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Secondary Scaphoid Nonunion

Multitom Rax Real3D[1] Hi-Res clinical case
University Hospital Wuerzburg, Germany

[1] Option

Clinical background and indication for Multitom Rax Real3D[1] Hi-Res examination

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Patient
Male |*1972 | BMI 29 kg/m²

Anamnesis
Four months before the present examination, the patient fell on his right wrist suffering an isolated scapholunate ligament (SLL) tear. Due to carpal instability and initial osteoarthritis in the stylo scaphoid joint, SLL reconstruction (using the ECRB tendon) and transfixation were performed.
The patient now reports to the emergency department with increasing pain over the radial side of the proximal carpal row (especially in motion).

Indication for Real3D[1] Hi-Res examination
Radiography displays dorsal dislocation of the corkscrew anchor in the lateral view (right side; arrow). While transfixation of the scapholunate gap appears satisfactory in AP view (left side), lateral view depicts dorsal extension of the lunate bone suggesting insufficient stability of the scapholunate compartment.

AP *Lateral*
Conventional X-ray examination

Study ID 5aab940

The products/features (mentioned herein) are not commercially available in all countries. Their future availability cannot be guaranteed.
[1] Option

Multitom Rax Real3D[1] Hi-Res Settings

Settings for tableside scan with dedicated Metal Protocol

Tube voltage	116 kV
Current time product	223 mAs
Dose area product	315 µGy·m²
Calculated value for $CTDI_{vol,32}$	4.7 mGy
Scan time	14 sec
Number of projections	318

Reconstruction settings for sectional views

Pixel size	0.2 mm
Reconstruction kernel	very sharp (equivalent to Ur77)
Slice thickness	2 mm

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Multitom Rax Real3D[1] Hi-Res Diagnostic findings

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Rax Real3D images with metal artefact reduction also display widening of the scapholunate gap and dorsal intercalated segment instability (DISI) position of the central carpal column, confirming insufficient transfixation. Coronal image shows additional bone resorption in the scaphoid (arrow).

Coronal view

Sagittal view

Study ID 5aab562

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Multitom Rax Real3D[1] Hi-Res
Diagnostic findings

Sagittal and axial images display extensive resorption in the scaphoid with displacement of the k-wire (arrows). Image findings suggest a bony avulsion of the corkscrew anchor in the dorsal portion of the scaphoid after transfixation with subsequent nonunion.

Immediate surgical removal of the k-wire was performed with consecutive cast immobilization. With respect to the highly unstable carpus, different salvage procedures were discussed with the patient including proximal row carpectomy and four corner fusion.

Axial view

Sagittal view

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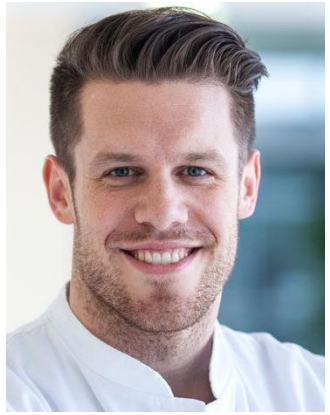

“Real3D images possess excellent spatial resolution with easily discernable bone microarchitecture. The metal implants do not cause considerable artefacts. Soft tissue contrast is high.”[1]

Jan-Peter Grunz, MD
University Hospital Wuerzburg, Germany

[1] The statements by Siemens Healthineers customers described herein are based on results that were achieved in the customer’s unique setting. Since there is no “typical“ hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption) there can be no guarantee that other customers will achieve the same results.

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Results from case studies are not predictive of results in other cases. Results in other cases may vary.

Dr. Jan-Peter Grunz is employed by an institution that receives financial support from Siemens Healthineers for collaborations.