

IRISH ASSOCIATION FOR
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IAEM Clinical Guideline

**Haematoma Block for Distal Radius
Fracture Reduction**

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DISCLAIMER

IAEM recognises that patients, their situations, Emergency Departments and staff all vary. These guidelines cannot cover all clinical scenarios. The ultimate responsibility for the interpretation and application of these guidelines, the use of current information and a patient's overall care and wellbeing resides with the treating clinician.

Revision History

Date	Version	Section	Summary of changes	Author
April 2025	1.0	All	Final version	MB,RM

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GLOSSARY OF TERMS

DRF	Distal radius fracture. General term for any fracture of the radius occurring near the wrist.
In-plane technique	Ultrasound-guided needle manipulation technique in which the needle trajectory is in parallel and in the same axis as the ultrasound probe.

GLOSSARY OF ABBREVIATIONS

ED	Emergency Department
LA	Local Anaesthetic
LAST	Local Anaesthetic Systemic Toxicity
PSA	Procedural Sedation and Analgesia
US	Ultrasound

Haematoma block for distal radius fracture reduction

INTRODUCTION

Distal radius fractures (DRF) are the most common adult orthopaedic fracture¹ with a bimodal distribution, affecting both young patients following high-energy trauma and elderly patients from low energy falls. DRF often require closed reduction in the Emergency Department (ED) to prevent neurovascular complications, provide pain relief and potentially achieve anatomical reduction to allow for conservative management.²

The choice of analgesia and anaesthetic for emergency manipulation is influenced by several factors, including patient co-morbidities, availability of trained personnel and availability of suitable monitoring space.^{3,4,5} While procedural sedation and analgesia (PSA) may be favoured for accuracy of fracture reduction⁶, this may not be suitable in every circumstance.⁵ In these cases, alternative analgesic methods need to be considered such as haematoma blocks or inhaled anaesthesia (e.g. Entonox or Methoxyflurane). Using a haematoma block alongside inhaled anaesthesia will allow for better procedural and post-procedural analgesia.

A haematoma block (HB) is simple method of providing rapid pain relief during reduction of distal radius fractures.^{7,8} It involves injecting local anaesthetic (LA) into the haematoma between the fractured fragments of bone. Manipulation of the fracture can then be carried out with significantly reduced pain.⁷ Haematoma blocks of the wrist are considered safe in both adults and children and hold several advantages over procedural sedation, such as only requiring a single practitioner and no requirement for cardiopulmonary monitoring.^{8,9} The use of ultrasound (US) guidance for haematoma blocks has been shown to further increase the accuracy of the block and improve anaesthesia of the fracture.¹⁰

PARAMETERS

Target audience	Emergency physicians and Advanced Nurse Practitioners who regularly manage patients with distal radius fractures.
Patient population	Patients presenting to the ED with acute distal radius fractures requiring reduction and manipulation.
Exclusion criteria	Open Fractures.
Contraindications	Allergy to local anaesthetic. Cellulitis overlying the fracture site. Coagulopathies.
Relative Contraindications	Patient anxiety or inability to co-operate with procedure.

AIMS

This guideline aims to describe the haematoma block as a modality for analgesia for fracture reduction in distal radius fractures.

TECHNIQUE

1.0 Preparation

- Explain procedure to patient and gain consent.
- Gather necessary equipment:
 - Antiseptic solution e.g. Chlorhexidine
 - 10ml syringe
 - Local anaesthetic (2% Lidocaine without adrenaline)
 - 22 Gauge (blue) needle
 - Mepore dressing
 - Optional: Ultrasound (linear probe), sterile probe cover, sterile US gel
- Position patient
 - Arm supported, prone and wrist in neutral position

2.1 Block Technique (Landmark)

- Palpate along dorsal surface of wrist for fracture site. Feel for “step-off”.
- Inject small wheel of LA above fracture site, then insert needle approximately 1cm proximal to fracture site at 30-degree angle towards haematoma, proximal to distal, aspirating on needle until blood returns to syringe (Figure 1).
- Slowly inject up to 3mg/kg of lidocaine, to maximum of 200mg (10mls of 2% lidocaine)¹¹ into the haematoma and around adjacent periosteum.
- Apply pressure to injection site and Mepore dressing.

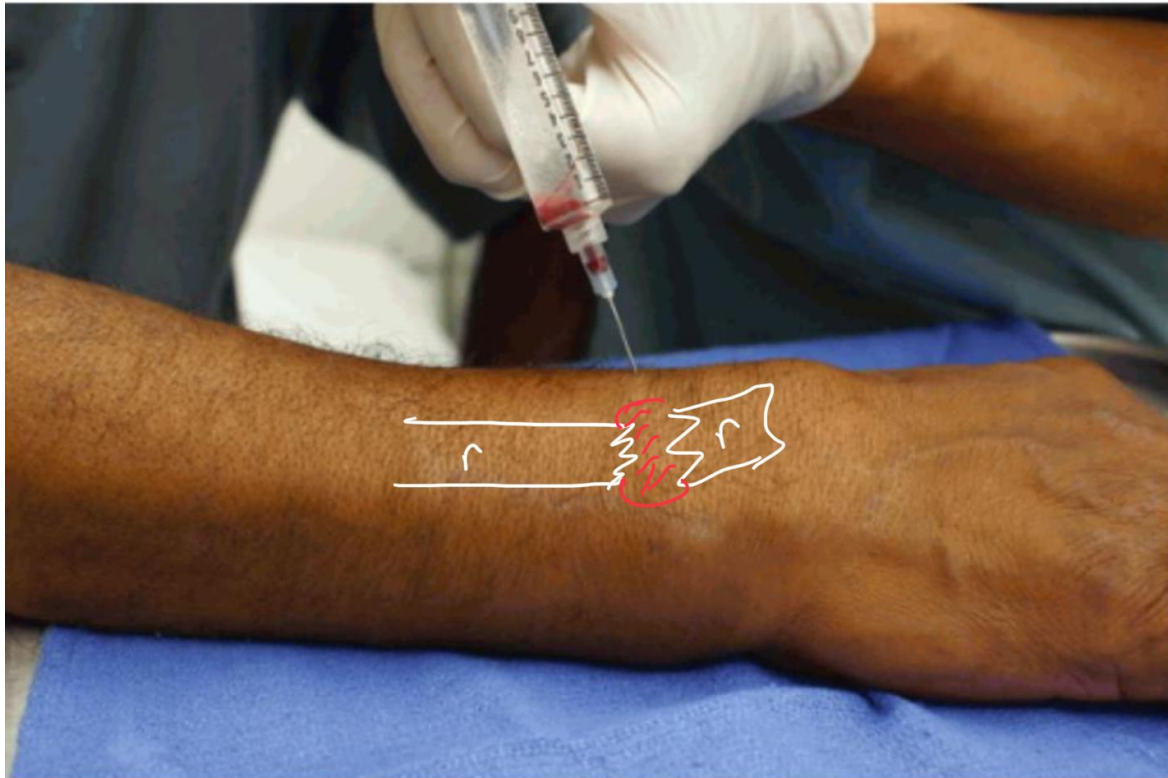


Figure 1: Image showing needle aspirating haematoma prior to infiltrating LA. Image from: <https://musculoskeletalkey.com/the-wrist-and-hand-8/>. (Image Modified by MB, r= Radius)

2.2 Block Technique (Ultrasound)

- Using the linear probe placed longitudinally along the distal radius, identify the disruption in the hyperechoic cortex of the distal radius (Figures 2a to 2c).
- Using an in-plane technique, angle the needle directly into the fracture site and inject LA 6-8mls 2% lidocaine slowly into the hematoma and around the adjacent periosteum.

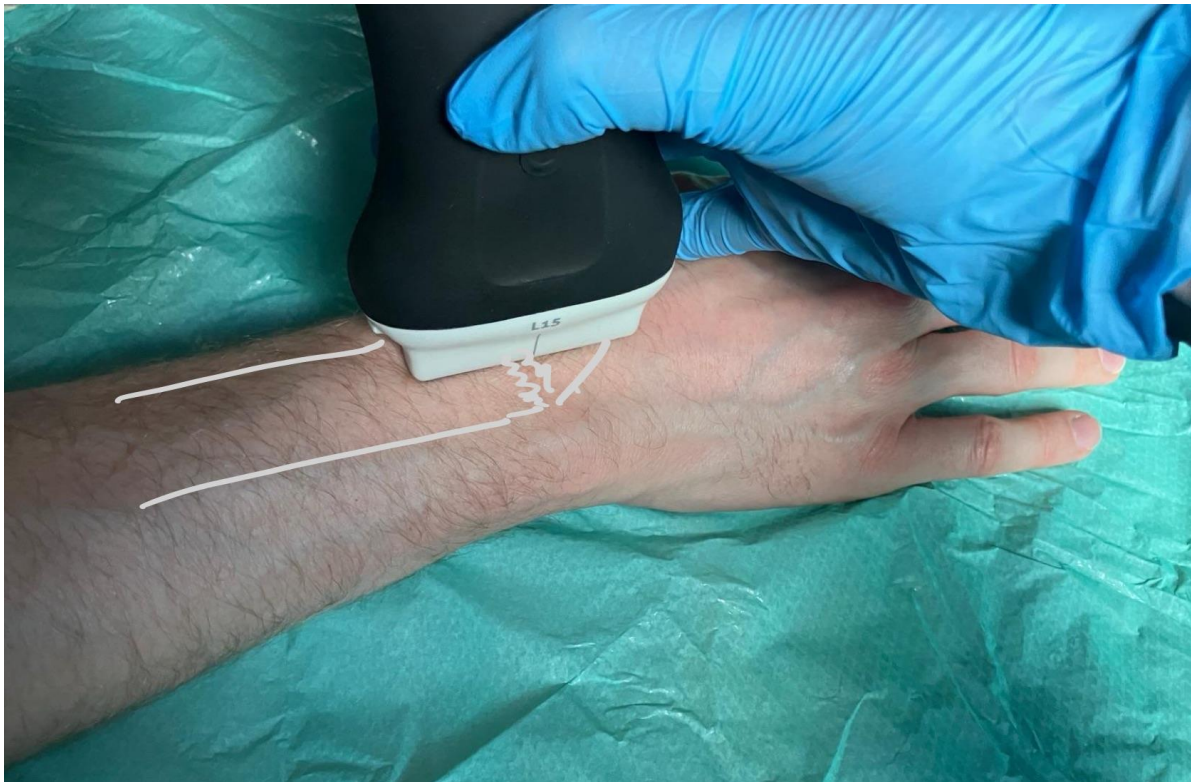


Figure 2a: Image of linear probe in position

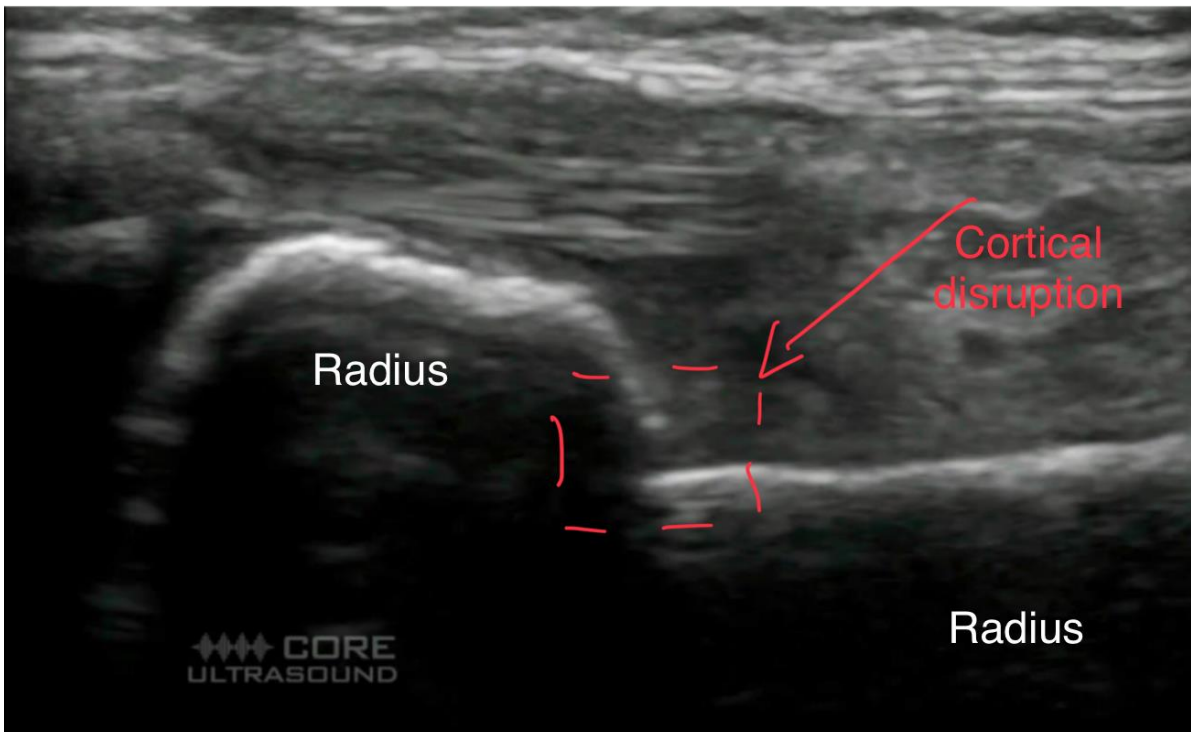


Figure 2b: Sagittal image of distal radius showing disruption in cortex. Image from: <https://coreultrasound.com/fracture-and-hematoma-blocks/> (Image Modified by MB)

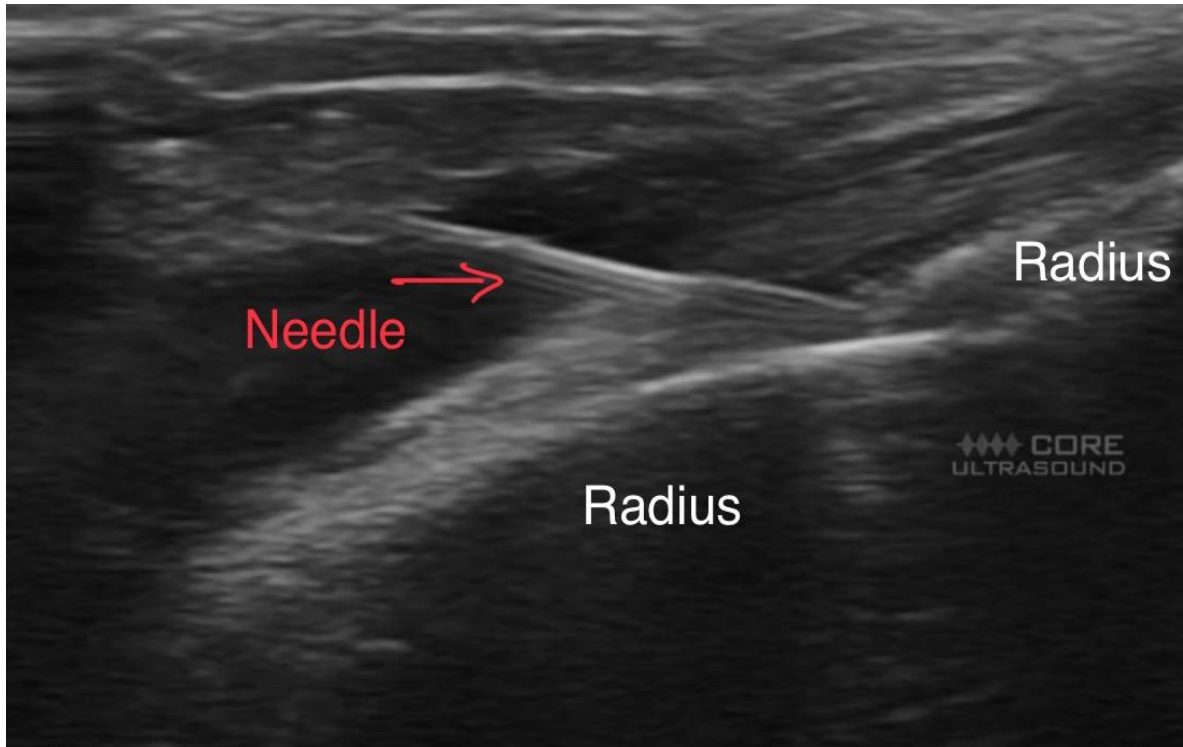


Figure 2c: Sagittal image of distal radius illustrating needle advancing into haematoma in long-axis view. Image from: <https://coreultrasound.com/fracture-and-hematoma-blocks/> (Image modified by MB)

3.0 Following haematoma block, wait for 10 - 15 minutes for anaesthesia to take effect

- Failure to allow adequate time for LA to work is a common mistake.
- Continue with the manipulation when patient reports pain reduced. You may consider supplementing the haematoma block with inhaled anaesthesia such as Entonox® or Methoxyflurane for additional patient comfort.¹²
- What to do if it has not worked?
 - Do not repeat the haematoma block if it has not worked the first time, this increases risk of Local Anaesthetic Systemic Toxicity (LAST).¹³
 - Consider alternative forms of analgesia. If not suitable for procedural sedation in the ED patient should be referred to the orthopaedic team for definitive operative management.

4.0 Post Procedure

- Local anaesthetic systemic toxicity can occur between 5-30 minutes after administration of LA,¹³ for this reason patients should be observed for at least 30 minutes post haematoma block.

SPECIAL CONSIDERATIONS/ COMPLICATIONS

Local Anaesthetic Systemic Toxicity (LAST)

- Rare but potentially severe complication associated with the administration of LA. It typically results from high plasma concentrations of LA, which can occur due to inadvertent intravascular injection, excessive dosing, or rapid absorption from highly vascularized areas. This can be avoided by careful attention to weight-based dosing and staying below 3m/kg (maximum of 200mg) when using lidocaine.¹³
- Similar to other blocks, the dose of LA should be reduced by 20% if patient is known to have renal or hepatic impairment.
- See [IAEM guideline on LAST](#) for further information.

Compartment Syndrome

- Can occur after a fracture when subsequent swelling within a closed muscle compartment, leads to increased pressure impeding circulation and damaging nerve and muscle cells. There have been reported cases in the literature of compartment syndrome following HB, this is however extremely rare.¹⁴
- If suspected, elevate the limb, remove any restrictive cast or bandage and immediate referral to orthopaedics is warranted for urgent fasciotomy.

Infection

- Introduction of infection at the fracture site can lead to osteomyelitis¹⁵ or septic arthritis, complicating recovery and treatment. This is very rare. This risk should be minimised by using a strict aseptic technique. The patient should be counselled on signs of infection and told to return for review if infection is suspected.

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