

GUIDE

Fascia Iliaca Block: a method of preoperative pain management in older people with acute hip fractures

ACI Pain Management Network



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Section 1

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 Fascia Iliaca Block (FIB) utilising an out-of-plane approach.

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

Multi-modal pharmacological pain management for patients with hip fractures is recommended.

(See *Minimum Standards for the Management of Hip Fractures*, www.aci.health.nsw.gov.au/networks/aged-health/min-standards-hip-fractures)

Section 2

Principles of action

The principles of treating people with suspected or confirmed acute hip fractures are to minimise pain and associated risks by early utilisation of an ultrasound-assisted Fascia Iliaca Block (FIB).

These 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 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.

Section 3

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 (IP) | The needle is placed in line and parallel to the transducer (ultrasound beam). Both needle shaft and tip are visualised. |
| out-of-plane (OOP) | Use an out-of-plane (Figure 2) 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) or the Algoplus Pain Scale are not decreased by 30% within 40 minutes of FIB insertion. |
| novice FIB clinician | Medical or nursing clinician who is authorised to insert FIB and is new to this procedure at this facility. |
| supervisor | FIB practitioner deemed competent. |

Section 4

Roles and responsibilities

4.1 Scope

This procedure applies primarily to patients with suspected or confirmed fractured neck of femur (Hip).

For absolute and relative contraindications see Section 5.1.

4.2 Responsibilities

Responsibilities of clinical directors or managers

The director or manager is responsible for ensuring appropriately qualified staff are competent in the insertion and management of FIBs in line with local governance guidelines and the *Training framework for clinicians new to inserting Fascia Iliaca Blocks* (Appendix 1).

They are also responsible for:

- monitoring and managing clinical practice in relation to FIBs 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 competency elements.

Responsibilities of supervisors

The supervisors are responsible for maintaining knowledge and skills of FIB in line with local governance guidelines and the *Training framework for clinicians new to inserting Fascia Iliaca Blocks* (Appendix 1). They are also responsible for demonstrating competency and effective outcomes relating to the insertion of FIBs.

Supervisors need to provide competency training for clinicians according to the training framework or local governance including, but not limited to:

- reviewing the patient's full medical history and principal diagnosis
- comparing the patient's medical history and principal diagnosis with the patient criteria outlined in Section 5.1 and considering relative and absolute contraindications
- monitoring performance of the novice FIB clinician.

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 at the hospital. Staff not yet deemed competent to do the procedure may include junior medical officers, registrars and fellows training in the hospital, nurse practitioners¹, clinical nurse consultants and nurse educators.

Novice FIB clinicians are responsible for:

- maintaining knowledge and skills of FIB in line with the *Training framework for clinicians new to inserting Fascia Iliaca Blocks* (Appendix 1)
- safely completing at least two observed FIBs (determined through local governance) with the supervisor prior to being assessed as competent with the procedure
- demonstrating competency in FIB insertion prior to performing the procedure independently
- reviewing the patient's full medical history and principal diagnosis
- comparing the patient's medical history and principal diagnosis with the patient criteria for exclusion outlined in Section 5.1.

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

Section 5

Process

5.1. Determine appropriateness of fascia iliaca block

Before placing the FIB, you need to take the following steps:

1. Complete or review the patient's medical assessment and documentations, including ECG.
2. Confirm and document the need for FIB. Consider alternatives such as femoral nerve blocks, in-plane ultrasound techniques, according to level of proficiency, clinical experience and indications.
3. Consider the indication for FIB, which is preoperative pain management for patients with confirmed or suspected acute hip fracture.
4. Consider the absolute and relative contraindications for FIB.

Absolute contraindications

FIB should be excluded for patients who have any of the following:

- known allergy to local anaesthetics
- any ropivacaine contraindications
- localised injection site infections.

Relative contraindications

FIB may be excluded for patients where you are unable to identify the femoral artery with ultrasound. Other relative contraindications include:

- documented hepatic disease
- known bleeding problems
- documented evidence of second or third-degree heart block on ECG (unless patient has a personal pacemaker)
- patients on anticoagulant agents such as:
 - warfarin (with INR >1.4),
 - clopidogrel
 - low molecular weight heparin (within previous 12 hours)

- subcutaneous heparin (within previous six hours)
- direct oral anti-coagulant drugs (DOACs).

Note that aspirin alone or non-steroidal anti-inflammatory drugs (NSAIDs) alone are not a contraindication.

5.2 Equipment

The following equipment should be assembled:

- plain lignocaine (5 mL of 1%) for local anaesthetic infiltration to skin
- plain ropivacaine 0.75%
- normal saline 0.9% for injection
- dressing pack
- sterile gloves
- chlorhexidine gluconate swabs 2% w/v in 70% v/v IPA (hydrex 2% alcohol)
- sterile gel
- intravenous cannulas as appropriate for patient
- 1 litre Hartmann's solution
- Luer lock syringes (20 mL x 2)
- 22 G x 50 mm Sono Tap® cannula
- small dressing
- ultrasound machine with linear array ultrasound probe usually in the mid to high-frequency range (e.g. 8-10 MHz)
- marking pen
- regional anesthetic needle.

Monitoring equipment

- Electrocardiography (ECG)
- Blood pressure monitor/sphygmometer
- Pulse oximeter.

5.3 Preparation and procedure

Assistance

Ideally, this is procedure that should be performed by two operators. To ensure safe patient care, enlist assistance if available.

Preparation

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/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. Perform hand hygiene and prepare equipment.
8. Set up the sterile dressing pack on a dressing trolley, IV equipment and local anaesthetic (Table 1).
9. Set up monitoring equipment (ECG, pulse oximetry, blood pressure and respiratory rate measurement).
10. Position the patient in a supine position with the relevant lower limbs slightly abducted and externally rotated if possible.

Procedure

Watch the video www.aci.health.nsw.gov.au/networks/pain-management/about/fascia-iliaca-blocks and use this document as an additional support to guide practice.

1. Gain venous access preferably using an 18G cannula.
2. Start Hartmann's solution (1 litre over 8–12 hours), unless otherwise indicated.
3. Draw up 5 mL of 1% lignocaine.
4. Use 0.375% ropivacaine in the volumes identified in Table 1 according to the weight of the patient.

NB: Ropivacaine is preferred to bupivacaine due to reduced cardiac toxicity.

| 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 |

Table 1 – Local anaesthetic to weight ratio table

5. Monitor the patient throughout the procedure including ECG, pulse oximetry, frequent blood pressure measurement (every five minutes), respiratory rate, and level of consciousness.
6. Stand on the injured side of the patient within comfortable reach of the area to be surveyed (between the femoral artery and anterior superior iliac spine).
7. Palpate the anterior superior iliac spine (ASIS) and mark the medial border. Palpate the femoral artery and mark its position (see Figure 1).
8. Ensure the ultrasound video screen is opposite for easy viewing and to enable the clinician to hold the ultrasound probe in his or her non-dominant hand and the needle in the dominant hand. Identify the orientation (medial and lateral aspects) of the ultrasound probe.

9. Anaesthetise the insertion point with 2-5 mL of 1% lignocaine, approximately 2 cm lateral to the femoral artery and 1 cm inferior to the inguinal ligament.
10. Maintain 'No touch, clean' technique throughout procedure.
11. Clean the skin with chlorhexidine gluconate swabs 2% w/v in 70% v/v IPA (Hydrex 2%)



Figure 1 – Right sided Fascia iliaca infrainguinal approach

12. Apply gel and place the ultrasound probe parallel to the inguinal ligament, between the ASIS, and the femoral artery.
13. Palpate and place the probe over the ASIS first.
14. Then move the probe medially along the line of the inguinal ligament (Figure 2) and identify the relative location of the common femoral artery.
15. Palpate for the ASIS and then move the probe over it and visualise it on ultrasound. Move the probe medially 2-3 cm and inferior (downwards) and identify the edge of the ilium.
16. Identify the muscle covering the ilium and descending into the pelvis (the iliacus muscle).
17. The bright band covering the iliacus is the fascia iliaca.
18. Move the probe superiorly over the edge of the ilium so that the echo-reflective curve of the ilium is on the inferior side of the ultrasound survey picture and you can clearly see the fascia and iliacus muscle.
19. Stabilise the hand holding the ultrasound probe to minimise movement.

20. Use an out-of-plane (Figure 2) needle approach for this block. The needle tip may be visualised as a hyperechoic dot as it progresses to the target area.
21. Angle the needle to try to cross the iliacus fascia about midway across the bony edge of the ilium. You should feel a release and see the needle tip puncture the iliacus fascia.

Keep the needle tip in the superficial layers of the iliacus muscle to allow the injected solution to spread cephalad and the block will still work. Once the needle tip is sub-fascial, aspirate and inject 2-5 mL of the local solution to see how it spreads.

22. Ideally the solution will lift the fascia off the superficial layer of the iliacus muscle and spread in a superior direction. (See Figure 1.)
23. If the needle tip is within the iliacus muscle, you will note the muscle fibres spreading apart and solution moving in the superior direction.



Figure 2 – Insert the needle using an OOP approach for the infrainguinal Fascia Iliaca Block

24. After injecting 5-10 mL, advance the needle another centimetre or two while watching on ultrasound. Advancing the needle will help the solution to move superiorly during subsequent injection.
25. After the needle is advanced into the space made by the initial injection, inject the remainder of the local solution slowly over 1½-2 minutes, aspirating every 5 mL of administration to optimise the spread of the anaesthetic.

26. Watch carefully during injection to make sure that the solution is moving in the superior or cephalad direction. Adjust the needle position, if necessary, to correct placement of the solution.

NB: Do not advance the needle blindly into the space created by the injected volume. Always use the ultrasound to monitor the needle's advance. The needle position will be physically close to the pelvic cavity and advancing blindly could cause inadvertent puncture of the pelvic cavity.

27. After initiating the FIB, it is the responsibility of the FIB clinician to remain immediately available until satisfactory block has been achieved, the patient is stable, and the potential for immediate complications has passed.

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.

5.4. Complications

5.4.1 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.

5.4.2 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 CNS 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 cardio-pulmonary resuscitation, commence lipid rescue. This includes administering intralipid 20% intravenously (IV) in the following dose regime:

- give intralipid 20% 1.5 mL/kg over one minute
- follow immediately with an infusion at a rate of 0.25 mL/kg/min
- continue chest compressions (as lipid must circulate)
- repeat bolus every 3–5 minutes up to 3 mL/kg total dose until circulation is restored
- continue infusion until hemodynamic stability is restored. Increase the rate to 0.5 mL/kg/min if blood pressure declines
- a maximum total dose of 8 mL/kg is recommended.

In practice, this is what is required in resuscitating an adult weighing 70 kg:

- Take a 500 mL bag of Intralipid 20% and a 50 mL syringe.
- Draw up 50 mL and give stat IV, x 2.
- Then attach the intralipid bag to an IV administration set (macro drip) and run the IV at a rate of 0.25 mL/kg/min = rate 1050 ml/hour (total volume to be infused = 400 mL).
- Repeat the initial bolus up to twice more if spontaneous circulation has not returned.

5.4.3 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 VNRS or Algoplus Pain Scale has not decreased by 30% within 40 minutes of FIB insertion. When FIB fails, administer regular analgesia as charted or notify supervisor.

5.4.4 Haematoma

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

5.4.5 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), paraesthesia and pain in the distribution of the femoral nerve. In this situation, inform the supervisor.

5.5 Tips

5.5.1 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.

5.5.2 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 to encourage antegrade of flow towards the lumbar plexus.

5.6. Post-procedure patient management

1. Monitor the patient 15 minutes post procedure, then hourly for two hours, then four hourly thereafter as per standard adult general observation chart. This includes:
 - monitoring BP, pulse, oxygen saturation, respiratory rate and level of consciousness
 - assessing pain using appropriate pain assessment tool (VNRS, Algoplus Pain Scale for confused patients)
 - observing for block effect or regression.

2. Chart regular analgesia and aperients including:
 - 2.5–5 mg oxycodone IR (Endone) four times a day unless reviewed by geriatrician or other appropriate clinician
 - paracetamol 500 mg–1 gm three to four times a day orally or per rectum
 - coloxyl and senna twice a day.
3. Refer patients to appropriate team for follow up, for example, acute pain service, geriatrician, CMO, orthopaedics.
4. If deemed appropriate by the team, notify FIB practitioner (after approximately 12 hours) to readminister nerve block.
5. Maintain pressure injury prevention strategies.

5.7. Documentation

These things need to be documented in the patient healthcare record:

- 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 3) including method, drugs and dose used, complications or problems encountered
- pre and post-procedure pain scores using tools
- pre and post-procedure cardiovascular monitoring of vital signs, urine output, sensory and motor function
- neurovascular observations
- instructions for subsequent management and post-procedural care
- prescribed PRN analgesia.

Section 6

Compliance

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

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

Section 7

Bibliography and footnote

Abou-Setta AM, Beaupre LA, Rshiq S et al. Comparative effectiveness of pain management interventions for hip fracture: a systematic review. *Annals of Internal Medicine*, 2011;155:234–245.

Agency for Clinical Innovation. *Care of confused hospitalised older persons*, www.aci.health.nsw.gov.au/chops

Agency for Clinical Innovation. *Minimum standards for the management of hip fractures*. Accessed 29 June 2015 at www.aci.health.nsw.gov.au/networks/aged-health/minimum-standards-hip-fractures

Agency for Clinical Innovation. *Orthogeriatric model of care – clinical practice guide, 2010*. Accessed 29 June 2015 at www.aci.health.nsw.gov.au/data/assets/pdf_file/0013/153400/aci_orthogeriatrics_clinical_practice_guide.pdf

Australian and New Zealand College of Anaesthetists. *Guidelines for the management of major regional analgesia, 2014*. Accessed 29 June 2015 at www.anzca.edu.au/resources/professional-documents/pdfs/ps03-2014-guidelines-for-the-management-of-major-regional-analgesia.pdf

Australian and New Zealand College of Anaesthetists. *Guidelines on infection control in anaesthesia, 2015*. Accessed 29 June 2015 at www.anzca.edu.au/resources/professional-documents/pdfs/ps28-2015-guidelines-on-infection-control-in-anaesthesia.pdf

Australian and New Zealand Hip Fracture Registry Steering Group. *Australian and New Zealand guideline for hip fracture care: Improving outcomes in hip fracture management of adults, September 2014*. Accessed on 29 June 2015 at www.anzhfr.org/images/resources/Guidelines/ANZ%20Guideline%20for%20Hip%20Fracture%20Care.pdf

Australian Commission on Safety and Quality in Health Care. *National safety and quality health service standards, September 2012*. Accessed 29 June 2015 at www.safetyandquality.gov.au/wp-content/uploads/2011/09/NSQHS-Standards-Sept-2012.pdf

Lipid Rescue. *Treatment for local anaesthetic-induced cardiac arrest*. Version 7, 2006. Accessed on 1 July 2015 from www.frca.co.uk/documents/lipidrescue%20us.pdf

Mak JCS, Cameron ID, March LM. Evidence-based guidelines for the management of hip fractures in older persons: an update. *Med J Aust*. 2010;192(1): 37-41.

National Health and Medical Research Council. *Emergency care acute pain management manual, 2011*. Accessed on 29 June 2015 at www.nhmrc.gov.au/guidelines-publications/cp135

National Institute for Health and Care Excellence. *Earlier operations and better care can improve the lives of thousands of hip fracture patients*. Accessed on 29 June 2015 at www.nice.org.uk/guidance/cg124/resources/earlier-operations-and-better-care-can-improve-the-lives-of-thousands-of-hip-fracture-patients

National Institute for Health and Clinical Excellence. *Hip fracture: evidence update March 2013: A summary of selected new evidence relevant to NICE clinical guideline 124 'The management of hip fracture in adults', 2011*. Accessed on 29 June 2015 at arms.evidence.nhs.uk/resources/hub/946207/attachment

Neuraxiom.com. *Ultrasound guided regional nerve blocks. Fascia iliaca compartment block*. Accessed on 1 July 2015 from www.neuraxiom.com/html/ficb.html

NHS Institute for Innovation and Improvement. *Fractured neck of femur facts*. Retrieved on 05/03/2013 from www.institute.nhs.uk/quality_and_value/high_volume_care/fractured_neck_of_femur_facts.html

Rat P, Jouve E, Pickering G et al. Validation of an acute pain-behavior scale for older persons with inability to communicate verbally: Algoplus(R). *Eur J Pain*. 2011 Feb;15(2):198.e1-198.

Scott DM, Chuan AC. *Regional anesthesia: Blocks of the head, upper and lower extremities and para-axial region, Interactive desktop guide, 2nd ed*. Accessed 29 June 2015 at members.iinet.net.au/~achuan01/Anaesthesia_DesktopGuide.pdf

- 1 Clinical nurse consultants, nurse practitioners and nurse educators or others determined by local governance who have demonstrated competency may be permitted to perform nurse-initiated FIB without a medical officer's order after:
 - reviewing the medical officer's documentation of the patient's full medical history and principal diagnosis
 - comparing the patient's medical history and principal diagnosis with the patient criteria for exclusion outlined in Section 5.1.

Section 8

Acknowledgements

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Procedure photos are courtesy of AstraZeneca Pty Ltd, reprinted with permission.

Section 9

Abbreviations

| Abbreviation | Description |
|--------------|---|
| ASIS | anterior superior iliac spine |
| BD | <i>'bis in die'</i> = twice daily |
| BP | blood pressure |
| CNC | clinical nurse consultant |
| CNS | central nervous system |
| CNS2 | clinical nurse specialists 2 |
| CT | computed tomography |
| DOAC | direct oral anti-coagulants |
| ECG | electrocardiogram |
| ED | emergency department |
| FIB | Fascia Iliaca Block |
| INR | international normalised ratio |
| IP | in-plane approach |
| IPA | indicative prescribing amount |
| IR | immediate release |
| IV | intravenously |
| MO | medical officer |
| MRI | magnetic resonance imaging |
| NSAID | non-steroidal anti-inflammatory drug |
| OOP | out-of-plane |
| PO | per oral |
| PR | per rectum |
| PRN | <i>'pro re nata'</i> – as needed |
| QID | <i>'quater in die'</i> – four times a day |
| VNRS | Verbal Numerical Rating Scale |
| WHS | work, health and safety |

Appendix 1

Training framework for clinicians new to inserting Fascia Iliaca Blocks

Introduction

This framework specifies the minimum knowledge and practical training requirements for the safe insertion of Fascia Iliaca Blocks (FIBs) in adults.

All novice FIB clinicians, who are new to inserting these blocks, must therefore complete a training program which has both knowledge and practical components.

Scope

This document is relevant to clinicians authorised to insert a FIB in the scope of their practice. This framework does not address issues relating to maintaining proficiency.

The insertion of FIBs in infants or children less than 16 years of age is not within the scope of this guide.

Minimum knowledge requirements

Clinicians should follow these steps:

- acquire knowledge
- observe FIB insertion
- review the online video
- attend the practical competency training
- complete a knowledge assessment prior to being deemed competent.

Knowledge

The Fascia Iliaca Block learning package supports the knowledge requirements of this framework and includes:

1. Fascia Iliaca Block for preoperative pain management in adults with fractured neck of femur procedure
2. Fascia Iliaca Block insertion video
3. Fascia Iliaca Block competency assessment and process.

By completing this learning package, clinicians will satisfy the minimum knowledge requirement.

Where supplemental knowledge is required, reading about the following topics is suggested.

1. Relevant anatomy of the femoral vessels (artery and vein); femoral nerve and femoral nerve triangle; the anterior iliac crest and the fascial layers (iliaca and lata). A FIB is a compartment block, so additional reading regarding the lateral cutaneous nerve and lateral femoral nerve distribution will be relevant.
2. Indications, contraindications and complications of FIB insertion as discussed in standard anaesthetic texts.

Observation

Novice FIB clinicians are required to observe at least one FIB insertion performed by a supervisor prior to inserting FIBs themselves. Observing insertions prior to attempting assisted insertions is encouraged. Several clinicians may concurrently observe a FIB insertion.

Observation includes being involved in the decision-making processes regarding site selection, review of out-of-plane technique, anatomical landmarks, indications, patient issues and issues related to consent. The supervisor must be made aware that the novice FIB clinician is observing the procedure for training purposes and engage him or her accordingly.

Knowledge assessment

A novice FIB clinician must demonstrate the following knowledge, prior to progressing to practical components.

1. Identify surface anatomy: structures in the lower abdomen and limbs; large veins of the leg and femoral triangle, anterior superior iliac spine (ASIS), the femoral artery, pubic tubercles and inguinal ligament.
2. Outline indications, contraindications and complications of FIBs.
3. State methods of rapidly escalating care in an emergency situation.
4. Describe principles, routes and techniques of FIBs.
5. Summarise principles of 'no touch clean' technique and handling of invasive medical devices.
6. Define standard precautions and preventative infection control techniques (including hand washing, gloves, protective clothing and sharps disposal).
7. Describe the equipment required for FIB.
8. State indications for specific monitoring to ensure patient safety during an intervention or procedure.

Sample questions relating to these elements are contained in the FIB Competency Assessment Standards in Appendix 4.

Sample answers are available in Appendix 5.

Minimum practical requirements

Novice FIB clinicians are required to undertake assisted insertions, practical assessments and independent insertions to fulfil requirements of the framework.

Clinicians should not proceed to independent FIB insertions prior to completing the competency training and assessment components.

The number of assisted and independently inserted FIBs asserted in this document is not evidence based. Clinicians should be monitored and may require additional training where further learning needs are identified.

Assisted insertions

Clinicians must perform a minimum of two assisted FIBs, with a supervisor assisting. One simulated insertion may be completed where appropriate facilities are available.

This is a minimum requirement and supervisors may require that a clinician undertake additional assisted insertions to develop proficiency prior to being assessed.

The supervisor of each assisted insertion should document feedback and learning needs identified during the procedure in the clinician's logbook, an example of which appears in Appendix 6.

Assessment

Clinicians must complete the FIB Practical Assessment Competency prior to performing independent insertion.

This assessment is provided in Appendix 7. Supervisors should document successful completion of assessment using this tool and the associated FIB Competency Assessment Standards.

Independent insertions

Clinicians must independently insert a minimum of two FIBs, with a supervisor immediately available to assist. Direct observation by a supervisor is required.

The supervisor must review appropriate documentation subsequent to each insertion and complete the clinician's logbook (Appendix 6).

Final competency assessment

Once the clinician has completed the competency training, they should approach the Director of the Unit or the delegate responsible for signing off to confirm that the clinician has demonstrated practical competency in FIB and no additional learning needs have been identified.

Completion of the practical competency assessment using the FIB Practical Assessment Competency can be logged.

Acknowledgement

This document was adapted from *Clinical Excellence Commission 2010, Claibicu Project – Preventing Central Line Infections. Training framework for clinicians new to inserting central lines in NSW*. Retrieved on 5 April 2013 from www.cec.health.nsw.gov.au/resources/tools-toolkits



FREQUENTLY ASKED QUESTIONS

Fascia Iliaca Block: Treating and managing pain for patients with hip fractures

ACI Pain Management Network

This leaflet gives patients and their carers information about the benefits and risks of fascia iliaca block to help them 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.

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.

Important note

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

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



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

With thanks to Acute and Chronic Pain Services, Department of Pain Medicine, St Vincent's Hospital.

Pain Management Network

NSW Agency for Clinical Innovation

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www.aci.health.nsw.gov.au/chronic-pain

Appendix 3

Fascia Iliaca Block (FIB) insertion sticker

FASCIA ILIACA BLOCK (FIB) INSERTED

Date: ____/____/____ Time: _____

Pain Score (VNRS) pre-FIB: _____

Pain Score (VNRS) 40 mins post-FIB: _____

*FIB will be effective up to 12 hours and may be repeated.
(Fascia Iliaca Block for preoperative pain management
in adults with acute hip fracture protocol, 2014)

FASCIA ILIACA BLOCK (FIB) INSERTED

Date: ____/____/____ Time: _____

Pain Score (VNRS) pre-FIB: _____

Pain Score (VNRS) 40 mins post-FIB: _____

*FIB will be effective up to 12 hours and may be repeated.
(Fascia Iliaca Block for preoperative pain management
in adults with acute hip fracture protocol, 2014)

FASCIA ILIACA BLOCK (FIB) INSERTED

Date: ____/____/____ Time: _____

Pain Score (VNRS) pre-FIB: _____

Pain Score (VNRS) 40 mins post-FIB: _____

*FIB will be effective up to 12 hours and may be repeated.
(Fascia Iliaca Block for preoperative pain management
in adults with acute hip fracture protocol, 2014)

FASCIA ILIACA BLOCK (FIB) INSERTED

Date: ____/____/____ Time: _____

Pain Score (VNRS) pre-FIB: _____

Pain Score (VNRS) 40 mins post-FIB: _____

*FIB will be effective up to 12 hours and may be repeated.
(Fascia Iliaca Block for preoperative pain management
in adults with acute hip fracture protocol, 2014)

FASCIA ILIACA BLOCK (FIB) INSERTED

Date: ____/____/____ Time: _____

Pain Score (VNRS) pre-FIB: _____

Pain Score (VNRS) 40 mins post-FIB: _____

*FIB will be effective up to 12 hours and may be repeated.
(Fascia Iliaca Block for preoperative pain management
in adults with acute hip fracture protocol, 2014)

FASCIA ILIACA BLOCK (FIB) INSERTED

Date: ____/____/____ Time: _____

Pain Score (VNRS) pre-FIB: _____

Pain Score (VNRS) 40 mins post-FIB: _____

*FIB will be effective up to 12 hours and may be repeated.
(Fascia Iliaca Block for preoperative pain management
in adults with acute hip fracture protocol, 2014)

Appendix 4

Sample questions

1. Describe the course and relationship of the femoral artery and anterior superior iliac spine.
2. Describe the anatomy of the femoral nerve.
3. Describe the anatomy of the femoral triangle.
4. List the indications for FIB placement.
5. List the contraindications for FIB placement.
6. Outline methods to distinguish between an arterial and venous puncture.
7. On attempting placement of a FIB, you inadvertently puncture the femoral artery. Describe your management.
8. After placement of a FIB on a patient, the patient continues to complain of pain in their thigh. Describe your management.
9. How do you determine whether a FIB is correctly placed?
10. Describe the advantages and disadvantages for FIB.
11. Describe your approach to the assessment of a patient in whom you have been asked to insert a FIB.
12. You are inserting a FIB in a patient and experience resistance when advancing the cannula. State reasons for the resistance and what action you would take in this scenario.



Figure 1 – Right sided Fascia iliaca infrainguinal approach

Appendix 5

Sample answers

1. The course and relationship of the femoral artery and anterior superior iliac spine

The femoral artery lies at the mid-inguinal point, which lies midway between the pubic symphysis and the anterior superior iliac spine.

The femoral vein lies within the femoral triangle in the inguinal-femoral area. The superior border of the triangle is formed by the inguinal ligament, the medial border by the adductor longus, and the lateral border by the sartorius muscle.

The apex of the triangle is formed by the sartorius crossing the adductor longus muscle. The roof of the triangle is composed of the skin, subcutaneous tissue, the cribriform fascia, and the fascia lata. The concave floor is formed of underlying adductor longus, adductor brevis, pectineus, and iliopsoas muscles.

The neurovascular bundle consists of the femoral vein, artery, and nerve, and lies within the triangle in a medial-to-lateral position (mnemonic device: VAN).

The femoral sheath encloses the femoral artery and vein, and the nerve lies outside the sheath. The femoral canal is a space within the femoral sheath and medial to the femoral vein.

2. Anatomy of the femoral nerve

The femoral nerve is the largest branch of the lumbar plexus, arising from the second, third, and fourth lumbar nerves. The nerve descends through the psoas muscle, emerging from the psoas at the lower part of its lateral border, and runs downward between the psoas and the iliacus. The femoral nerve eventually passes underneath the inguinal ligament into the thigh, where it assumes a more flattened shape.

The inguinal ligament is a convergent point of the transversalis fascia (fascial sac lining the deep surface of the anterior abdominal wall) and iliac fascia (fascia covering the posterior abdominal wall). As it passes beneath the inguinal ligament, the nerve is positioned lateral and slightly deeper than the femoral artery between the psoas and iliacus muscles. At the femoral crease, the nerve is on the surface of the iliacus muscle and covered by the fascia iliaca or sandwiched between two layers of fascia iliaca.

In contrast, vascular fascia of the femoral artery and vein, a funnel-shaped extension of the transversalis fascia, forms a distinctly different compartment from that of the femoral nerve, but often contains the femoral branch of the genitofemoral nerve lateral to the vessels. The physical separation of the femoral nerve from the vascular fascia explains the lack of spread of a 'blind paravascular' injection of local anesthetic toward the femoral nerve.

The femoral nerve supplies the muscular branches of the iliacus and pectineus and the muscles of the anterior thigh, except for the tensor fascia lata. The nerve also provides cutaneous branches to the front and medial sides of the thigh, the medial leg and foot (saphenous nerve), and the articular branches of the hip and knee joints.

A femoral nerve block results in anesthesia of the skin and muscles of the anterior thigh and most of the femur and knee joint. The block also confers anesthesia of the skin on the medial aspect of the leg below the knee joint (saphenous nerve, a superficial terminal extension of the femoral nerve).

2.1 Nerve roots L2–L4

MOTOR

Innervates the anterior thigh muscles that flex the hip joint (pectineus, iliacus, sartorius) and extend the knee (quadriceps femoris: rectus femoris, vastus lateralis, vastus medialis and vastus intermedius)

SENSORY

Cutaneous branches supply the anteromedial thigh (anterior cutaneous branches of the femoral nerve) and a terminal cutaneous branch supplies the medial side of the leg and foot (saphenous nerve).

| | | | |
|---|---|--|--|
| <p>4. Demonstrates awareness of infection control; Workplace Health and Safety (WHS) and waste management guidelines.</p> | <p>4.1. Demonstrates knowledge of standard, contact and airborne precautions and identifies appropriate personal protective equipment (ppe).</p> <p>4.2. Aware of WHS principles and safe work practices for avoiding workplace injury and maintaining patient safety.</p> <p>4.3. Applies aseptic technique throughout the procedures.</p> <p>4.4. Describes the rationale for disposing of waste using general, contaminated and sharps bins.</p> | | |
| <p>5. Performs FIB procedure.</p> <p>Displays ability to problem solve and apply critical thinking skills.</p> | <p>5.1. Demonstrates compliance with hospital policy and procedure regarding FIB.</p> <p>5.2. Provides rationale for the use of equipment required.</p> <p>5.3. Describes dose, contraindications, and monitoring requirements for ropivacaine.</p> <p>5.4. Assesses patient and identifies the following structures on ultrasound:</p> <ul style="list-style-type: none"> ◦ ASIS ◦ fascia iliaca ◦ iliacus muscle ◦ inguinal ligament ◦ femoral artery. <p>5.5. Describes out-of-plane techniques for insertion of FIB.</p> | | |
| <p>6. Performs FIB post-insertion assessment.</p> <p>Displays ability to problem solve and apply critical thinking skills.</p> | <p>6.1. Discusses post-procedure care including site care, ongoing pain assessment, monitoring requirements and documentation.</p> <p>6.2. Demonstrates knowledge of the complications that can arise from FIBs post insertion including clinical signs for each of the following:</p> <ul style="list-style-type: none"> ◦ haematoma ◦ failed block ◦ nerve damage ◦ toxicity ◦ injection into major vessel ◦ infection. <p>6.3. Discusses the process if FIB is unsuccessful.</p> | | |

Assessment decision

| | | | |
|---|------------------------------------|--|---------------------------------------|
| FIB Procedure | Competent <input type="checkbox"/> | Not Yet Competent <input type="checkbox"/> | Not Assessed <input type="checkbox"/> |
| Action/further training required | | | |
| Details of feedback to candidate | | | |
| Details of feedback from candidate | | | |

| | | | |
|--------------------------|--|--------------------|--|
| Supervisor's name | | Designation | |
| Signature | | Date | |

| | | | |
|-------------------------|--|--------------------|--|
| Candidate's name | | Designation | |
| Signature | | Date | |