CASE STUDY.

NEWCLIP-TECHNICS



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# XPERT WRIST:

Management of a comminuted intra-articular multi-fragment distal radius fracture with DRUJ involvement using fragment specific system

## Physician profile.

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## Patient history.

The patient is a 29-year-old male of normal weight, who is a construction worker. He suffered a 23-C3 comminuted multi-fragment distal radius fracture with an associated ipsilateral elbow fracture after falling from a rooftop approximately 4-5 meters above the ground. Fracture morphology, patient age, and activity-level contributed to the decision to proceed with operate intervention.

## Choice of treatment.

The patient fell from a roof while working in construction and was urgently taken to local emergency room. Closed reduction and temporary splinting were performed. Three 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 Pre-operative Postero-Anterior and Lateral radiographs demonstrated a comminuted, intra-articular multi-fragment, dorsally angulated distal radius fracture. Fracture morphology included impaction of radial styloid, dorsal angulation with involvement of dorsal ulnar corner, DRUJ involvement, with volar fracture line exiting at the watershed line.

This comminuted fracture morphology precluded the use of the traditional volar locking plate. Given the fracture extension and displacement in the direction of the dorsal ulnar corner and the DRUJ, neither a volar locking plate nor volar rim plate allow for both fracture stabilization. Traditional techniques such as bridge plate, or volar plate with K-wire pinning on DRUJ would have limited post-operative motion and hindered ultimate outcome. Through the use of Newclip Technics anatomical fragment specific plates, this fracture could be properly stabilized while maximizing the opportunity for early motion and return to activity, by allowing for a strong construct.

Fragment specific - radial column latero-dorsal and dorso-medial plating was chosen for fixation. Indeed, the radial column plate with the dorso-lateral extension was preferred over the one without, in this case, due to a sagittal fracture line involving the scaphoid articulation.

*Pre-op X-rays*

# Surgical treatment.

The operative approach was initiated through a dorsal approach to the wrist. Initially, a 5-7 cm incision was made just ulnar to Lister's Tubercle. Careful dissection was taken down to the level of the retinaculum, and the third dorsal compartment. The EPL was released and retracted radially, while the common extensor tendons were elevated off the floor of the 4th dorsal compartment, allowing exposure to dorsal aspect of the distal radius. A small dorsal capsulotomy was performed to visualize the joint surface of the distal radius. With surgical exposure, the dorso-ulnar corner was reduced provisionally with K-wires.

Fragment specific fixation was initiated with the dorso-medial plate. The anatomically contoured plate was placed as distally and close to the ulna as possible. A non-locking screw placed just proximal to the fracture allowed for the plate to be used in buttress fashion, providing dorsal stabilization. Correct placement was verified on biplanar fluoroscopy to verify that distal screws were subchondral with at least two screws in

the fragment. Distal fixation was then secured with locking screws. Proximal screws were placed to secure and stabilize the ulnar dorsal column.  Although severe comminution was present, the plate allowed for stabilization of the dorso-ulnar fragment of distal radius, with a congruent DRUJ.

Dorsal exposure was then extended radially to visualize the radial styloid fragment. After provisional reduction, Newclip Technic's unique dorsal radial styloid plate was then placed along the radial styloid on the radial column. Distal locking screws were positioned subchondrally to the joint surface and the plate was secured proximally with both locking and non-locking screws.

Given the volar fracture exited at the watershed line and stability was confirmed after dorsal plating, no further fixation was used. DRUJ stability was confirmed prior to leaving the surgical suite.

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*

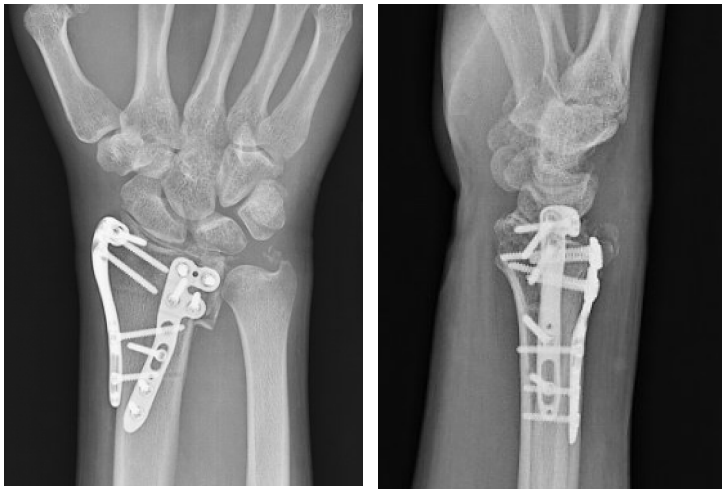
# Post-operative follow-up.

Post-operatively, the patient was placed in a thumb splint to allow for soft tissue rest and healing, while encouraging range of motion of adjacent joints.

At the 2-week post-operative appointment, the 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

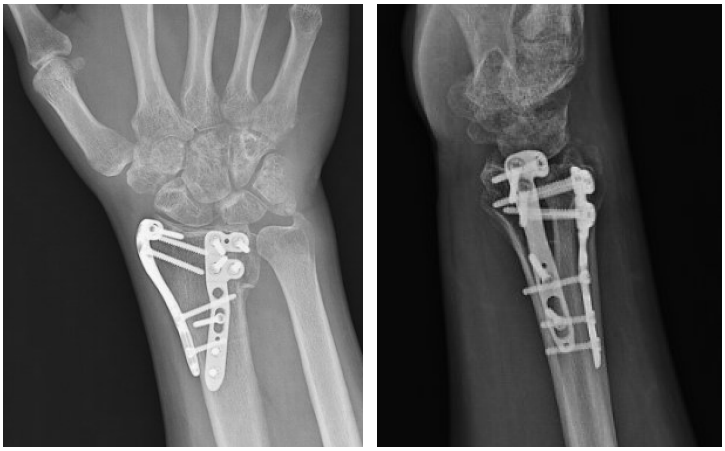
was started at this point in time, with a goal of two therapy sessions per week. 3 to 5 pounds (1 to 2 kg) weight-bearing was allowed to encourage return to activities of daily life. Due to direct DRUJ involvement, a removable thumb spica splint was given to wear at all times, except for therapy (self-directed or formal) and when bathing. The patient was encouraged to continue pronation and supination, but was cautioned against performing these movements with resistance.

6-week follow up visit reveals appropriate interval consolidation at the fracture site, allowing progression of weight bearing to 10-15 pounds. Motion demonstrated 45 degrees of wrist extension, 25 degrees of wrist flexion, and 30 degrees of pronation and 50 degrees of supination. The patient was informed that he could return to full weight-bearing at 10-12 weeks post-operatively.



*6 weeks post-op X-rays*

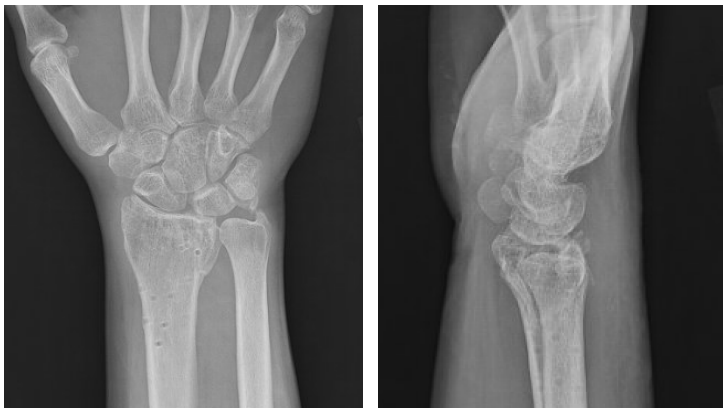
16-week follow up visit revealed X-rays with healed distal radius fracture, no interval change in alignment, and congruent DRUJ. Motion demonstrated 55 degrees of wrist extension, 45 degrees of wrist flexion, and 70 degrees of pronation and 90 degrees of supination.



*4 months post-op X-rays*

At the 6-month follow-up visit, the patient continued to show improvement in motion, with full pronation and supination, with no changes in flexion and extension. The use of extensor tendons continued to cause tendonitis symptoms, particularly notable in the FPL, and ECRL. After discussion, we elected to move forward with elective surgery for hardware removal. Hardware was removed uneventfully approximately 7 months post-initial surgery.

One month following plate removal, the patient attended a final office visit. He demonstrated full pronation and supination when compared to contralateral side. Wrist extension was measured at 60 degrees, while flexion was measured at 55 degrees, with an arc of motion approximately 85% of contralateral side.



*1 month post-hardware removal x-rays*

The patient returned to his occupation in construction 4 months post-op, stating he was able to perform all activities without restriction. At last follow-up, he stated he has no function restrictions when performing his job.

| Wrist | Pronation | Supination | Flexion | Extension |
|---|---|---|---|---|
| **Left (op)** | **85°** | **85°** | **55°** | **60°** |
| Right (non op) | 85° | 85° | 70° | 70° |

*Wrist mobilities' figures of the patient 9 months post-op*

# Physician conclusions.

Treatment of comminuted distal radius fractures, with small volar lip and DRUJ involvement are traditionally treated with bridge plating and pinning of the DRUJ, limiting anatomic fixation, range of motion and functional recovery.

To address these complex cases, Newclip Technics provides multiple options, including the traditional bridge plate, as well as the K-lock system and innovative fragment specific plates.

In the case presented, the use of the comprehensive fragment-specific plating system allowed for a stable construct and led to good clinical outcomes. Thanks to this 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