Rehabilitation pathway for the Operative Management of Distal Radial Fractures with Volar Locking Plates

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1) Introduction

Distal radial fractures (DRFs) are among the most prevalent upper limb injuries, particularly in older adults. When instability, displacement, or intra-articular involvement is present, open reduction and internal fixation (ORIF) using a volar locking plate is the preferred surgical approach. However, surgical fixation alone does not guarantee optimal outcomes. A structured, evidence-based rehabilitation protocol is essential to restore function, prevent complications, and support return to daily activities.

This protocol integrates national best practice guidelines and current clinical evidence to provide a comprehensive, patient-centred rehabilitation pathway following operative management of DRFs.
This protocol is to commence once the decision for operative fixation has been confirmed by the responsible orthopaedic consultant.

2) Patient Education

a) At the initial emergency department or fracture clinic visit, all patients with distal radial fractures should be advised by the orthopaedic team to keep their fingers and thumb moving as well as limb elevation, whether if treatment is non-operative or operative.

b) Provide written and/or digital information at the first Hand Therapy (HT) assessment at the 2 week post-operative stage. Advice regarding keeping fingers and thumb moving and elevation will be provided at the initial telephone call contact when arranging the first appointment with HT
   i) Post-operative exercises
   ii) Pain and oedema management
   iii) Signs of complications (e.g. CRPS, infection) and how to seek help

iv) Contact details for urgent concerns
v) Encourage light functional use of the hand unless contraindicated
vi) Information regarding expected functional recovery and rehabilitation, including advice about return to normal activities such as work, driving and education

3) Peri-operative Considerations

a) Timing of Surgery

i) Intra-articular fractures: aim for surgery within 72 hours of injury
ii) Extra-articular fractures: aim for surgery within 7 days of injury
iii) Fractures that have redisplaced post manipulation should be fixed within 72 hours from the decision made to operate

b) Surgical Technique

i) Closure with absorbable sutures where appropriate
ii) Final fluoroscopic imaging: AP, joint lateral, and standard lateral views should be saved onto the PACS system
iii) Post-operative immobilisation (splint or back slab) at surgeon's discretion, with clear documentation of type and intended duration
iv) Immobilisation must allow full finger movement and avoid forced palmar flexion
v) HT referral form to be completed at time of surgery by the operating team
vi) A sick note covering 8 weeks off work should also be completed

4) Initial Follow-up

Initial follow-up should occur at approximately 2 weeks post-operatively, unless earlier review is indicated.

a) Direct to Hand Therapy (HT) – appropriate for:

i) Uncomplicated DRFs
ii) Patients should be given a Patient Initiated Follow Up (PIFU) at time of surgery

b) Fracture Clinic – indications include:

i) Request of the responsible consultant

ii) Any wound concerns or wounds requiring removal of sutures
iii) Any concerns raised by HT
iv) Complicated/ comminuted fractures
v) DRFs performed with additional procedures (e.g CTR)

c) Patients who should be considered for earlier review (within 7 days)

i) Pre-operative stiffness
ii) High pain/ swelling
iii) Complex/ comminuted fractures
iv) Elderly/frail patients
v) Poor compliance risk
vi) Diabetes/ comorbidities
vii) Neurovascular symptoms
viii) CRPS risk

5) Follow-up Imaging

a) Routine post-operative X-rays are not indicated in uncomplicated cases.
b) Imaging should be arranged if there are:
   i) Clinical concerns (e.g. increasing pain, reduced function)
   ii) Suspicion of loss of fixation or complications

6) Further Follow-up

a) Further fracture clinic review at supervising consultant's discretion, guided by clinical progress and fracture complexity
b) Routine fracture clinic follow-up are not required for uncomplicated cases after initial review; patients may be transitioned to PIFU if clinically appropriate and with clear safety-netting advice
c) Patients will remain under the care of the HT team during rehabilitation
d) The intensity of the therapy sessions and rehabilitation goals including return to normal activities is at the discretion of HT team

7) **The responsible consultant retains overall clinical responsibility for the patient throughout the rehabilitation process.**

8) **Monitoring / Safety Netting and Escalation**

a) Patients will follow the rehabilitation protocol set by Hand Therapy
b) Patients should be advised to report worsening pain, swelling, stiffness, or functional decline
c) Hand Therapy should refer back to a hand surgeon/ responsible consultant if:
    i) Progress is not as expected for stage of recovery
    ii) Significant pain, stiffness, or functional limitation persists
    iii) There are concerns regarding complications
d) Escalation should occur in a timely manner with clear documentation

9) **Patient Related Outcome Measures (PROMs)**

a) Recommended PROMs to monitor outcomes at a minimum of three intervals:
    i) Pain VAS
    ii) QuickDASH & PRWE
    iii) Finger / Wrist / Elbow ROM
    iv) Grip strength

b) Recommended intervals:
    i) 1st – at initial assessment by HT (approximately 2 weeks post-op)
    ii) 2nd – at an interval deemed appropriate by HT
    iii) 3rd – at discharge

c) Responsibility for PROM collection and documentation lies with the Hand Therapy team, with results used to guide clinical decision-making and further audit purposes.

10) Conclusion

This protocol provides a unified, evidence-based framework for the rehabilitation of operatively managed distal radial fractures. By aligning surgical and rehabilitation practices with national standards and current clinical evidence, it supports timely, patient-centred care that prioritises early mobilisation, complication prevention, and functional recovery.

11) References

- British Orthopaedic Association & British Society for Surgery of the Hand. (2018). *Best Practice for Management of Distal Radial Fractures*. *https://www.bssh.ac.uk/_userfiles/pages/files/professionals/Radius/Blue%20Book%20DRF%20Final%20Document.pdf*
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- Mehta, R., et al. (2024). *Distal Radius Fracture Rehabilitation Clinical Practice Guidelines*. *J Orthop Sports Phys Ther 2024;54(9):CPG1-CPG78. doi:10.2519/jospt.2024.0301. https://www.orthopt.org/uploads/content_files/files/mehta_et_al_2024_distal_radius_fracture_rehabilitation.pdf*