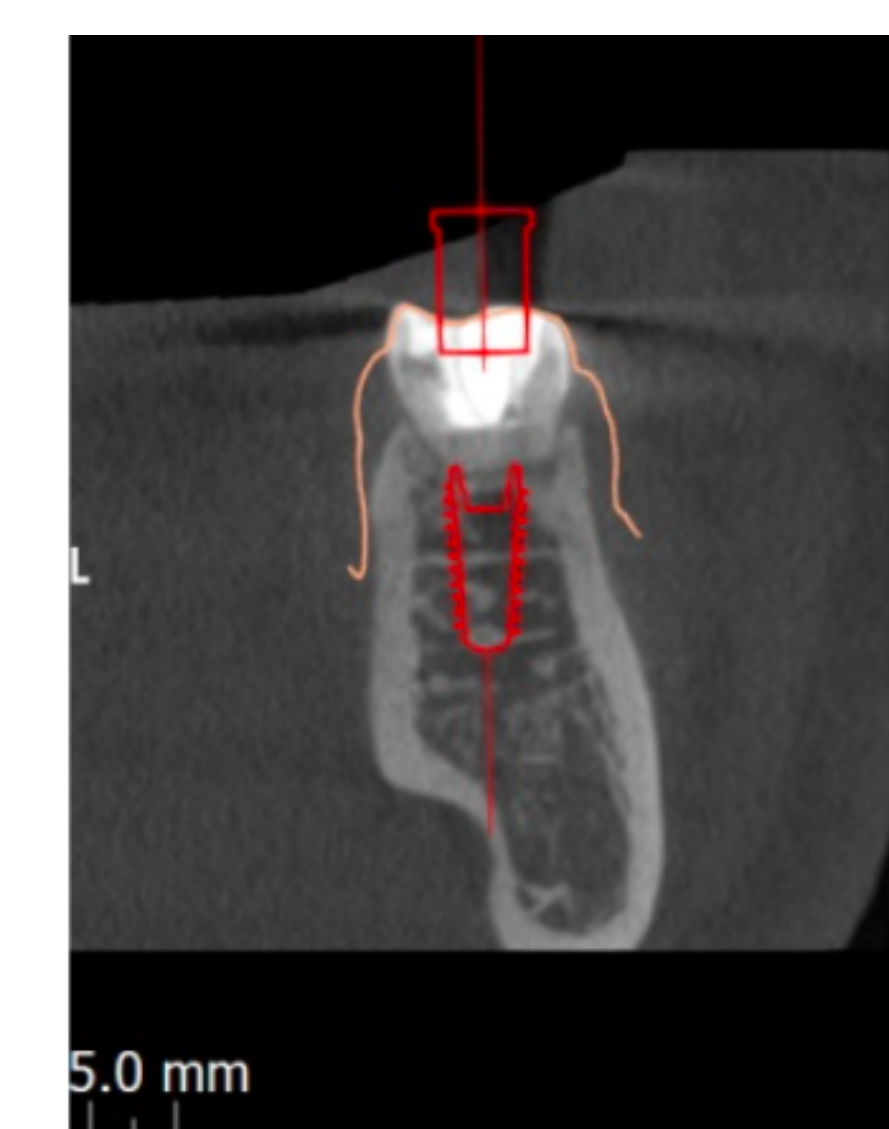
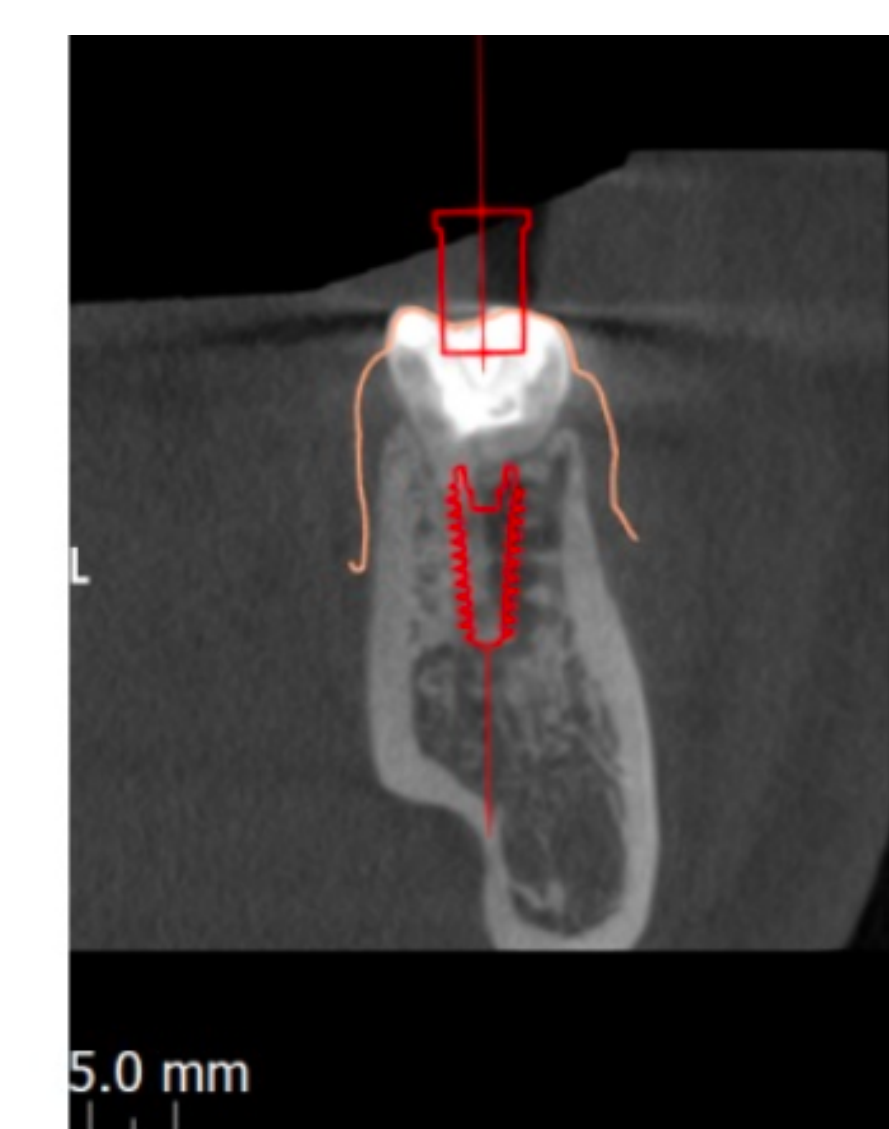
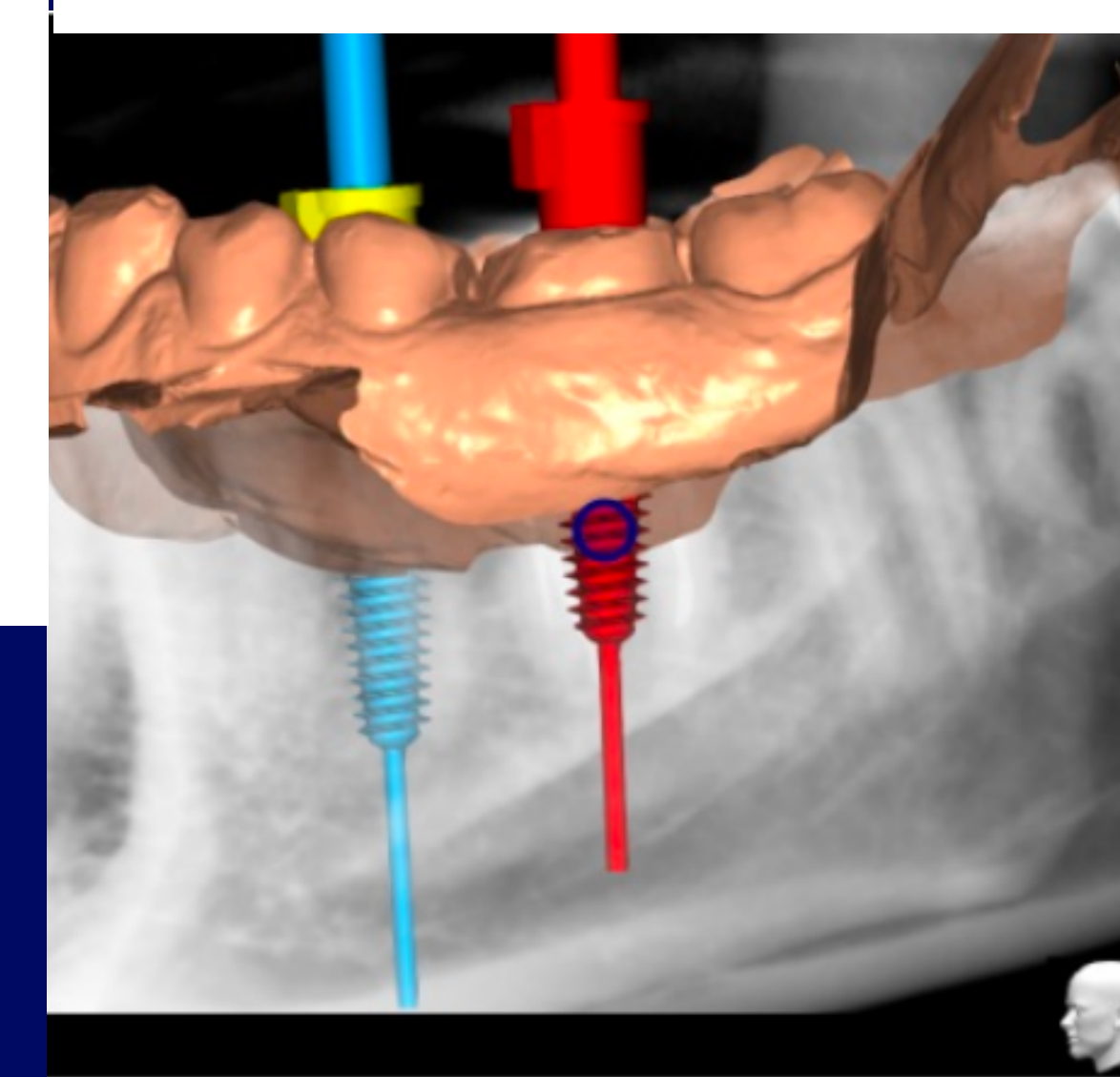
Comparison of Fully-Guided **VS** Pilot-Guided Surgical Templates for Dental Implant Placement

Dr. Roman Shvets, International Dentist, Sacramento, CA, USA



A Review of Contemporary Clinical Evidence

- Fully-guided protocols demonstrate higher placement accuracy
- Pilot-guided approaches allow intraoperative flexibility, but show greater deviation
- Accuracy differences may influence prosthetic predictability and long-term outcomes



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Systematic Review (Khaochoen 2024)

Study Design:

Systematic Review and Meta-Analysis of Clinical Studies

Purpose:

To compare the accuracy of computer-assisted implant surgery (CAIS) protocols.

Key Findings:

Fully-guided protocols demonstrated significantly lower linear and angular deviation compared to pilot-guided.

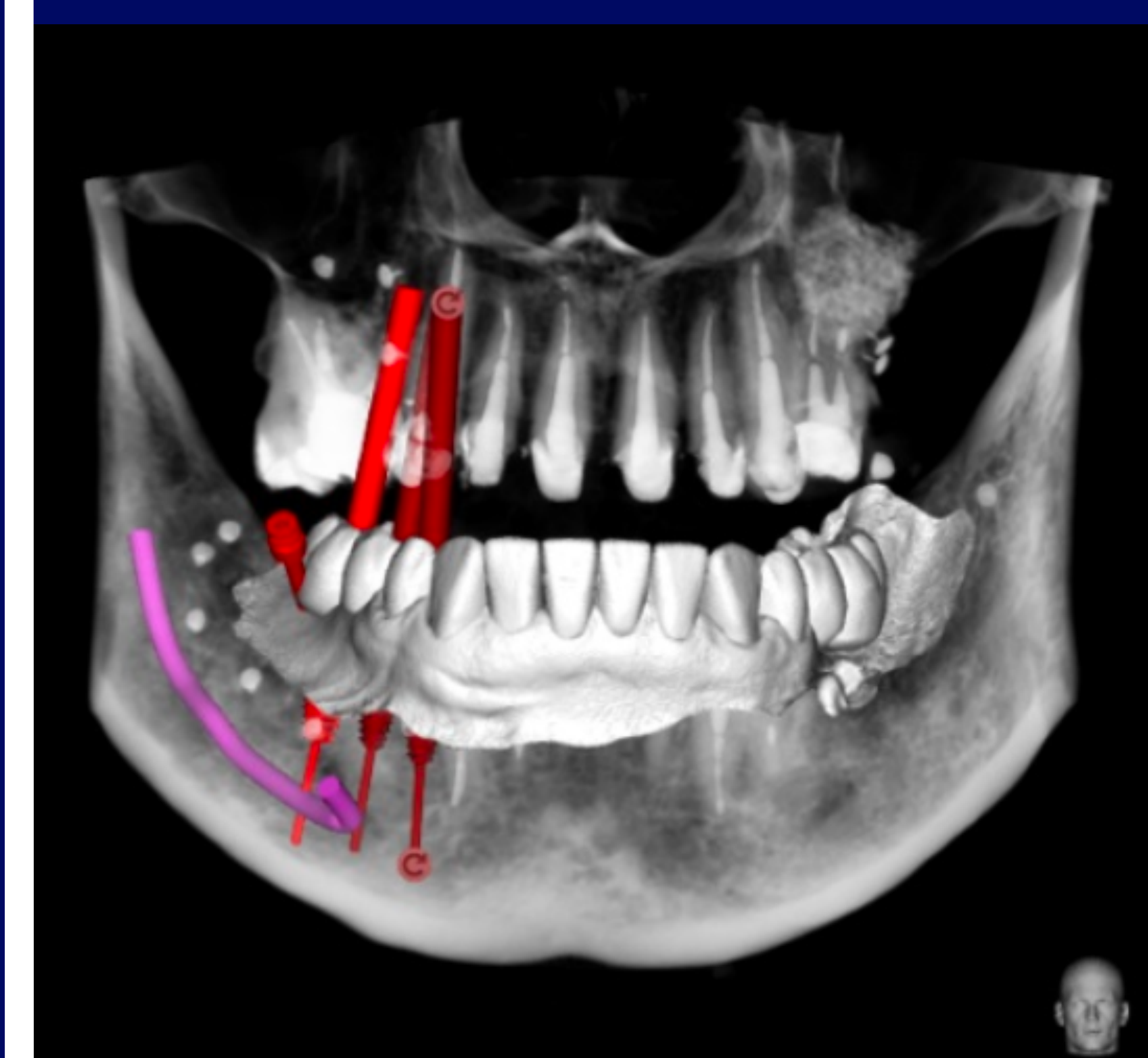
Mean global deviation (guided overall):

- Entry ≈ 1.1 mm
- Apex ≈ 1.4 mm
- Angular $\approx 3.5^\circ$

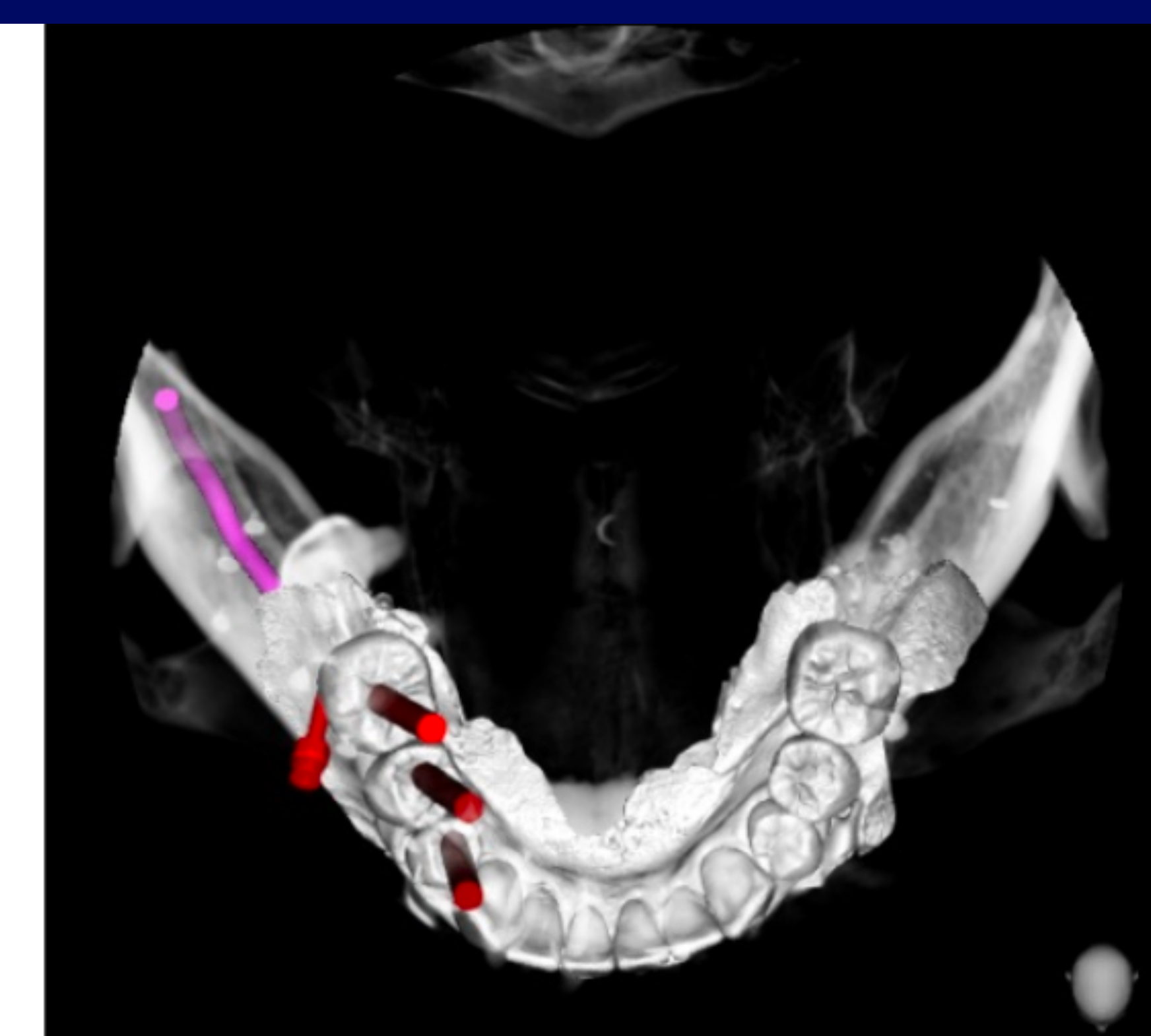
Accuracy influenced by guide stability and surgical protocol.

Clinical Significance:

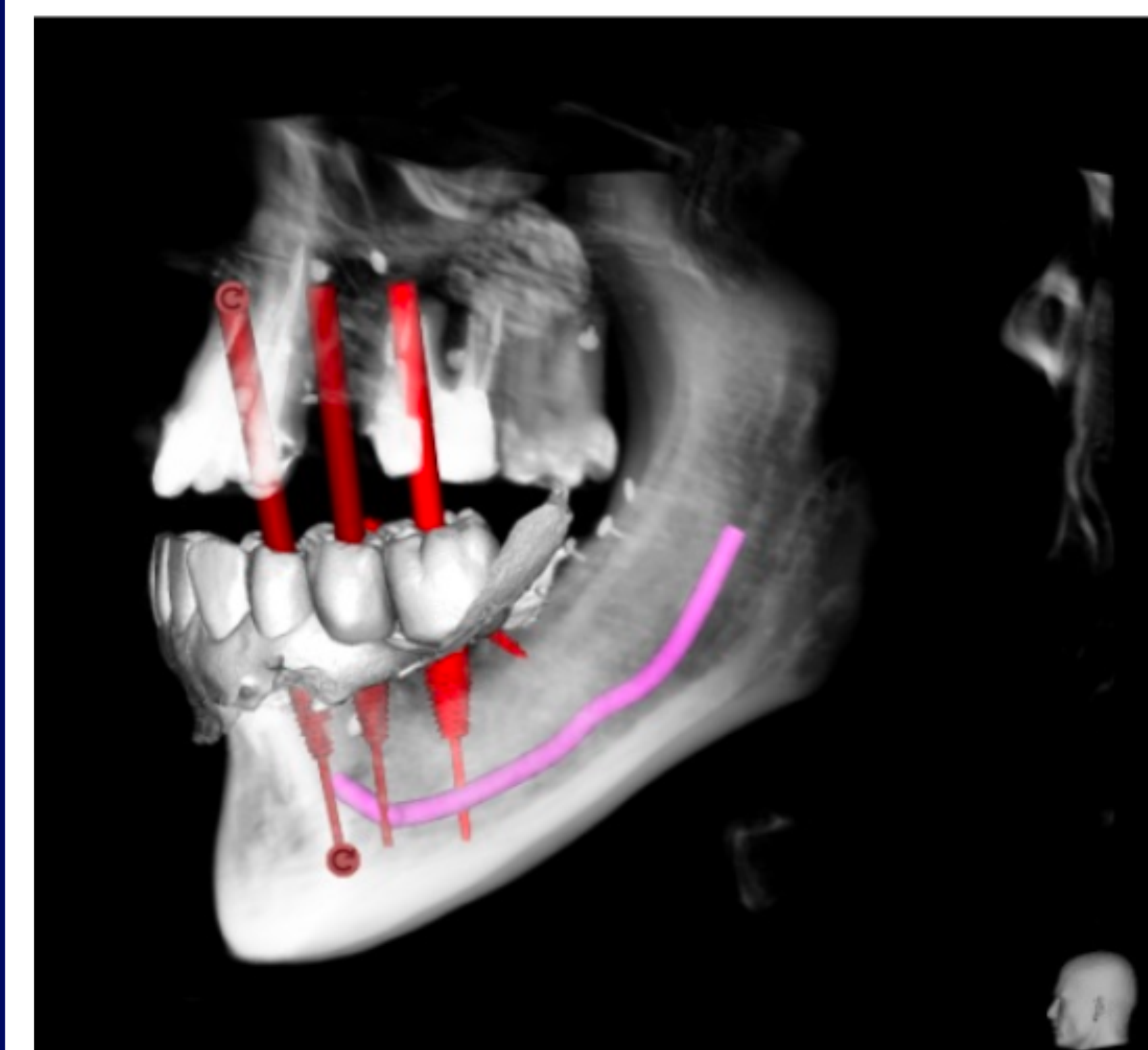
Fully-guided systems provide more consistent positional transfer from digital plan to clinical execution.



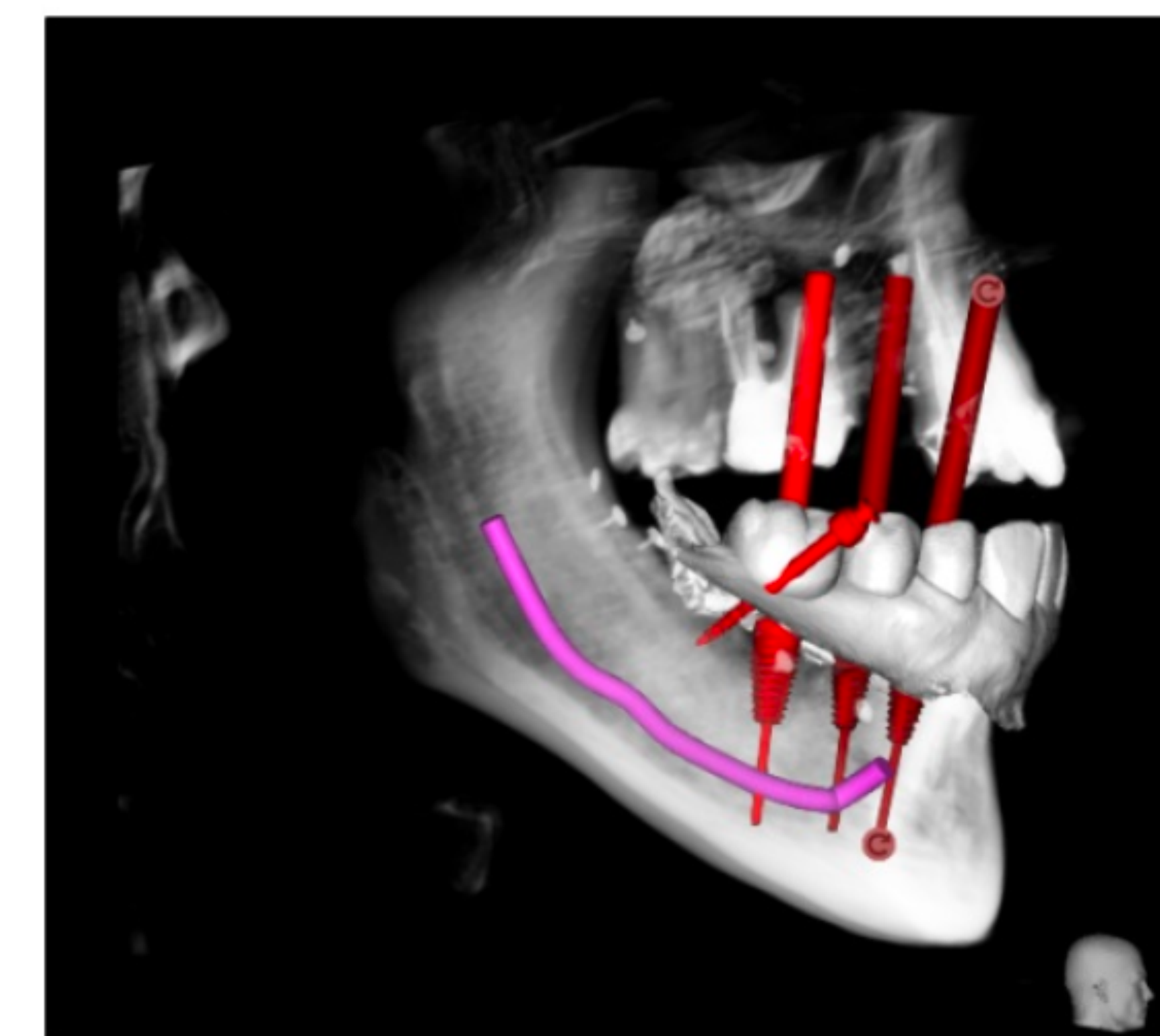
Frontal view



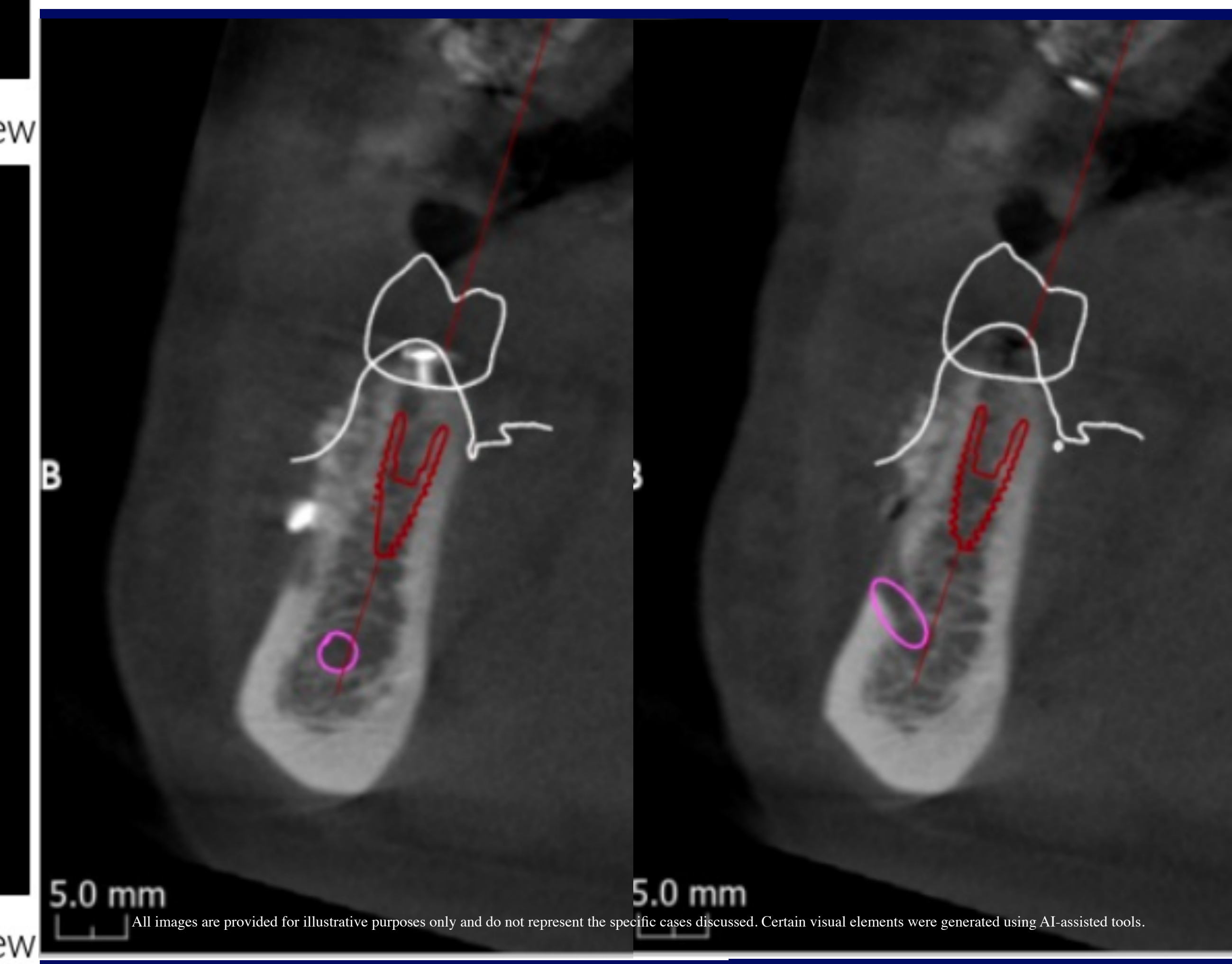
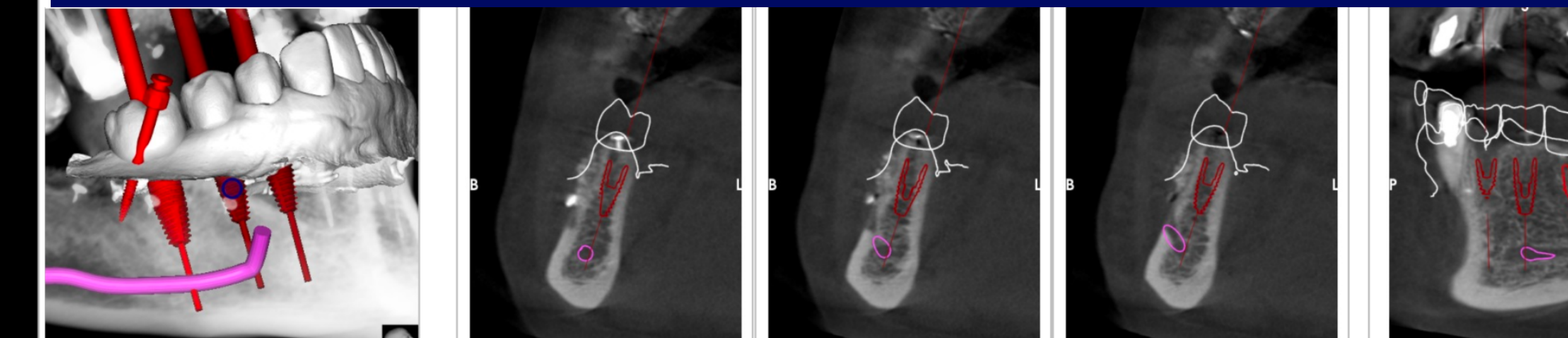
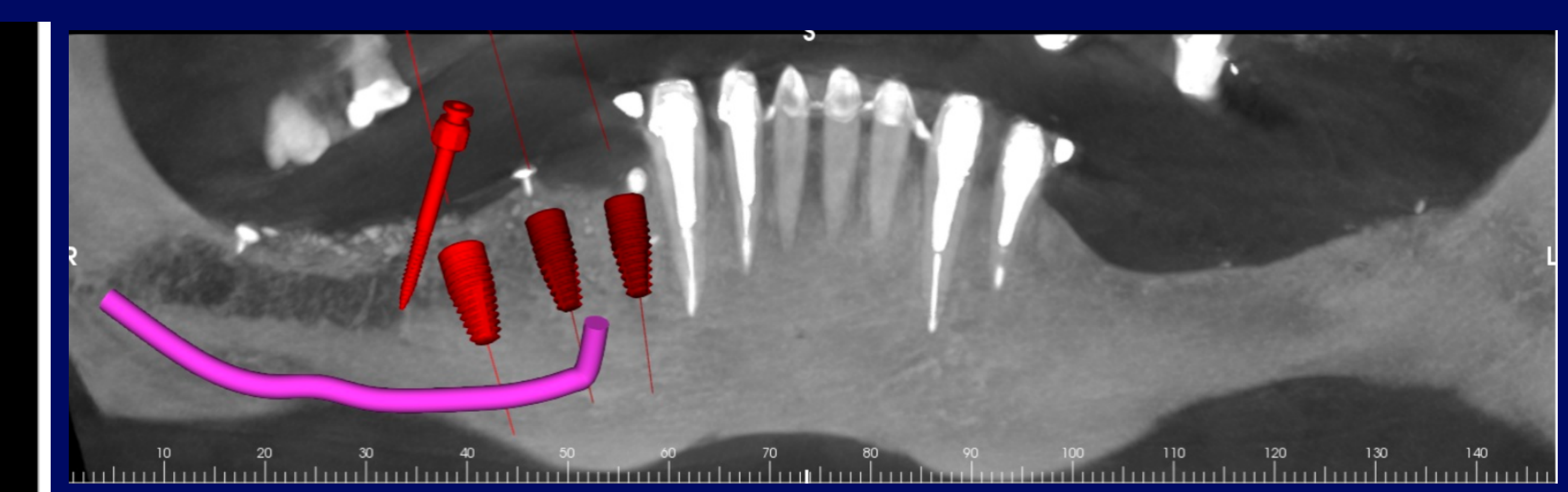
Occlusal view



Left view



Right view



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Split-Mouth Randomized Controlled Trial (Alqutaibi 2025)

Study Design:

Split-mouth Randomized Clinical Trial; 96 implants — edentulous maxilla

Direct FG vs PG Comparison:

(p < 0.05 for all)

Parameter	Fully Guided	Pilot Guided
Entry deviation	0.92 mm	1.05 mm
Apex deviation	1.63 mm	1.81 mm
Angular deviation	3.2°	3.8°

Interpretation:

FG demonstrated statistically significant higher trueness across all parameters.



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Randomized Controlled Trial (Younes 2018)

Study Design:

Randomized Clinical Trial; Posterior maxilla

Apical Global Deviation:

Fully-guided: **0.97 mm**

Pilot-guided: **1.43 mm**

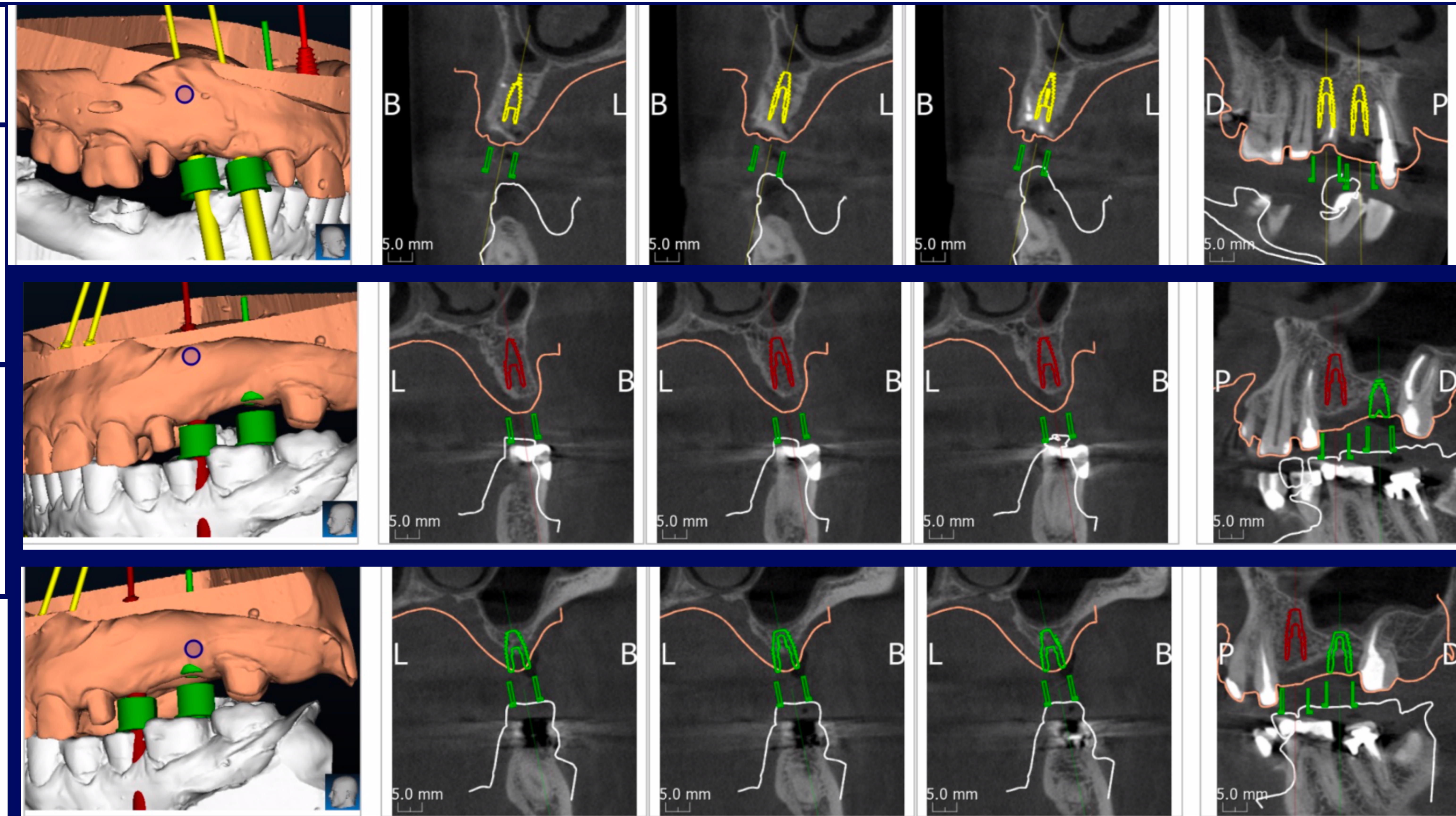
Freehand: **2.11 mm**

Additional Observation:

Greater deviation correlated with increased need for restorative adjustment (cement-retained conversion).

Clinical Insight:

Precision may directly impact restorative predictability.



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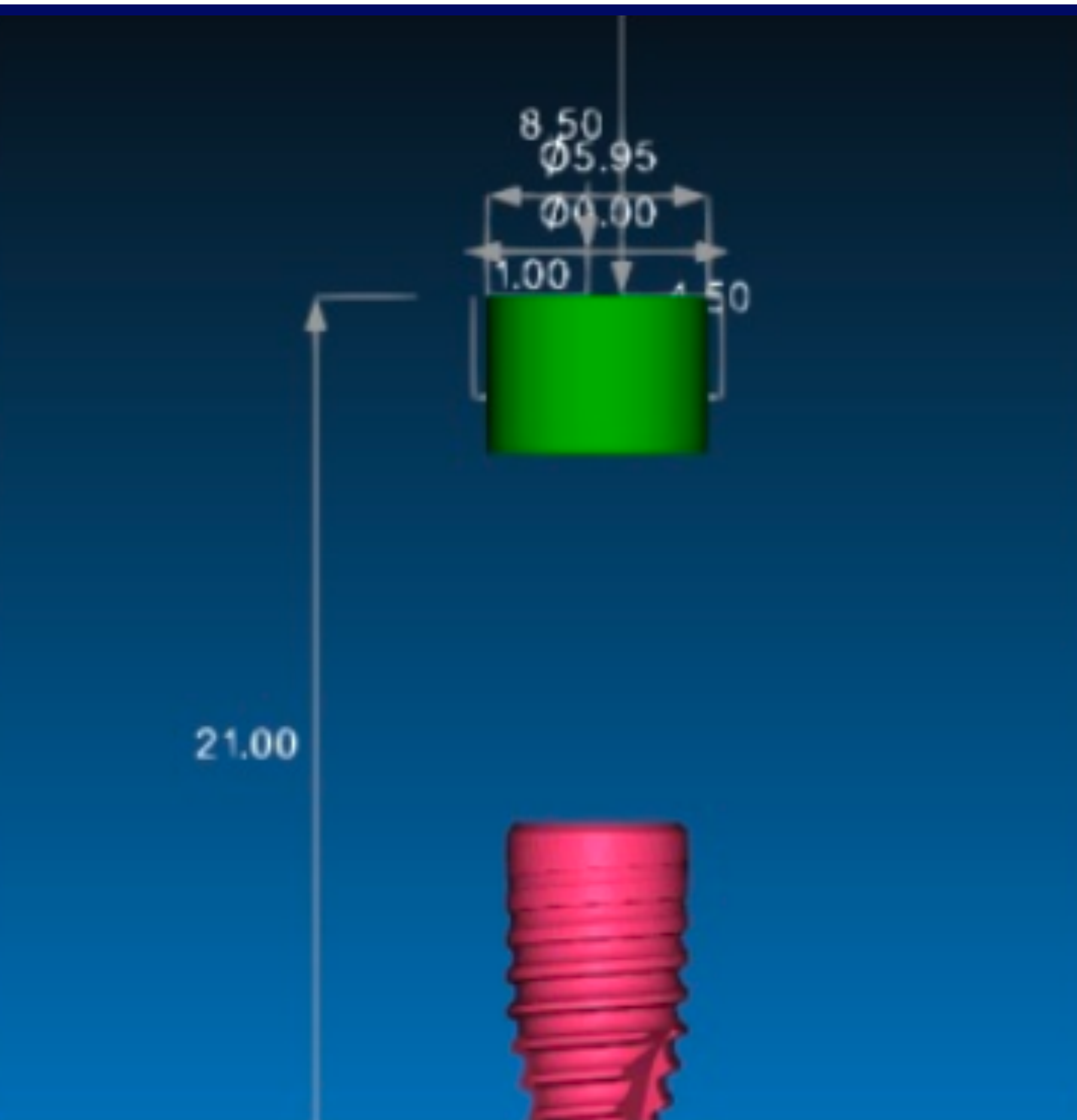


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CONCLUSION

Summary:

- ➔ Current high-level evidence consistently shows improved accuracy with fully-guided templates.
- ➔ Pilot-guided protocols remain clinically acceptable but demonstrate greater deviation.
- ➔ Precision differences may influence prosthetic outcomes in complex or esthetic cases.



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Clinical Recommendation:

Fully-guided surgery should be preferred in cases where prosthetic precision and anatomical safety margins are critical.