CASE STUDY.

NEWCLIP-TECHNICS

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XPERT WRIST:

Management of a comminuted volar shear distal radius fracture with multiple intra-articular fragments, using a volar bi-plate mounting

Physician profile.

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Patient history.

The patient is a 39-year-old male of normal weight, who works as a painter and is highly active on a daily basis. He suffered a 23-B3 comminuted volar shear distal radius fracture after a fall while hiking in the mountains. Fracture morphology and the patient's activity level mandated surgical intervention to maximize functional outcome, allow a quicker return to work, and accommodate patient's goals.

Choice of treatment.

The patient fell early in the morning while hiking and was urgently taken to local regional care center, where closed reduction and temporary splinting where performed. Two days following injury, the patient was evaluated by the treating physician, who performed a neurovascular exam and interviewed the patient about functional status and treatment goals.

The Preoperative Postero-Anterior and Lateral radiographs demonstrated a comminuted, intra-articular volar shear fracture with multiple intra-articular fragments, including a large radial styloid fragment, a die-punch fragment, and a small volar fragment of the lunate facet.

First, this comminuted fracture morphology does not allow for a traditional volar locking plate proximal to the watershed line, as the distal fragments would be at risk for displacement. Secondarily, although a volar rim plate could be considered, a single plate would not properly address all fracture fragments, and would be less than ideal for restoring anatomic alignment of the volar ulna, die-punch and radial styloid fragments.

Therefore, fragment specific dual column volar plating was chosen for fixation (anterior hook combined with volar radial plate). As the patient is active, this double-plate mounting ensure minimal conflict with the FPL.

Pre-op X-rays

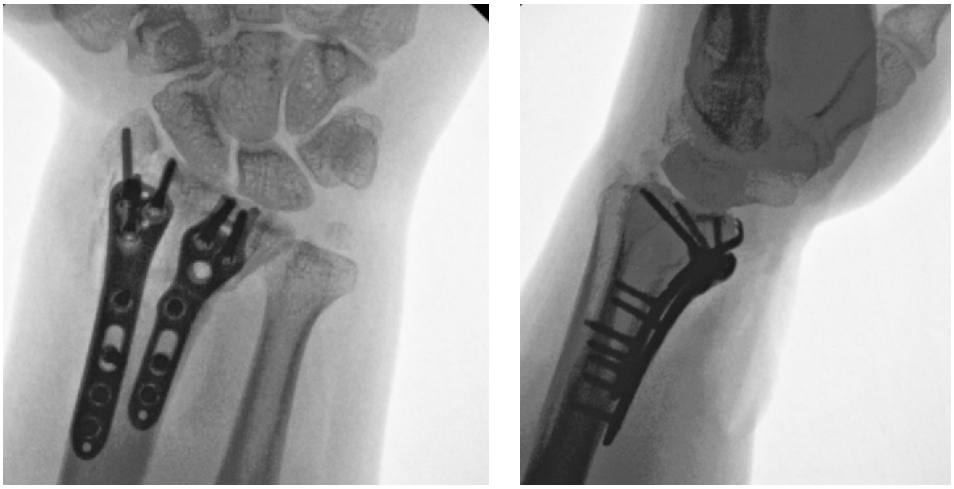
Surgical treatment.

The operative approach was initiated through a traditional trans-FCR approach to the wrist. Initially, a 4-5 cm incision was made in line with the FCR tendon. Careful dissection was taken down through the tendon sheath. The FCR was initially retracted ulnarly, but when accessing the ulnar aspect of the radius it can be taken radially. Radial artery was protected and the FPL tendon was gently retracted ulnarly. The Pronator Quadratus was elevated in periosteal fashion, and the brachioradialis was released off the radius styloid to assist in reduction. An elevator was used to raise central die-punch fragment, and provisional fixation was held with K-wires.

Given the competent dorsal cortex and volar shear configuration, it was decided that dorsal plating was not necessary. The Newclip anterior hook plate was chosen to stabilize the volar ulnar fragment of the lunate facet. Initially, a non-locking screw was placed in the oblong hole to use plate in buttress fashion and assist in reduction of volar shear fragment. Subsequently, distal holes were drilled placing locking screws subchondral to stabilize distal fragment. Proximal holes were then filled with locking screws and the initial non-locking screw was replaced with a locking screw.

Attention was then turned toward radial styloid. The Newclip volar radial plate was chosen. Similar to initial plate, both locking and non-locking screws were used. The monoaxial orientation of the two locking lateral holes of the plate, directed towards the radial styloid, allowed the use of longer screws for optimal fixation of this area. A monoaxial guide was used for their placement.

Final radiographs were obtained. If the surgeon is confident with the fixation, dynamic X-rays with flexion, extension, radial and ulnar deviation can be performed to assess fracture stability and guide early post-operative physiotherapy protocol, as was the case here.



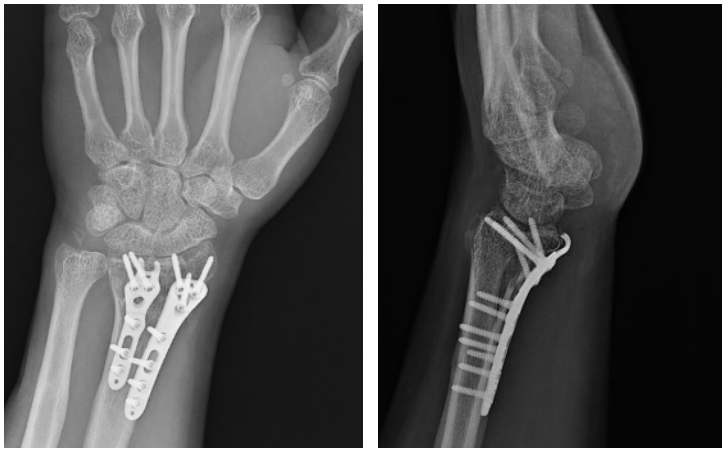
Post-op X-rays

Post-operative follow-up.

Post-operatively, the patient was placed in a volar resting splint to allow for soft tissue rest and healing, while encouraging finger and elbow range of motion.

At the 2-week post-operative appointment, splint was removed. Radiographs showed no evidence of secondary displacement. The patient was taught self-directed therapy to allow for flexion, extension, supination and pronation with active, active-assist, and passive range of motion. Formal physiotherapy was started at this point, with a goal of two therapy sessions per week. 3 to 5 pounds (1 to 2 kg) weight-bearing was allowed to encourage return to activities of daily life. A removable wrist splint was given to be worn at all times, except during therapy and bathing.

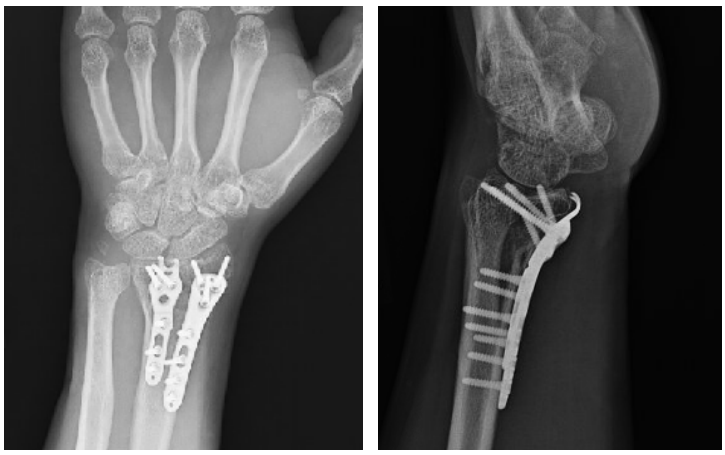
6-week follow up visit reveals appropriate interval consolidation at the fracture site, allowing progression of weight bearing to 20-25 pounds. Motion demonstrated 55 degrees of wrist extension, 30 degrees of wrist flexion, and 60 degrees of pronation and supination.



6 weeks post-op X-rays

Patient final post-operative visit at 16 weeks post-op showed X-rays with healed distal radius fracture. Measurable motion demonstrated no deficits in pronation/supination, with approximately 80% of flexion and extension compared to the contralateral side.

The patient returned to his occupation as a painter approximately 3 months post-op, stating he was able to perform all activities without restriction. At 4 months, he complained of occasional swelling that continued to improve. He stated he was able to lift upwards of 50 pounds without issue. He was counseled regarding potential symptoms of hardware irritation and possible indications for future hardware removal. He denied any such symptoms at the last follow-up.



16 weeks post-op X-rays

Wrist	Pronation	Supination	Flexion	Extension
Left (op)	**80°**	**80°**	**70°**	**75°**
Right (non op)	80°	80°	90°	90°

Wrist mobilities' figures of the patient 4 months post-op

Physician conclusions.

Treatment of volar shear fractures of the distal radius are traditionally addressed with standard volar locking plates. However, as fracture patterns become more complex, a single-plate system is less ideal. Newclip Technics offers the advantage of a comprehensive fragment specific system to address these challenging cases.

As was the case in this fracture, Newclip Technics provides multiple options, including standard volar plates, volar rim plates, dual-column plating, and the possibility of adding dorsal plates and radial styloid plates. With this comprehensive and versatile set, intra-operative findings can be address no matter the fracture pattern.

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Manufacturer : Newclip Technics - Case Study EN - Xpert Wrist Fragment Spe Dr Peter Gibson - ED1- 07/2025 - Medical device EC: class IIb – CE1639 SGS BE - US Class: II