DISIOR

CASE STUDY

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Pain after a multilevel corrective osteotomy of the radius

PRESENTATION

A patient who ten years earlier had been treated with a multilevel corrective osteotomy of the radius due to malunion of a distal radius fracture, presented with ulnocarpal pain and 20° lack of supination.

INITIAL EXAMINATION AND OPERATIVE PLAN

After comparing the injured side with the healthy mirrored side in 3D (**Figure 1**) we decided to virtually plan a corrective osteotomy of the distal radius using a standard plate and a patient-specific guide designed for the osteotomy according to the following values:

- 14.7° clockwise on axial plane
- 3.5° volarly on sagittal plane
- 1.2° ulnarly on coronal plane
- Ulna plus of 1 mm

VERIFICATION OF PRELIMINARY RESULTS

The additional analysis of the cone-beam computer tomography (CBCT) images faciliraed by the Bonelogic® 2 software enabled 3D visualization, automated measurements, and distance mapping that helped us assess the bone-to-bone distance in detail.

The virtual osteotomy tool of Bonelogic® 2 allowed us to simulate the post-operative outcome after a 14.7° rotation of the radius as planned.

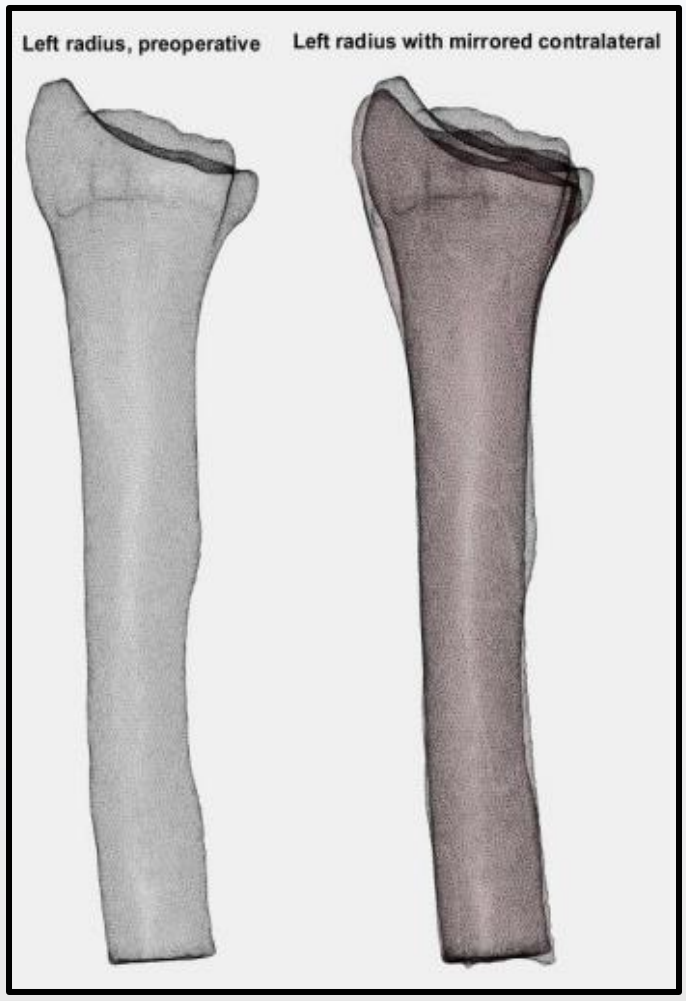


Figure 1 Comparison of the pre-operative left radius and the healthy side, mirrored radius.

The bone-to-bone distance mapping revealed an overload on the dorsal surface of the sigmoid notch (**Figure 2**).

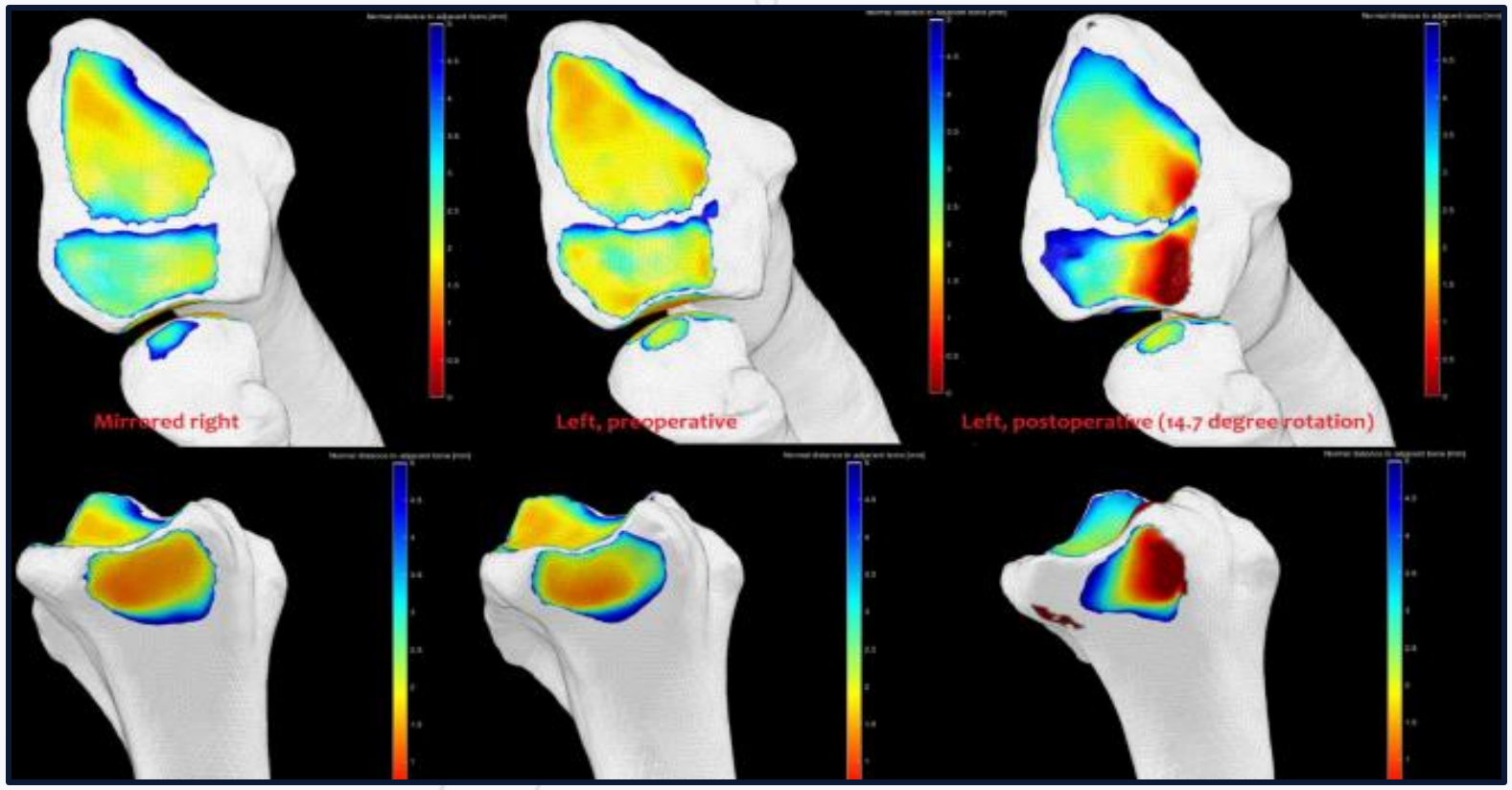


Figure 2 Distance mapping performed with the Bonelogic® 2.0 to quantify the simulated post-operative outcome after performing a 14.7° rotation.

ALTERNATIVE OPERATIVE PLAN

The simulation of the post-operative outcome shown above suggested that a different surgical approach was more appropriate and lead us to perform a de-rotation and shortening of the ulna using patient-specific guides and a standard plate.

PRELIMINARY RESULTS

Six weeks after the osteotomy, we used the distance mapping in Bonelogic® 2 again to assess the post-operative outcome (**Figure 3**). The patient reported symptom relief and improved functionality in the hand.

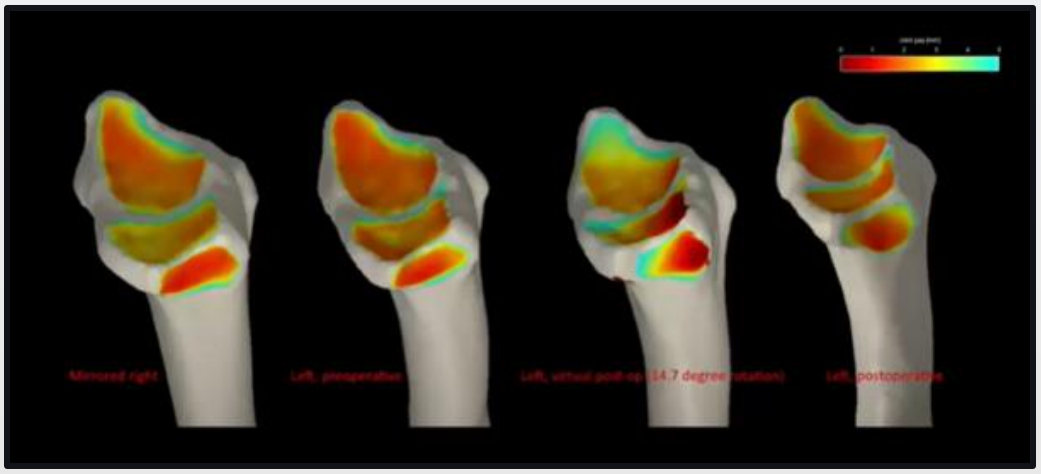


Figure 3. Distance mapping performed with the Bonelogic® 2.0 to assess the post-operative outcome six weeks after corrective osteotomy.

The additional information provided by Bonelogic® 2 and the virtual surgical planning in the software helped guiding the choice of surgical approach in this complex case and facilitated providing the patient with the best possible treatment.

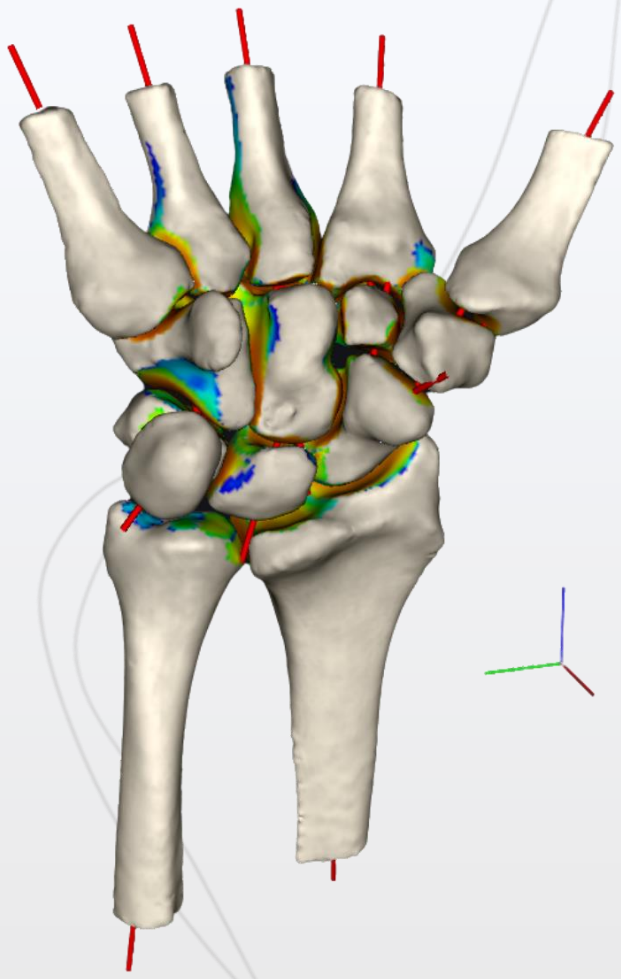
Featured Product: Bonelogic® 2 Hand & Wrist Module

PRODUCT INFORMATION

- Disior provides clinicians with the accurate diagnostic information they need to deliver perfectly-tailored treatment to every patient.
- Disior's 3D analysis software Bonelogic® 2 is a fast and cost-efficient way to get objective data for accurate diagnosis, create patient-specific surgical plans and assess treatment efficacy.

BENEFITS OF BONELOGIC® 2

- Makes diagnosis unambiguous with automated, easy-to-use tools that remove manual labor.
- Assess the patient's anatomy with objective and reliable anatomical analytics based on clinical landmarks and reference points.
- 3D analysis can now be part of routine clinical practice and research.



INDICATIONS FOR USE

Bonelogic® contains the measurement template with a set of distance and angular measures. The measurements can be used for diagnostic purposes. The three-dimensional (3D) models are displayed and can be manipulated in the software. Together, the information from the measurements and the 3D visualization can be used for treatment planning in the field of orthopedics (foot and ankle, and hand and wrist). The 3D models can be outputted from the software for traditional or additive manufacturing.

INTENDED USE

Bonelogic® software is intended to be used by specialized medical practitioners to assist in the characterization of human anatomy with three-dimensional (3D) visualization and specific measurements. The medical imaging modalities intended to be used in the software are computed tomography (CT) images, cone beam computed tomography (CBCT) images and weight-bearing cone beam CT (WBCT) images. The intended patient population is adults over 16 years of age.

For further information, please see the device-specific instructions for use on www.disior.com/bonelogic-2

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