IS IT REALLY MORE ACCURATE THAN FREEHAND?

To put it simply: yes, it is.
In a large, controlled, blinded clinical study involving over 100 volunteers, we placed over 200 implants at the Department of Oral and Maxillofacial Surgery, University of Szeged, Hungary. The volunteers were randomly assigned to 4 treatment groups: freehand surgery, pilot guide, partial guide and full guide.

In the non-freehand cases, SMART Guide was used, but the planning feature of SMART Guide was always used, also in freehand cases. The main question of the study was if accuracy as expressed in four different parameters would significantly increase with increasing guidance (i.e. from freehand toward full).

To answer this question, we took two CBCT images of each patient, one before and one after implant placement, and with the help of computerized analysis we determined apical deviation (in millimeters), coronal deviation (in millimeters), volume overlap (percentage) and angular deviation (i.e. the difference between the axis of the planned and the actual implant in degrees). This latter measure was the one we were the most interested in.
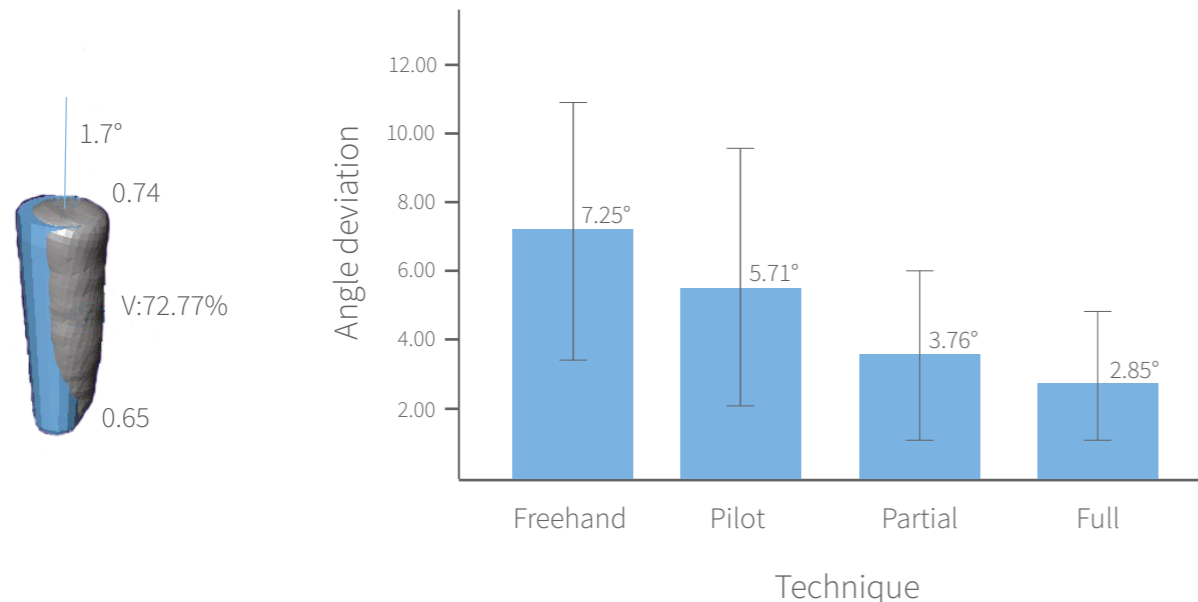
The results regarding angular deviation are summarized in the figure above (values are shown as mean angular deviation ± SD).

Angular accuracy turned out to be almost directly proportional to the level of guidance. The more guidance, the better, one could say. Both partial and full guidance proved to be significantly more accurate than freehand surgery. The pilot protocol, however, did not yield significantly better results. Check PubMed for our upcoming article!

LITERATURE

Endre Varga Jr., Márk Antal, László Major, Ramóna Kiscsatári, Gábor Braunitzer, Jozsef Piffkó (2020). Guidance means accuracy: A randomized clinical trial on freehand versus guided dental implantation. Clinical Oral Implants Research. 2020;31:417–430.

Barrak IA, Varga E, Piffko J (2016). [Navigation in implantology: Accuracy assessment regarding the literature]. Fogorvosi szemle 109(2):61-68.