

# ACCURACY USING THE X-GUIDE<sup>®</sup> DYNAMIC 3D NAVIGATION SYSTEM FOR DENTAL IMPLANT PLACEMENT

MODEL-BASED EVALUATION Emery RW, Merritt SA, Lank K, Gibbs, JD.  
J Oral Implantol 2016 Jun 6.

## 3D ANGULAR ACCURACY

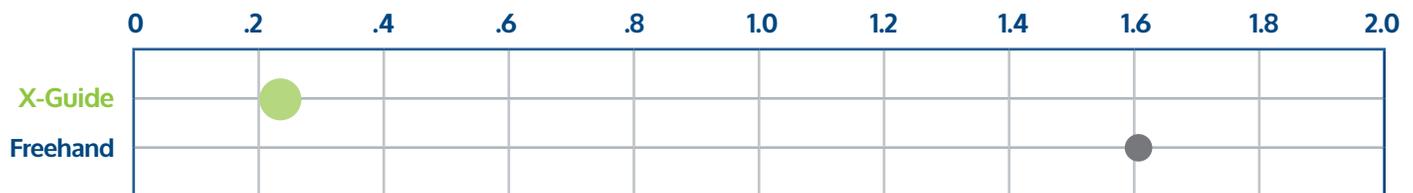
(degrees)



APPROX 11X BETTER THAN FREEHAND

## 2D LATERAL POSITIONAL ACCURACY

(mm) (combined M/D and B/L at the apex of the implant, excluding depth)



APPROX 8X BETTER THAN FREEHAND

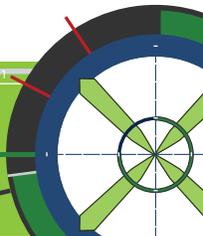
## 3D POSITIONAL ACCURACY

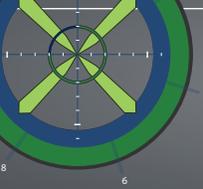
(mm) (combined M/D and B/L and depth at the apex of the implant)



APPROX 2X BETTER THAN STATIC

# BELIEVE IN BETTER



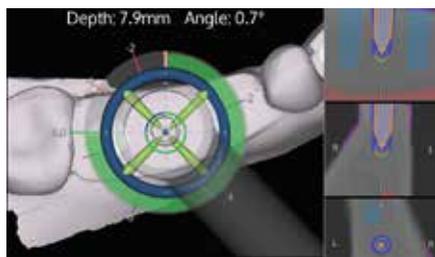


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SYSTEM	3D ANGULAR ACCURACY (degrees)	2D LATERAL POSITIONAL ACCURACY (mm) (combined M/D and B/L at the apex of the implant, excluding depth)	3D POSITIONAL ACCURACY (mm) (combined M/D and B/L and depth at the apex of the implant)
X-Guide (1)	0.89 ± 0.35 (1.52)	0.22 ± 0.13 (0.47)	0.38 ± 0.21 (1.01)
Freehand (2,3,4)	10.4 ± 5.41 (25.3)	1.62 ± 0.68 (2.68)	—
Static (5)	1.44 ± 3.36	—	0.73 ± 2.02

- Data not available.



X-Guide Navigation Software

### References:

- 1- Emery RW, Merritt SA, Lank K, Gibbs, JD. Accuracy of Dynamic Navigation for Dental Implant Placement - Model Based Evaluation. J Oral Implantol 2016 Jun 6.
- 2- Brief J, Edinger D, Hassfeld S, & Eggers G. Accuracy of image-guided implantology. Clin. Oral Implants Res. 16:495–501, 2005).
- 3- R. S. Hoffmann J, Westendorff C, Gomez-Roman G, Accuracy of navigation-guided socket drilling before implant installation compared to the conventional free-hand method in a synthetic edentulous lower jaw model. Clinical Oral Implant Research, vol. 16, pp. 609–614, 2005.
- 4- Nickenig, H, Wichman, M, Hame, J, Schlegel, K, Eitner, S, Evaluation of the difference in accuracy between implant placement by virtual planning data and surgical guide templates versus the conventional free-hand method – a combined in vivo – in vitro technique using cone-beam CT (Part II). J of Cranio-Maxillo-Facial Surgery, 2010;38,488-493.
- 5- Tahmaseb A, Wismeijer D, Coucke W, Derksen W. Computer Technology Application in Surgical Implant Dentistry: A Systemic Review. Int J Oral Maxillofac Implants 2014; 29 (SUPPL):25-42.

## FROM THE LITERATURE...

“ While both static and dynamic image navigation are highly accurate, dynamic navigation systems have the following advantages:

1. The patient can be scanned, planned, and undergo surgery on the same day.
2. The plans can be altered during surgery when clinical situations dictate a change.
3. The entire field can be visualized at all times.
4. Accuracy can be verified at all times. ”

“ Further clinical indications of dynamically guided systems include:

- limited mouth opening.
- tight interdental spaces that preclude the use guidance tube in CAD/CAM guides.
- distal implants (ie, second molars) that are precluded from CAD/CAM static guides by prolongation height.
- and the inability to take impressions due to hyper exaggerated gag reflex. ”