

Fascia iliaca block guide

A method of preoperative pain management
in older people with acute hip fractures

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The information in this document should not replace a clinician's professional judgement.

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Objective

- To provide the tools and resources to enable the use of fascia iliaca block (FIB) as an analgesic option for patients with acute hip fracture.
- To ensure patients with suspected or confirmed acute hip fracture are provided with safe and effective preoperative pain relief.

This document is a guide to ultrasound-guided FIB using an out-of-plane approach. The out-of-plane approach has been selected because needle trajectory is parallel to the vascular bundle, rather than in the direction of the vessels, and allows easy conversion to a catheter technique.

The out-of-plane approach has been selected as it is a safer approach for those training in ultrasound-guided FIB, however there is a range of other options or techniques. The out-of-plane approach allows for easily viewable needle trajectory in the complimentary videos. These documents are to support ultrasound-guided FIB training and should be used together with clinical training and observation.

Other options or techniques for the administration of regional analgesia for fractured neck of femur (hip) – including but not limited to in-plane ultrasound-guided and blind double-pop FIB and femoral nerve blocks, are not addressed here. They may be considered as per local governance and clinical preference and proficiency of staff.

This guide is a guideline only and designed to be adapted to meet the needs of local hospitals and health districts. Local policies and clinical governance frameworks should be in place before implementing a FIB program.

Principles of action

Pain and associated risks can be minimised for people with suspected or confirmed acute hip fractures by early use of an ultrasound-guided FIB.

The principles of treatment using FIB include:

- overarching local governance relating to administration of regional analgesia
- regular assessment and documentation of pain
- ultrasound-guided FIB for consenting patients (where appropriate) with suspected or confirmed acute hip fracture as soon as practical
- education of patient and carer on FIB
- evaluation of the procedure, its effectiveness in improving the patient experience and outcome on an ongoing basis.

Roles and responsibilities

Scope

The FIB procedure applies primarily to patients with suspected or confirmed fractured neck of femur.

FIB can also be considered in patients with mid shaft femur fractures.

For absolute and relative contraindications see page three.

Responsibilities

Responsibilities of clinical directors or managers

The director or manager is responsible for ensuring appropriately qualified staff are accredited in the insertion and management of FIBs in line with local policies, governance frameworks and the FIB accreditation process. The FIB accreditation process is described in the *Fascia Iliaca Blocks in Acute Hip Fracture in the Older Person: Toolkit*.

They are also responsible for:

- monitoring and managing clinical practice in relation to FIB outside of the scope of this document
- ensuring essential equipment and support is available at the clinical unit for appropriately trained staff to perform FIBs
- routinely monitoring the outcomes from the time of implementation, including adverse events and accreditation elements.

Responsibilities of supervisors

The supervisors are responsible for maintaining knowledge and skills of FIB in line with local policies, governance frameworks and the FIB accreditation process. They are also responsible for demonstrating accreditation and effective outcomes relating to the insertion of FIBs.

Supervisors need to provide accreditation training for clinicians according to the training framework and local policies.

Responsibilities of the novice FIB clinicians

The term novice FIB clinicians refers to medical or nursing staff authorised to insert FIB but new to this procedure. Staff appropriate to undertake accreditation training may include junior medical officers, registrars, fellows, nurse practitioners, clinical nurse consultants, nurse educators, clinical nurse specialists and senior registered nurses.

Novice FIB clinicians are responsible for:

- maintaining knowledge and skills of FIB in line with local hospital policy and the FIB accreditation process
- safely completing 2-5 observed FIBs (determined through local governance) with the supervisor, prior to being assessed as competent with the procedure. It is recommended nurses perform five FIBs under supervision to gain accreditation
- demonstrating competency in FIB insertion prior to performing the procedure independently
- comparing the patient's medical history and principal diagnosis with the patient criteria for exclusion outlined on page three.

Clinicians who fail to successfully insert FIB after one attempt should stop immediately and seek assistance from a supervisor before attempting another FIB.

Process

Determine appropriateness of FIB

Before placing a FIB do the following.

1. Complete or review the patient's medical assessment and documentation, including electrocardiogram (ECG) and current medications.
2. Review contraindications to FIB and ensure patient does not meet any of the exclusion criteria.

Contraindications

Absolute contraindications

FIB should be excluded for patients who have:

- local site infection
- patient refusal
- any ropivacaine contraindications including:
 - known allergy to local anaesthetics
 - documented severe hepatic disease
 - documented evidence of second or third-degree heart block on ECG (unless patient has a permanent pacemaker)
 - amiodarone therapy.

Relative contraindications

FIB may be excluded for patients where you are unable to identify the femoral artery with ultrasound.

Other relative contraindications include:

- anticoagulated patients or those with significant coagulation abnormalities. These patients may still have a FIB performed by the most experienced person available if the likely benefit for the individual patient outweighs the risk
- patients with femoral artery bypass operation on the side of the fracture.

Note that aspirin alone or non-steroidal anti-inflammatory drugs (NSAIDs) alone are not a contraindication. An experienced clinician may decide the risk benefit ratio is in favour of performing a FIB in the presence of anticoagulation as the site is compressible and vascular structures are clearly visible under ultrasound.

Equipment

The following equipment should be assembled:

- plain lignocaine (5mL of 1%) for local anaesthetic infiltration to skin
- plain ropivacaine 0.75% x 2 ampules
- normal saline 0.9% 10mL for injection x 2 ampules
- dressing pack
- sterile gloves
- chlorhexidine gluconate swabs 2% w/v in 70% v/v IPA (hydrex 2% alcohol)
- a sterile ultrasound probe cover (the pack contains the sterile gel)
- sterile gown
- surgical cap
- intravenous cannulas as appropriate for patient
- 1L Hartmann's solution
- Luer lock syringes (20mL x 2 + 5mL x 1)
- appropriate intravenous access/cannula
- small dressing
- ultrasound machine with linear array ultrasound probe usually in the mid to high-frequency range (e.g. 8-10MHz)
- marking pen.

Monitoring equipment

- ECG monitor
- Blood pressure monitor
- Pulse oximeter.

Preparation and procedure

Assistance

This procedure requires a second person to assist injecting the ropivacaine (under direct instructions from the proceduralist).

Preparation before procedure

1. Confirm the patient's identification.
2. Introduce yourself and your assistant to the patient.
3. Offer the patient the opportunity to have a member of staff, relative or friend with them during the procedure.
4. Educate the patient (and relative or friend, if present) about the procedure and explain the reason for the FIB. Provide them with the Patient and carer brochure on FIB (see Appendix 2).
5. Obtain and document patient's verbal consent to align with the principles of an informed consent policy.
6. Assess and document pain.
7. Set up monitoring equipment (ECG, pulse oximetry, blood pressure and respiratory rate measurement).
8. Gain venous access preferably using an 18G cannula.
9. Start Hartmann's solution (1L over 8-12 hours), unless otherwise indicated.

Procedure

1. Ensure patient remains on cardiac monitor and level of consciousness is assessed throughout the procedure.
2. Draw up 5mL of lidocaine (lignocaine) 1% injection for local skin anaesthetic.
3. Draw up ropivacaine 0.375% by diluting ropivacaine 0.75% with an equal volume of sodium chloride 0.9%.

To achieve this

In two separate 20mL syringes draw up 10mL of ropivacaine 0.75% into each syringe. Dilute each 20mL syringe with 10mL of sodium chloride 0.9% to a total volume of 20mL in each syringe.

Determine volume required according to patient weight and using the parameters outlined in table 1.

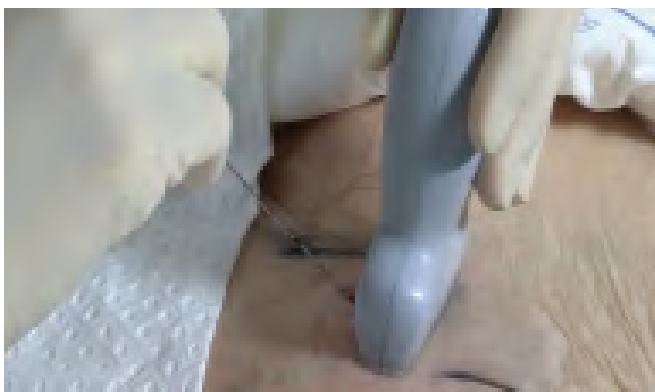
Table 1: Local anaesthetic to weight ratio table

Weight or estimated weight of patient in kg	Volume of ropivacaine 0.375% (in mL) (1:1 of 0.75% ropivacaine with 0.9% sodium chloride)
≤60	30
61–70	35
≥71	40

4. Position ultrasound and procedure trolley so there is easy access to the patient's affected side.
5. Clean the skin with chlorhexidine gluconate swabs and allow to dry.
6. Maintain aseptic technique throughout the procedure.
7. On the ultrasound machine use linear probe (transducer).
8. Set the ultrasound probe (transducer) to nerve examination setting.
9. Increase the depth to 4-5cm depending on the size of the patient.
10. Identify orientation of the ultrasound probe – medial and lateral and apply gel.
11. Palpate and place the probe over the anterior superior iliac spine.
12. Move the probe medially along the line of the inguinal ligament until you identify the femoral artery and vein.
13. Turn the probe perpendicular and move laterally until you visualise the ischium.
14. Above the ischium is the iliacus muscle and the bright white band above that is the fascia iliacus.
15. Decrease the depth on the ultrasound to 2-3cm.
16. Inject 2-3mL of lidocaine (lignocaine) 1% injection to anaesthetise the skin.
17. Insert the blunt nerve block needle/echogenic needle (e.g. the Pajunck brand) in the middle of the probe at a 45-degree angle using an out of plane approach. Follow the tip of the needle until you see it advance through the fascia lata and the fascia iliaca (you will usually feel two 'pops') (see figure 1).

18. Aspirate and inject 1mL of ropivacaine 0.375% solution. The fascia iliaca should peel off the iliacus muscle. If the tip of the needle has gone into the iliacus muscle, you will see the muscle fibres spreading apart. Slowly withdraw the needle until you see the tip directly under the fascia iliaca.
19. Continue injecting the remainder of the ropivacaine 0.375% solution creating a black space that will allow the solution to track down and block the femoral nerve.
20. Once the dose of ropivacaine 0.375% solution has been injected, withdraw the needle and place light pressure on the injection site.
21. Following FIB insertion it is the responsibility of the proceduralist to remain immediately available until satisfactory block has been achieved, the patient is stable, and the potential for immediate complications has passed.

Figure 1: Insert the needle using an out-of-plane approach for the infrainguinal Fascia Iliaca Block



Throughout the entire procedure you must use ultrasound to monitor the needle's location.

The needle position will be physically close to the pelvic cavity and advancing blindly could cause inadvertent puncture of the pelvic cavity.

Disposal of waste and equipment

1. Dispose of waste and equipment from the FIB in standard waste bins and sharps bins as required.
2. Remove sterile gloves and perform hand hygiene.

Complications

Inadvertent intravascular injection

Observe the patient for any signs of inadvertent intravascular injection such as:

- circumoral tingling
- light-headedness
- visual disturbances
- seizures
- arrhythmias.

If any of the above occur:

- stop injecting the local anaesthetic
- call for rapid response and follow basic life support guidelines
- administer 100% oxygen.

Toxicity

Signs of reaction to local anaesthetic

- Early signs are circumoral numbness (first sign) followed by tongue paresthesia and dizziness
- Excitatory signs such as restlessness and agitation often precede central nervous system depression (slurred speech, drowsiness, unconsciousness)
- Muscle twitching heralds the onset of tonic or tonic-clonic seizures
- Respiratory arrest often follows.

Treatment for reaction to local anaesthetic

- Stop injecting the local anaesthetic
- Administer 100% oxygen
- Call the supervisor and follow basic life support guidelines.

If the patient is unresponsive to standard therapy, in addition to standard cardiopulmonary resuscitation, commence lipid rescue as per local policy.

Failed block

A failed block is rare and is usually due to injecting in the wrong location or abnormal anatomy. Failed block is recognised when the Verbal Numerical Rating Scale (VNSR), Abbey Pain Scale or Pain Assessment in Advanced Dementia Scale (PAINAD) has not decreased by 30% within one hour of FIB insertion.

When FIB fails, administer regular analgesia as charted or notify supervisor.

In the case of block failure, a FIB may be repeated after four hours.

Haematoma

Haematoma is usually a minor complication. Do not perform block when the patient is anticoagulated (INR>1.4).

Nerve damage

Femoral nerve damage is very rare, since the needle and injection are not near the nerve. It is likely due to wrong location or abnormal anatomy. Signs of a nerve injury include a prolonged motor block (greater than 24 hours), parasthesia and pain in the distribution of the femoral nerve. In this situation, inform the supervisor.

Tips

Excessive resistance to injection

If you feel excessive resistance to the injection, either withdraw the needle slightly or advance it, depending on what you are seeing in the survey window.

Excessive inferior run-off of local solution

If there is excessive inferior run-off of the local solution (some or too much of the local spreading out in the direction opposite the lumbar plexus), use one of your hands or ask an assistant to place a hand to exert manual pressure inferior to the injection site. This will encourage antegrade of flow towards the lumbar plexus.

Post-procedure patient management

1. Monitor the patient 15 minutes post procedure, hourly for two hours, then four hourly thereafter including: blood pressure, pulse, oxygen saturation, respiratory rate and level of consciousness.
2. Pain assessments using appropriate pain assessment tool VNRS or Abbey Pain Scale (for confused patients).
3. Observe for block failure (pain at same level as prior to FIB on activity and on rest).
4. Prescribe PRN analgesia. Analgesic doses should be adjusted to reflect advanced age, co-morbidities and drug interactions. For those over 75 years consider initiating:
 - a. oxycodone 2.5mg PO PRN up to QID
 - b. regular paracetamol 1g PO TDS or QID (depending on age, weight and co-morbidities)
 - c. docusate with senna two tablets PO BD.
5. Maintain pressure injury prevention strategies.
6. Refer to appropriate speciality team, for example acute pain service.
7. A total of three FIBs can be inserted pre-operatively.

Documentation

Document the procedure in the patient healthcare record including:

- verbal consent obtained or not obtained from patient
- prescription of ropivacaine and Hartmann's fluid as per policy
- record of the procedure, using the FIB insertion sticker (Appendix 2) including method, drugs and dose used, complications or problems encountered
- pre and post-procedure pain scores using appropriate pain assessment tools
- pre and post FIB vital signs
- neurovascular observations
- instructions for subsequent management and post-procedural care
- prescribed PRN analgesia
- referral to specialty team, if appropriate (for example acute pain service).

Compliance

To ensure compliance with the procedure, check via an audit process that:

- pain assessment is documented
- the time to initial analgesia is less than 30 minutes
- paracetamol is charted and given every six hours
- additional opioids are charted as required
- the person's response to analgesics is documented
- there is evidence that FIB was inserted for fractured neck of femur.

Additional reading list

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Appendix 1

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Fascia iliaca block

Treating and managing the pain of hip fractures

This leaflet gives you information about the benefits and risks of fascia iliaca block to help you make an informed decision about undergoing this procedure.

What is a fascia iliaca block?

This is an injection given near your hip that numbs the nerves in the hip and thigh. If you have a broken hip, it should give you pain relief for up to 12 hours. This injection can be given while you are awake.

How is it given?

A doctor or nurse trained in giving the injection will ask you to lie on your back so that the groin area on the side of your broken hip can be accessed.

The skin on your groin will be cleaned (this may feel a bit cold) and you will then have a small injection to numb the skin. A deeper second injection will then numb the nerves.

Is it painful?

The first injection to the skin will sting for a few moments, but this will make the area numb so that the doctor or nurse can put the second needle in with minimal discomfort.

The whole procedure should not be painful, but it can be uncomfortable. If you feel pain, you should let the doctor or nurse know.

How long does it take before the injection starts to work?

It usually takes 30 minutes for the injection to work, but every patient is different.

What are the benefits of a fascia iliaca block?

The block provides pain relief to the area of the fracture, reducing the need for other strong drugs which can have side effects such as sickness, drowsiness and chest problems.



Important note

If you are taking warfarin, or have a known blood clotting disorder, this injection may not be suitable for you.

If you have forgotten to let doctors and nurses know, please tell them as soon as possible.



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Fascia iliaca block: Patient and carer brochure

What if I do not want to have the injection?

If you choose not to have the injection, you will be given alternative pain relief for your broken hip until you have surgery.

Are there any side effects with a fascia iliaca block?

Side effects are very rare but may include:

- not enough pain relief – the injection may not work
- temporary leg weakness
- infection
- reaction to the drugs
- bleeding
- nerve damage
- absorption of the anaesthetic into the blood stream, which in turn may cause you to:
 - feel unwell
 - feel light-headed
 - have a tingling or numbness of the lips
 - feel drowsy
 - have fits.

If you get any of the above symptoms, including pain at the site of injection, please let the doctors or nurses know as soon as possible.

Should you have any questions that this leaflet does not answer, please ask your nurse, doctor or any member of the healthcare team



Adapted from NHS Nottingham University Hospital, Fascia iliaca compartment block: alternative pain relief for patients with a hip fracture brochure, 2012.

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Pain Management Network
NSW Agency for Clinical Innovation



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Appendix 2

Fascia iliaca block insertion sticker

FASCIA ILIACA BLOCK (FIB) INSERTED	
Date ____/____/____	Time _____
Pain score (VNRS) pre-FIB _____	
Pain score (VNRS) one hour post-FIB _____	
*FIB will be effective up to 12 hours and may be repeated. (Fascia Iliaca Block for preoperative pain management management in adults with acute hip fracture protocol)	

FASCIA ILIACA BLOCK (FIB) INSERTED	
Date ____/____/____	Time _____
Pain score (VNRS) pre-FIB _____	
Pain score (VNRS) one hour post-FIB _____	
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Glossary

BD	'Bis in die' = twice daily
ECG	Electrocardiogram
FACEM	Fellowship of the Australasian College for Emergency Medicine
FIB	Fascia Iliaca Block
INR	International normalised ratio
IPA	Indicative prescribing amount
NSAID	Non-steroidal anti-inflammatory drug
PO	Per oral
PR	Per rectum
PRN	'Pro re nata' – as needed
QID	'Quater in die' – four times a day
VNRS	Verbal Numerical Rating Scale
WHS	Work, health and safety

Definitions

Fascia iliaca block (FIB)	A regional anaesthetic technique that blocks sensation in the distribution of the femoral and lateral femoral cutaneous nerves.
Traumatic injury	An injury to the body that occurs when a physical force contacts the body.
Suspected acute hip fracture	On examination, the affected extremity is often shortened and unnaturally, externally rotated compared to the unaffected leg. The patient is experiencing pain and is unable to weight bear.
Confirmed acute hip fracture	On examination, the affected extremity is often shortened and unnaturally, externally rotated compared to the unaffected leg, plus medical confirmation by either X-ray, magnetic resonance imaging (MRI) or computed tomography (CT).
In-plane approach	The needle is placed in line and parallel to the transducer (ultrasound beam). Both needle shaft and tip are visualised.
Out-of-plane	Use an out-of-plane (figure 1) needle approach for this block. The needle tip may be visualised as a hyperechoic dot as it progresses to the target area.
Failed block	Verbal Numerical Rating Scale (VNRS), Abbey Pain Scale or the Pain Assessment in Advanced Dementia Scale (PAINAD) are not decreased by 30% within one hour of FIB insertion.
Novice FIB clinician	Medical or nursing clinician who is authorised to insert FIB and is new to this procedure.
Supervisor	FIB practitioner deemed competent.

Acknowledgements

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Fascia Iliaca Block members 2020

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