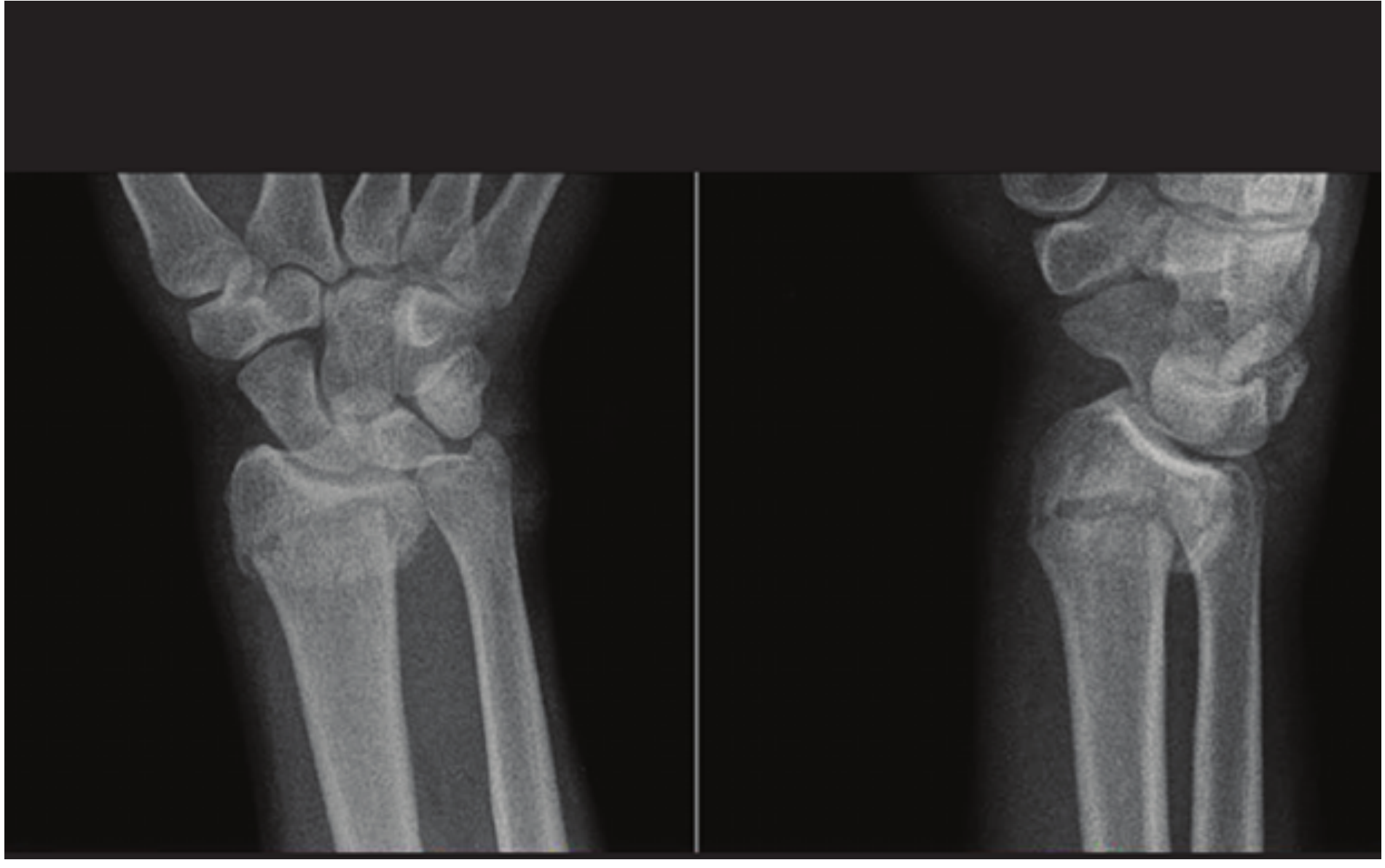
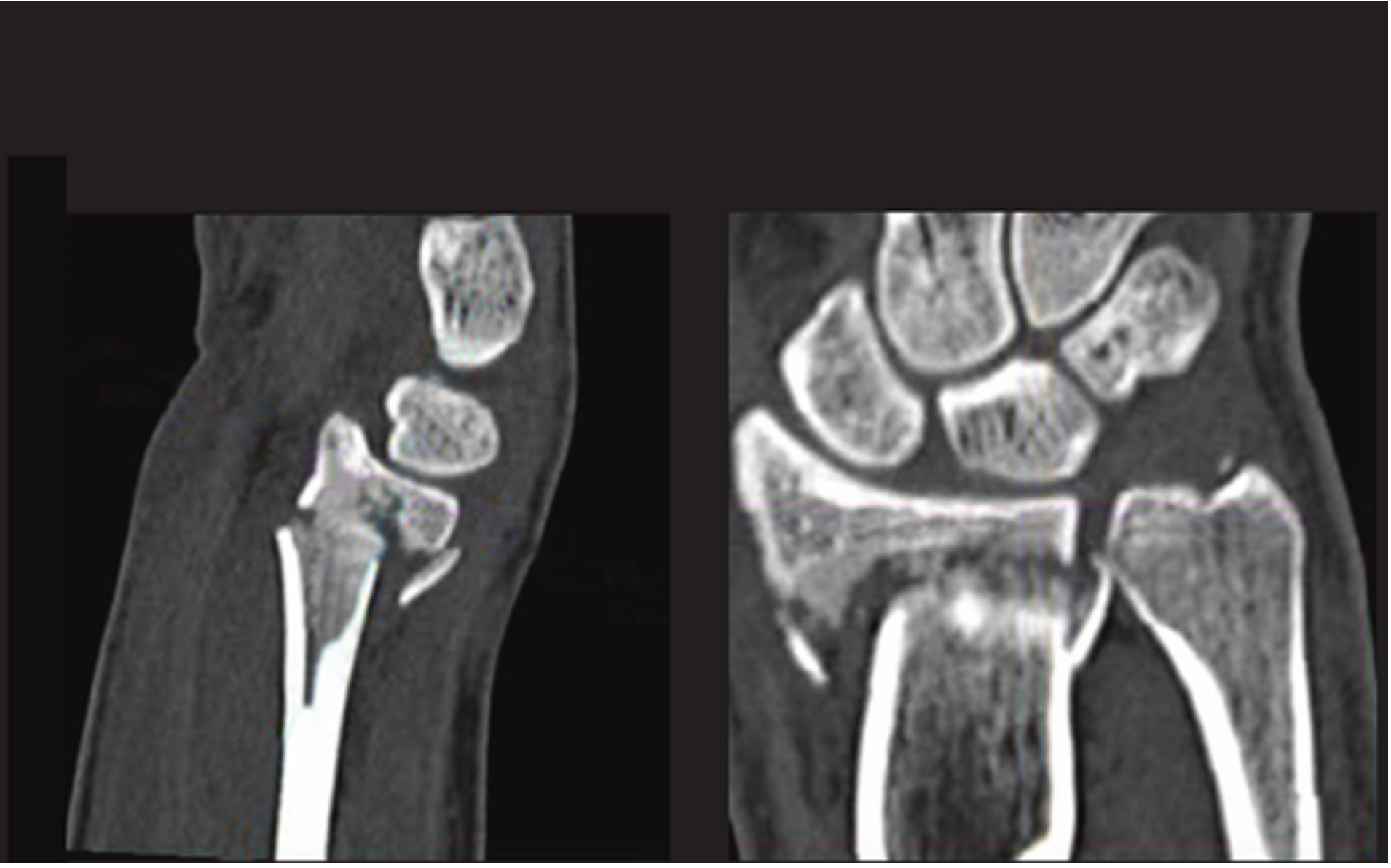
DVR

Approach & Techniques

- A 20-year-old male patient with dorsal displacement extra articular distal radial fracture.

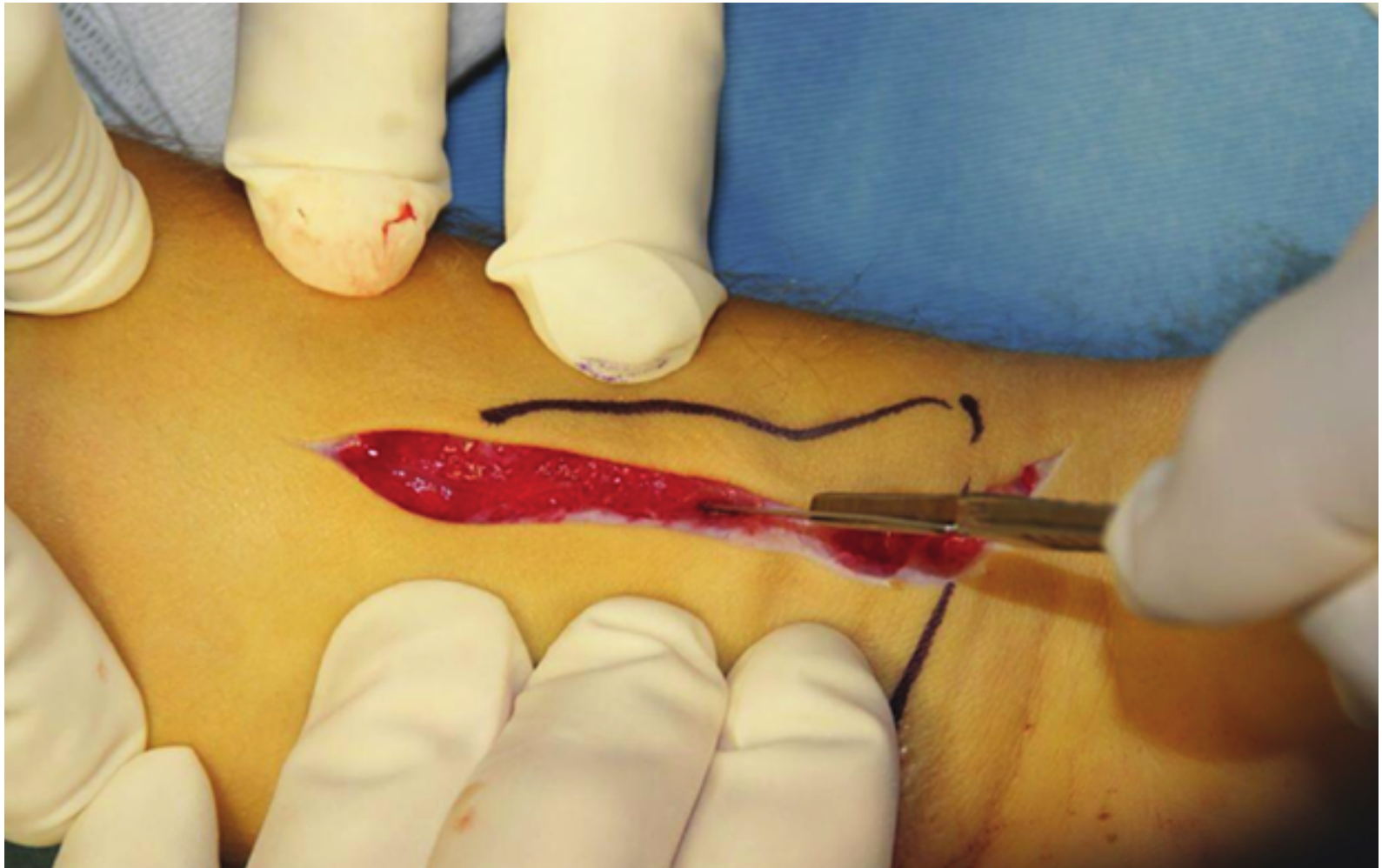




- On these CT images, this appears to be an extra-articular facture with some dorsal comminution

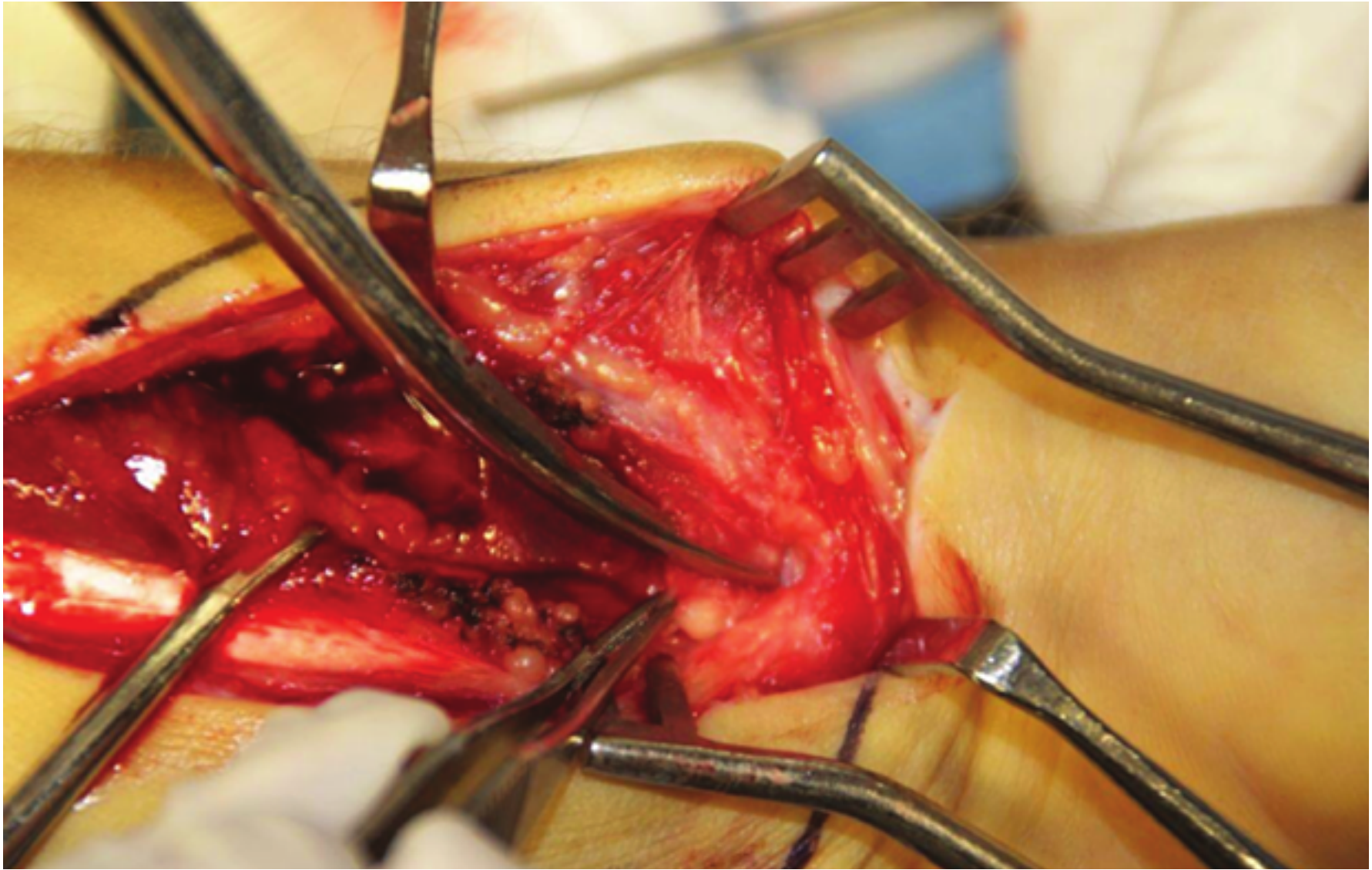
1. Approach

- Volar Henry approach through the flexor carpi radialis.

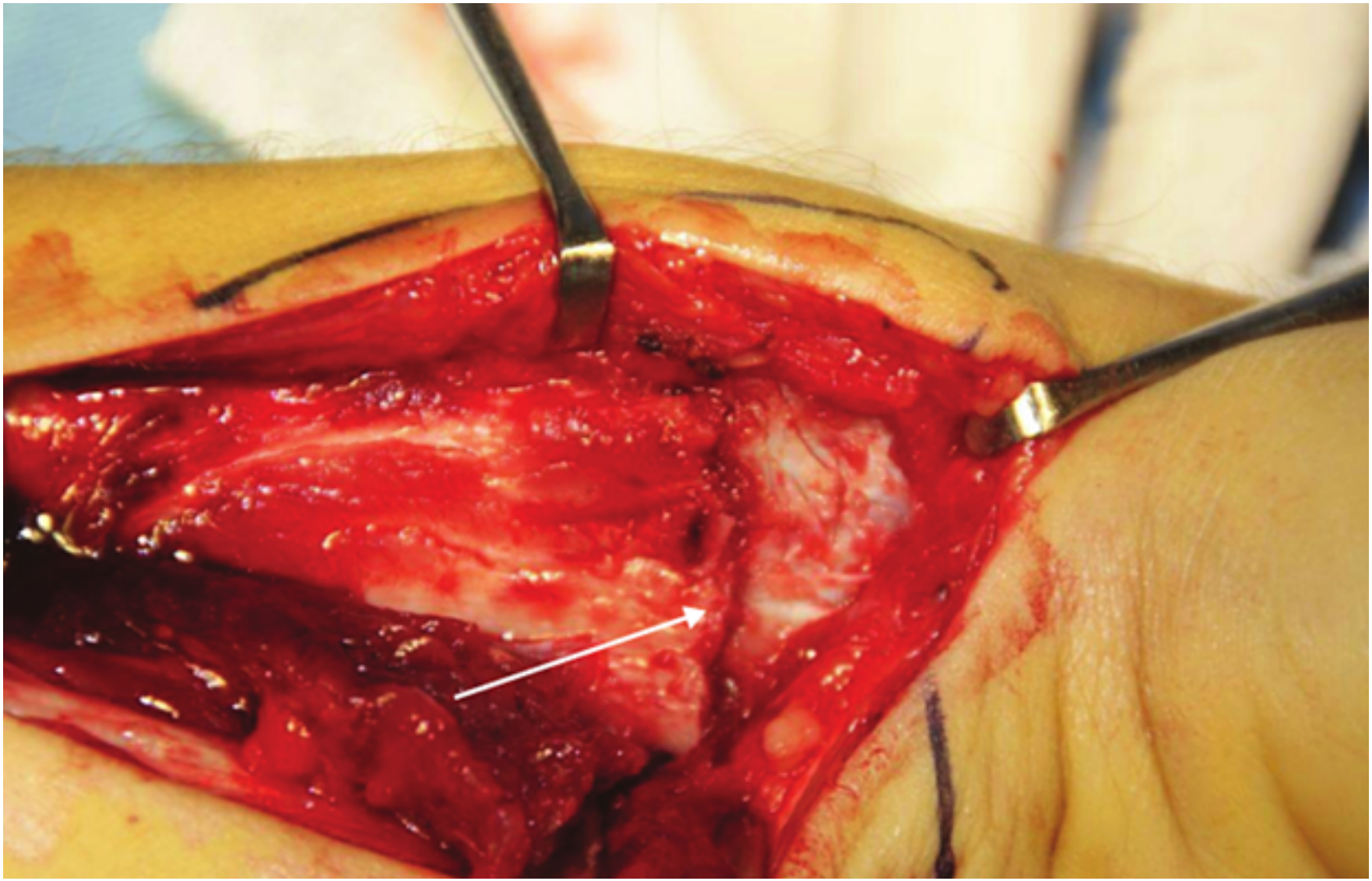


- The flexor sheath is opened.

- Deep to the flexor sheath lies the pronator quadratus on the volar distal radius



- Pronator quadratus has been subperiosteally dissected and reflected, exposing the fracture beneath

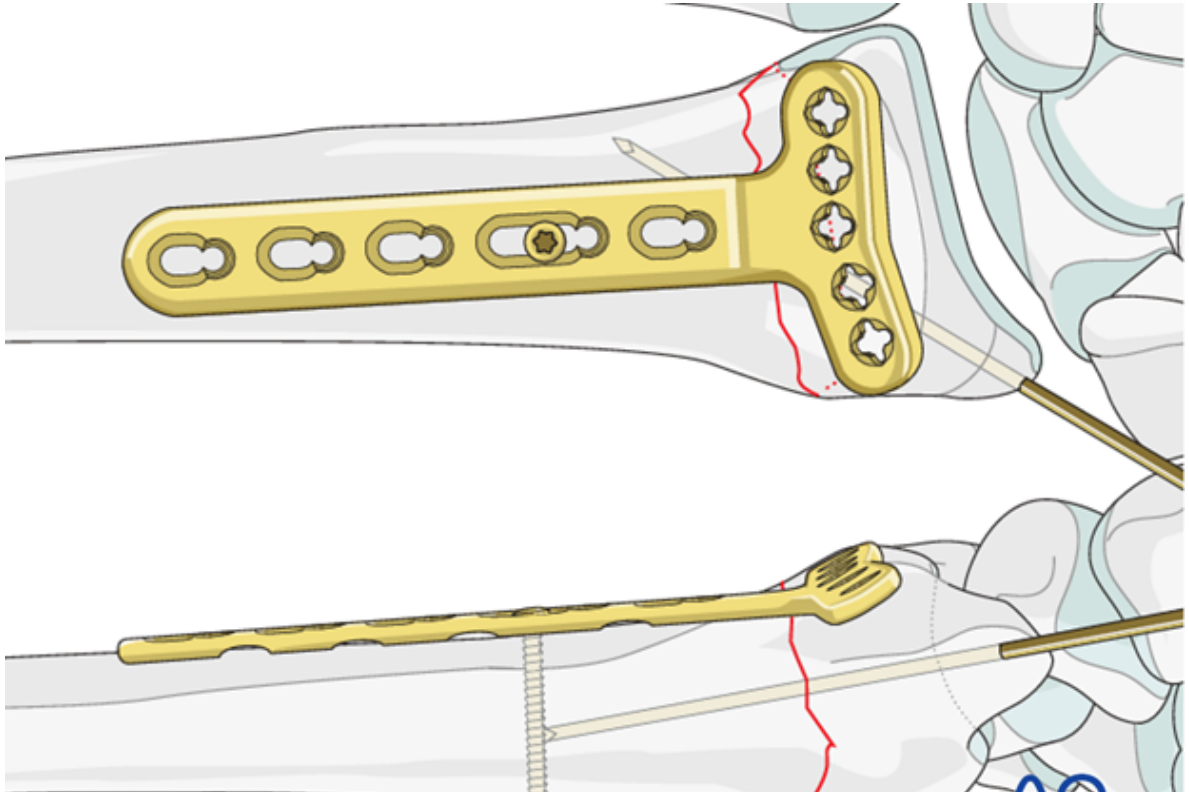


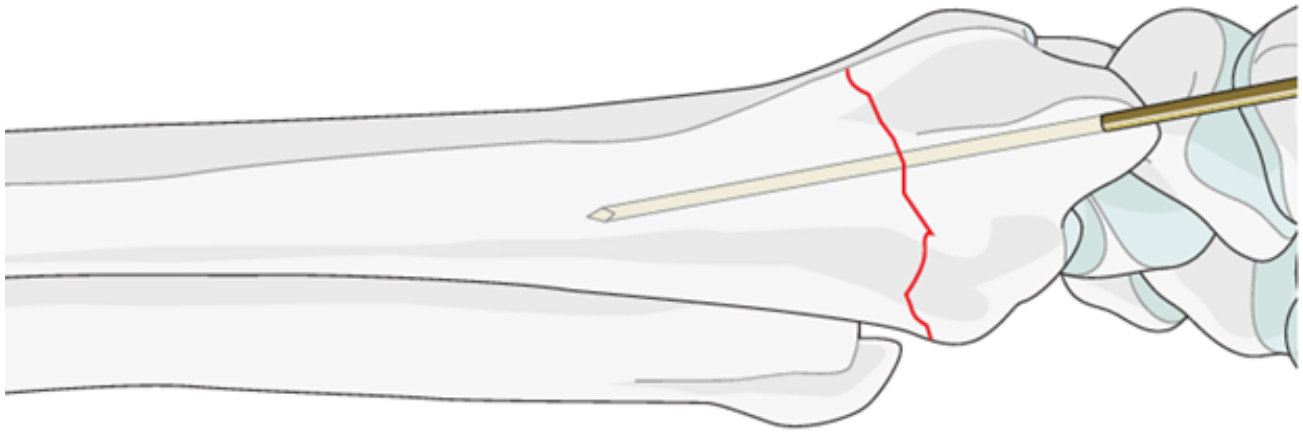
2. Reduction techniques & Plate insertion

1. Manual reduction and preliminary fixation with K-wires
2. Reduction with plate

1. Manual reduction and preliminary fixation with K-wires

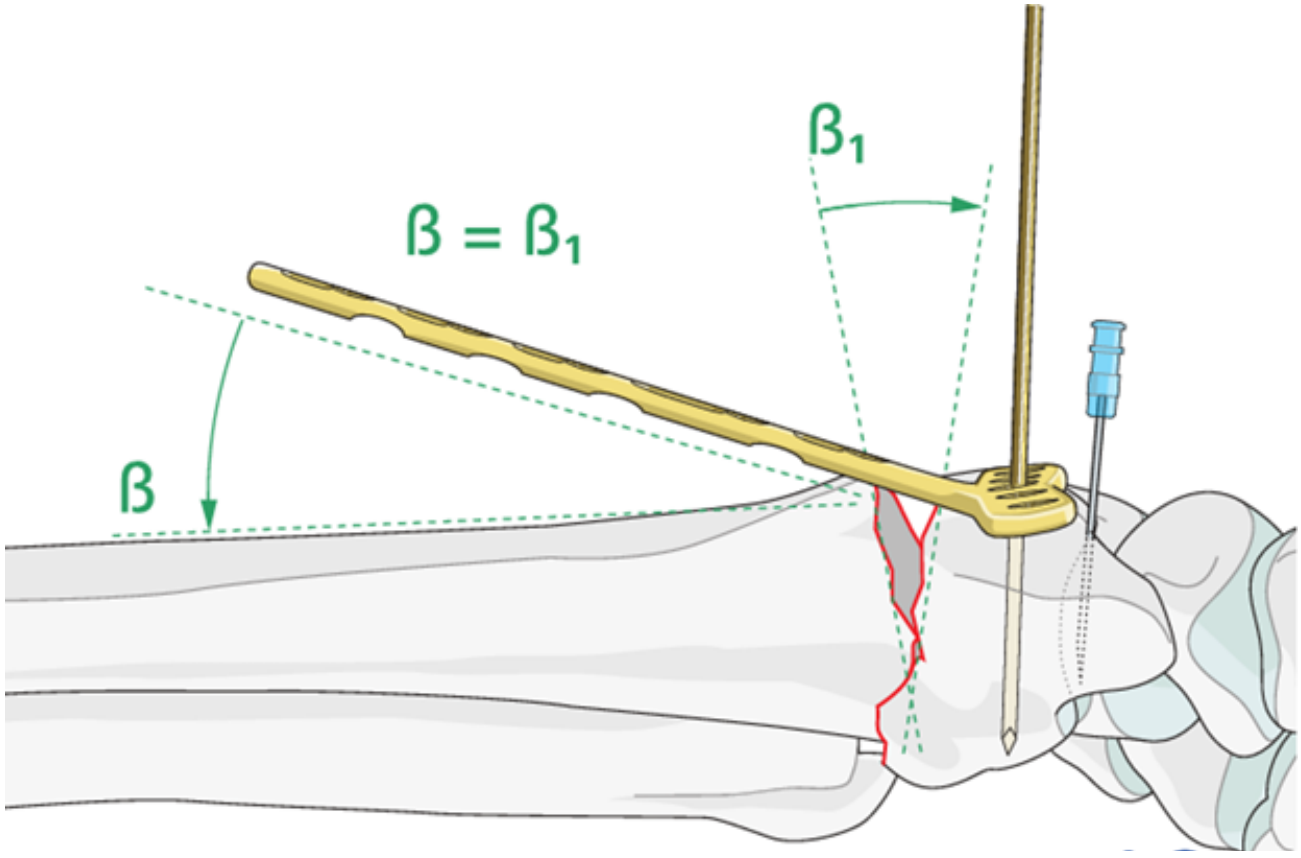
- Apply the plate to the bone. The distal end of the plate should end at the anatomic watershed zone of the distal radius.
- Insert a screw through an oblong hole in the proximal radial fragment.
- Before fully tightening it, check the plate position using intraoperative imaging, adjusting the position of the plate as necessary.





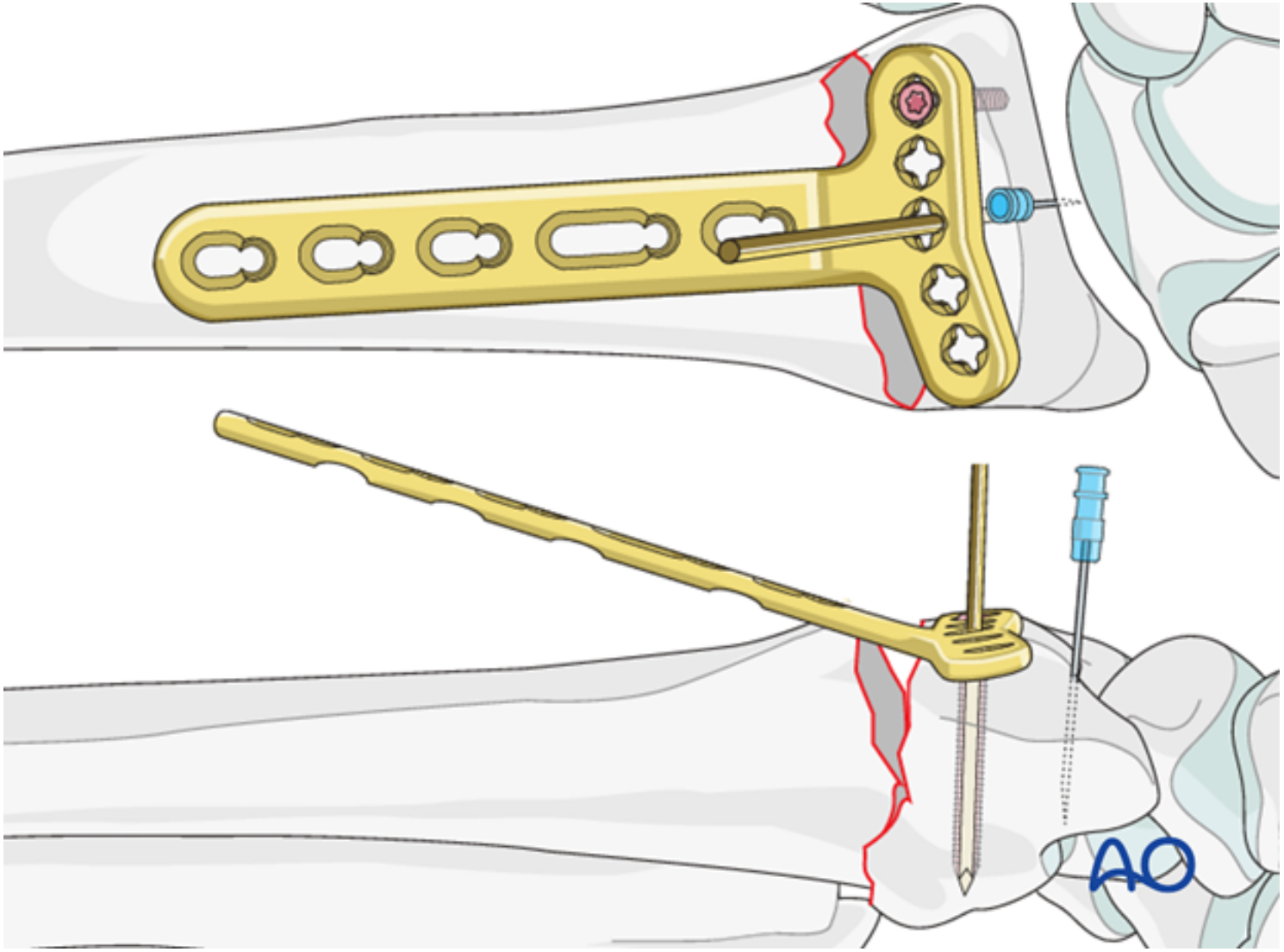
2. Reduction with plate

- Apply the plate to the distal fragment. The distal end of the plate should end at the anatomic watershed zone of the distal radius.
- Insert a K-wire through a screw hole, as close to the subchondral bone as possible and parallel to the articular surface.
- The angle of the plate to the shaft should equal the angle of the displacement.(B=B1)
- Confirm using image intensification.

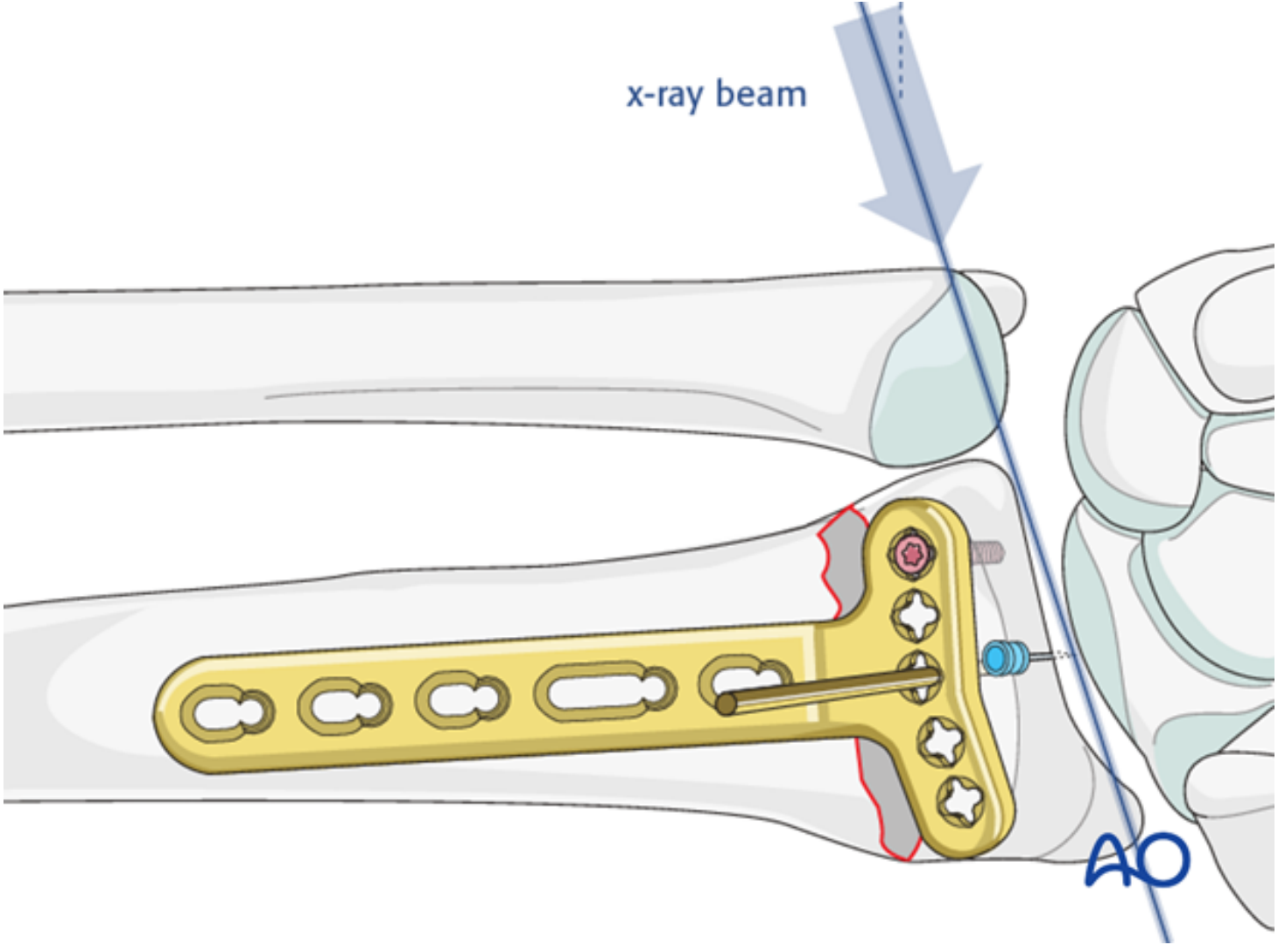

β = β1
β1
β

- The **initial screw** is inserted in the most ulnar screw hole.
- The reason for this is that **if** the **initial screw** is placed on the **radial** side it will block accurate imaging of the ulnar screw placement. **Choose a locking head screw, 2-4 mm shorter than measured.

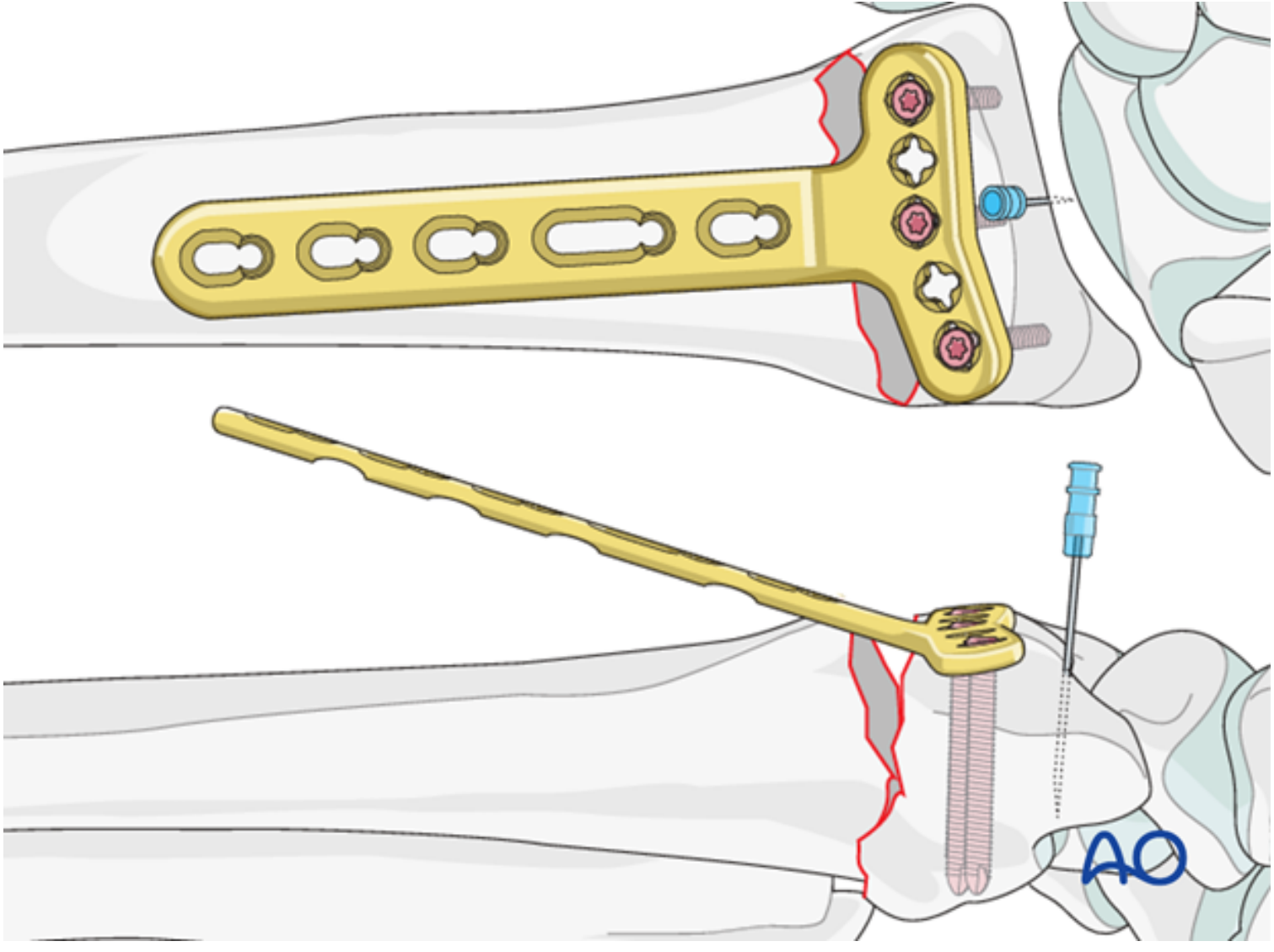
- Provided the screw is parallel to the K-wire, it should not enter the radiocarpal joint.



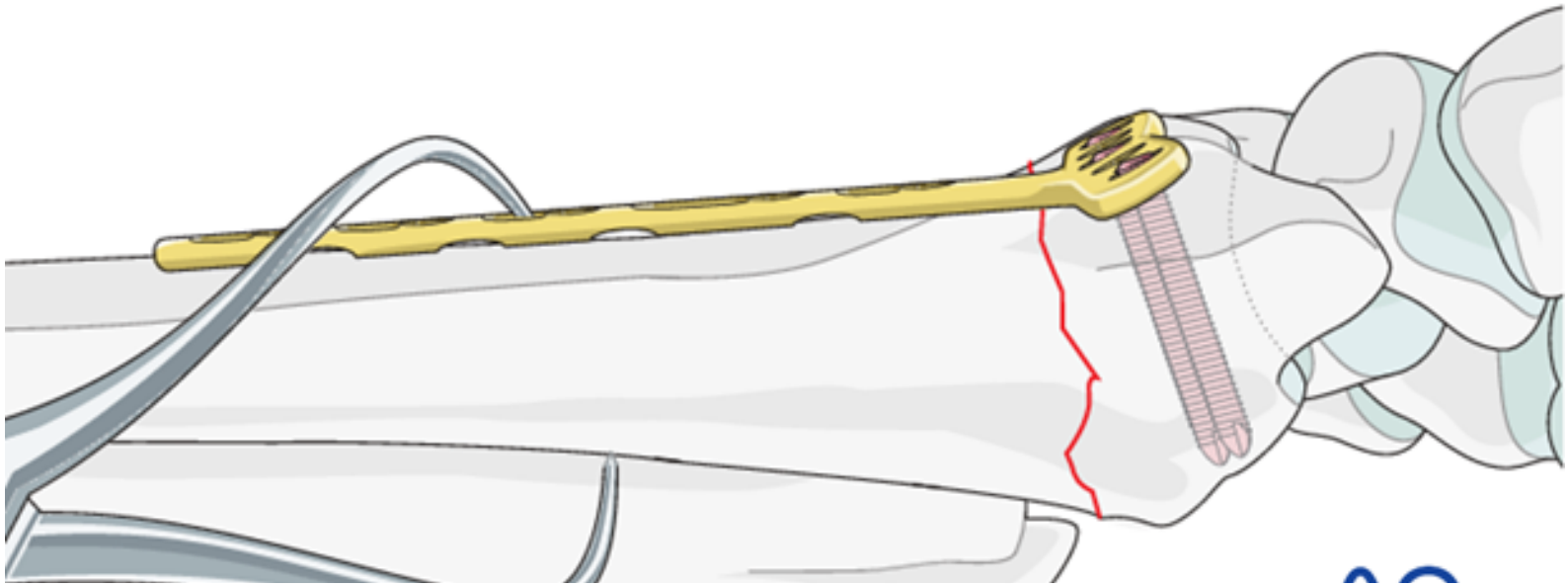
- **Confirm** screw position with a lateral view under image intensification, with the beam aimed at an angle of 20° to the true lateral, clearly showing the joint surface.


x-ray beam

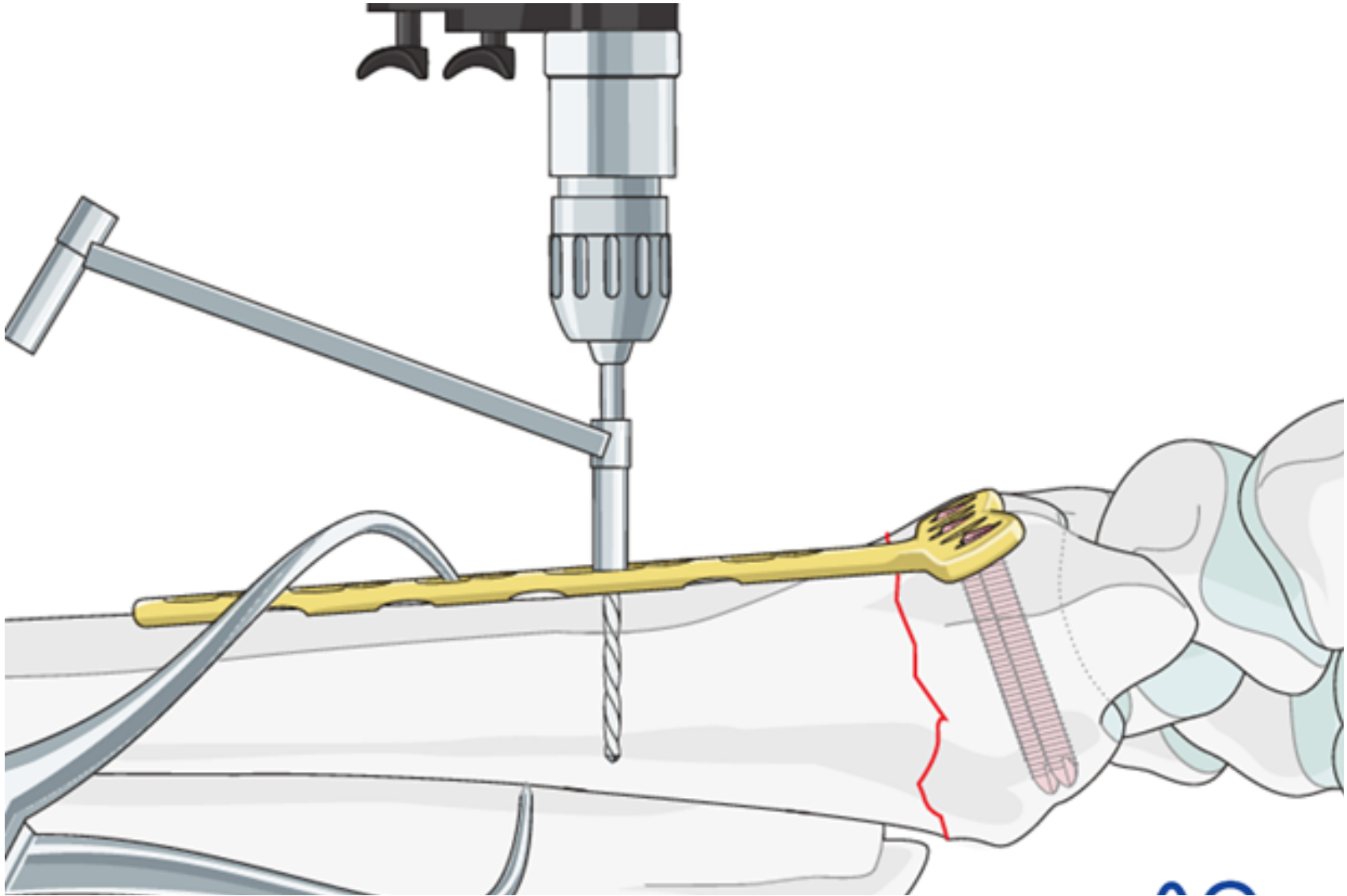
- Insert at least two other distal locking head screws.



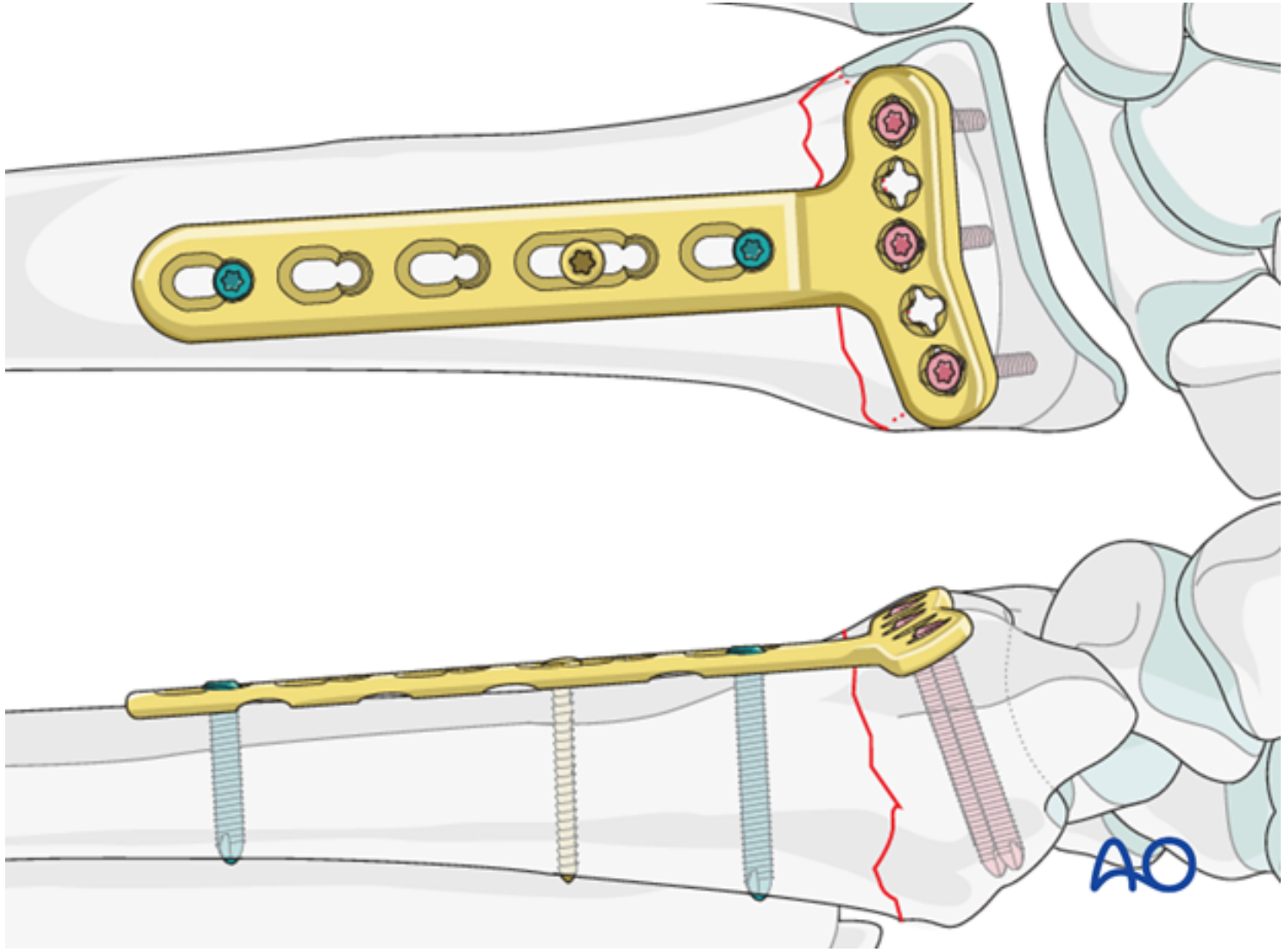
- Bring the plate onto the shaft and hold it with a clamp.
- Obtain check radiographs and adjust the position of the distal fragment if necessary by moving the plate.



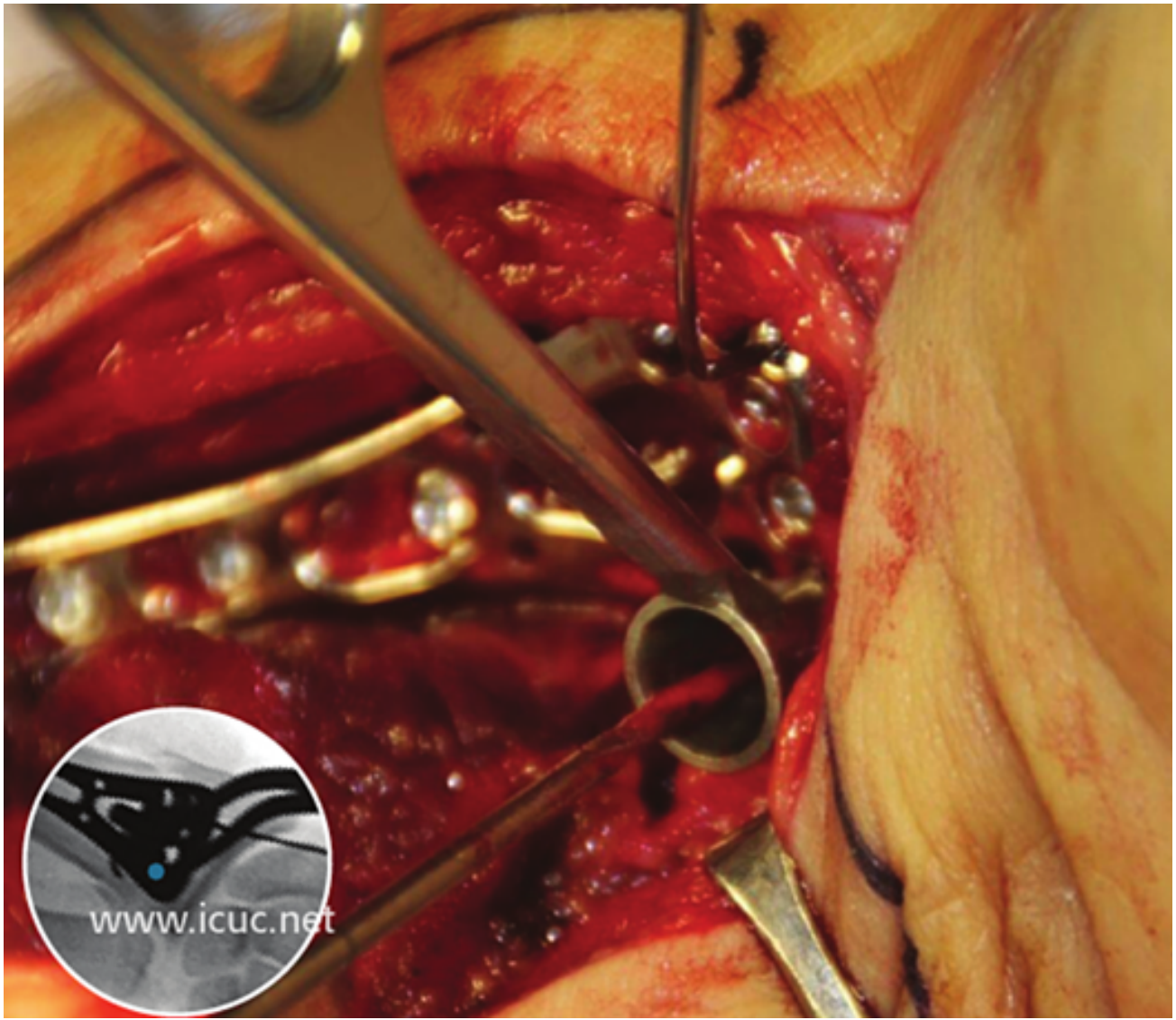
- Once satisfactory reduction is confirmed, insert a self-tapping, non-locking screw through the oblong plate hole.



- Insert at least two further proximal screws



- A variable angle drill guide is used in the distal most screw holes, taking care that the screw trajectory will be **subchondral** and **not into the joint.**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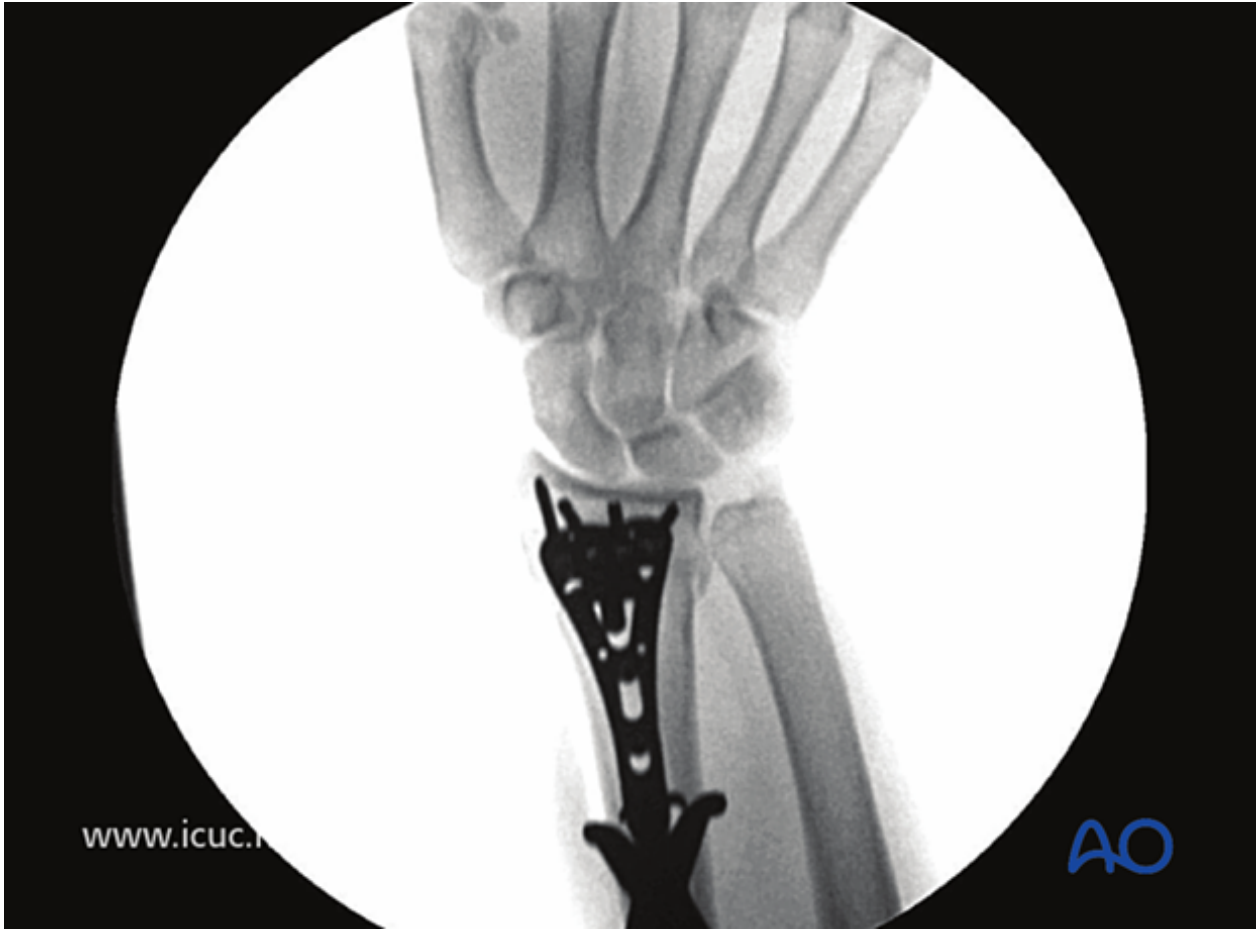
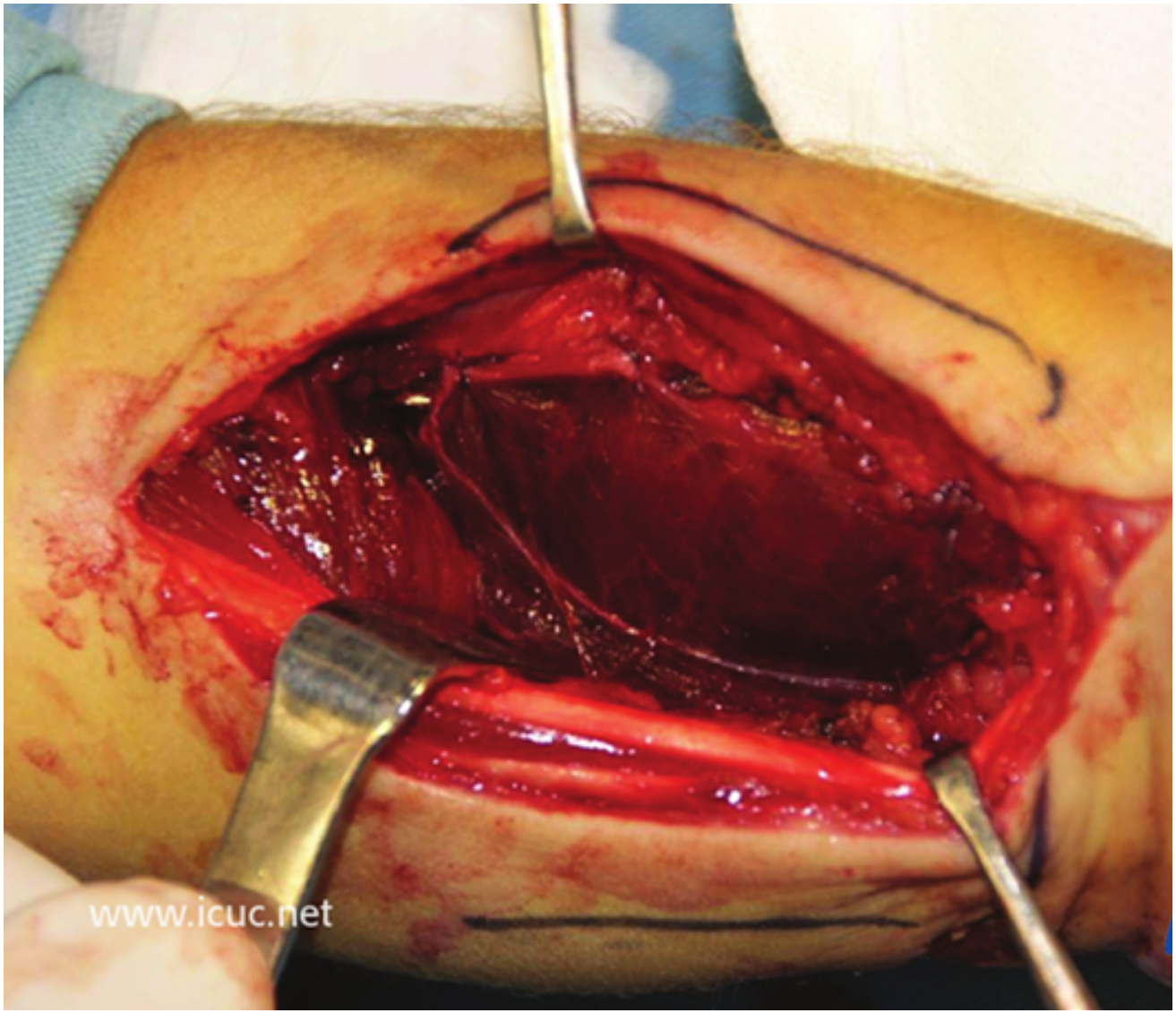


- Fluoroscopic image demonstrating all distal screws are extraarticular.

- Lateral fluoroscopic image demonstrating that the screws are extra-articular.
- To ensure the radial styloid screw is **extra articular**, a styloid view with **20° of angulation** must be performed.

3. Closure

- Before skin & subcutaneous closure, the volar plate should be covered with the pronator quadratus.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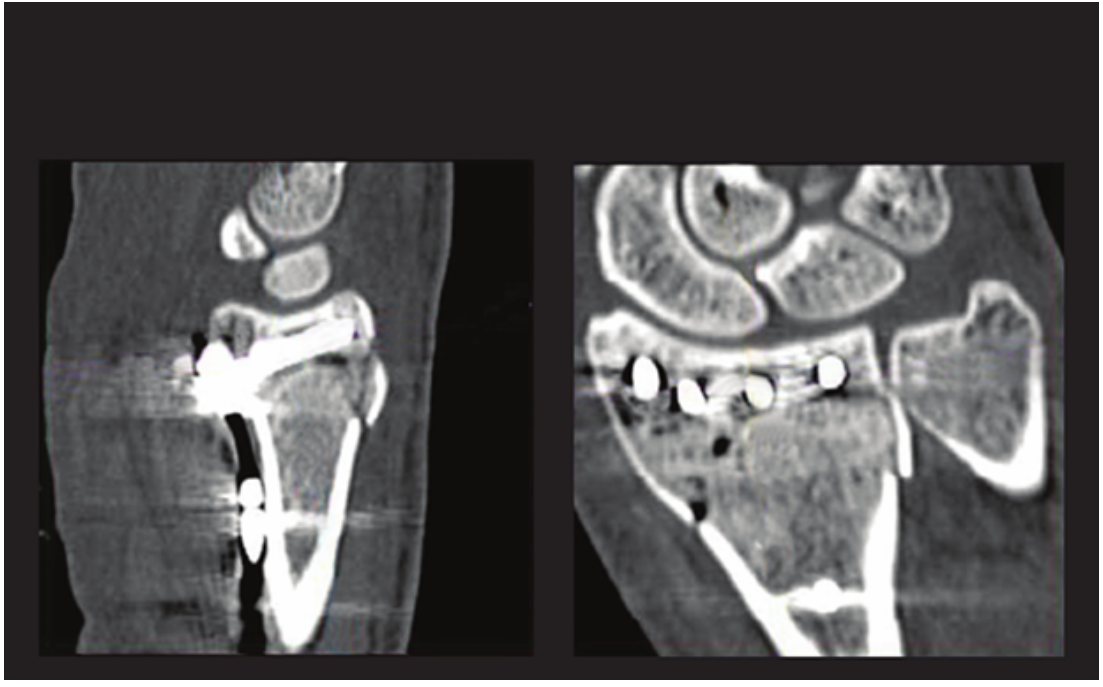
4.Post Op images



- Postoperative CT showing extraarticular position of variable angle screws.