

## Combined use of Ziehm Vision RFD 3D and Ziehm Vision FD Vario 3D

Increasing surgical confidence with intraoperative  
3D information in a Type II odontoid fracture

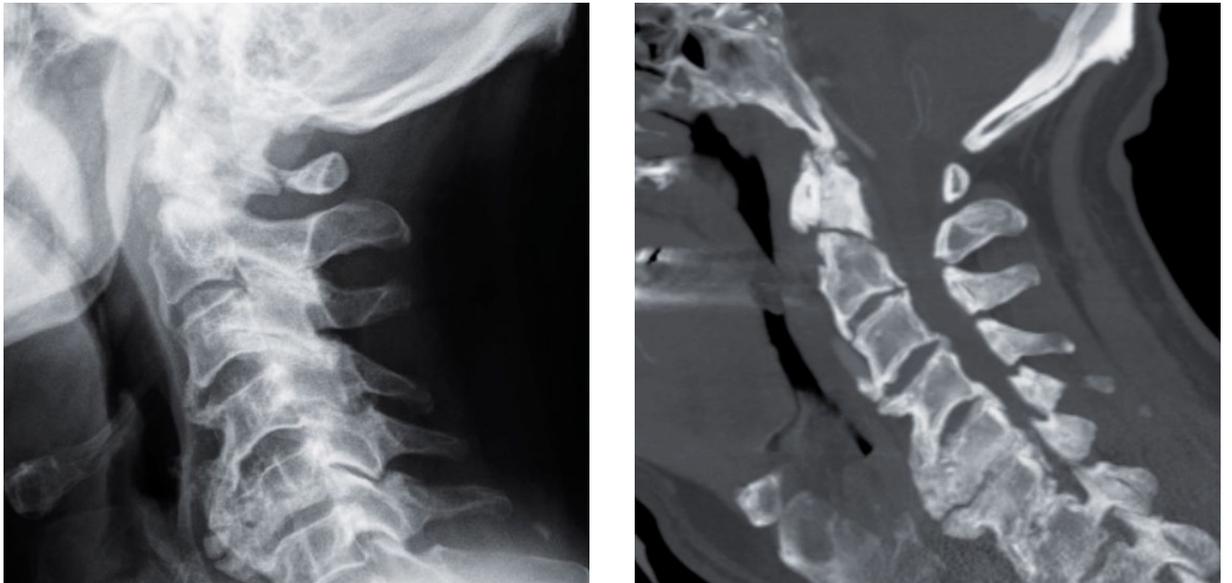


Fig. 1: Preoperative images: Odontoid fracture Type II in X-ray (left) and CT scan (right).

As a result of a ground-level fall on his head, a 67-year-old male patient suffered a dislocated odontoid fracture Type II (Fig. 1) without neurological deficits but with severe pain in the upper cervical spine. The patient was obese, with a body mass index of 30.

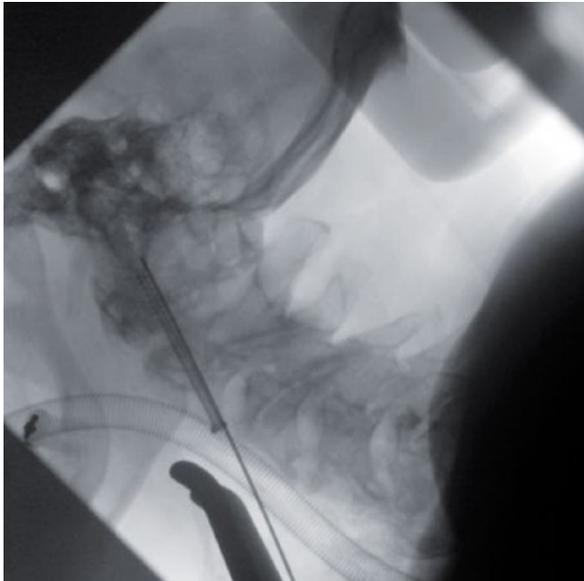


Fig. 2: Intraoperative fluoroscopy: One screw and one K-wire placed into the odontoid process.



Fig. 3: Reconstructions of the intraoperative 3D scan showing the correct screw placement and reduction of the fracture.

The indication for an anterior lag screw stabilization of the odontoid fracture was determined and performed with the use of Ziehm Vision FD Vario 3D and Ziehm Vision RFD 3D in parallel use. The operation time was 67 minutes. Two cannulated screws were placed from the anterior using the Smith-Robinson approach after inserting

K-wires under fluoroscopic control. After the screws were placed, an intraoperative 3D scan was performed. The reduction of the fracture and correct screw placement could be viewed clearly (see Fig. 2 and 3). A correction of the screws was not necessary.



Fig. 4: Ziehm Vision FD Vario 3D and Ziehm Vision RFD 3D in parallel use.

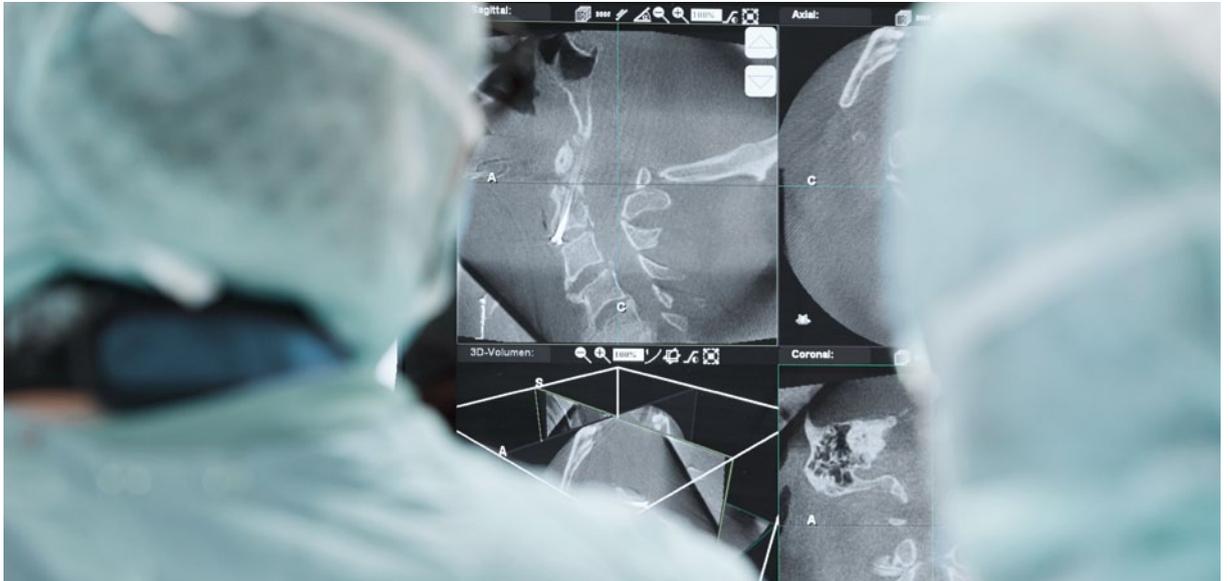


Fig. 5: Intraoperative imaging during surgery.

The scan could be performed within 5 minutes. This included draping, the team leaving the OR, hyperoxygenation of the patient, breathing stop, image acquisition and reconstruction.

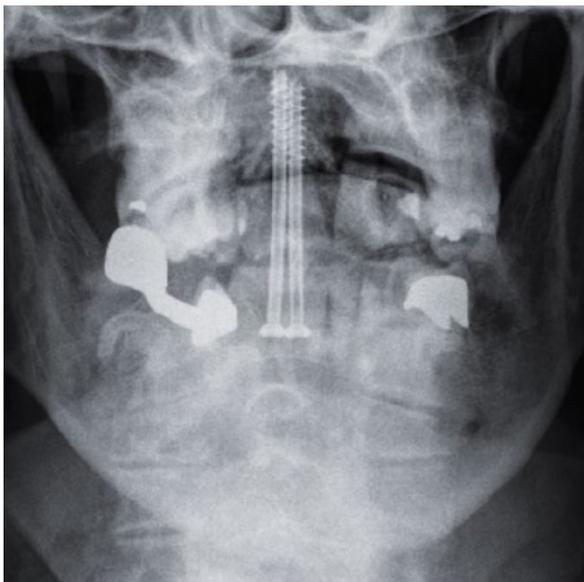


Fig. 6: Postoperative control X-ray.

The usage of 3D imaging, especially with Ziehm Vision RFD 3D, during this surgery demonstrated these advantages:

- Intraoperative control of the screws and reduction of the fracture in an image with CT-scan-like quality within a short application time
- Elimination of the need for a postoperative CT scan
- Easy handling of the Ziehm Imaging C-arm devices

---

Authors:

Prof. Dr. Christoph Josten

Dr. Jan-Sven Jarvers

Department of Orthopaedic,  
Trauma and Plastic Surgery  
University of Leipzig

---