FASCIA ILIACA COMPARTMENT BLOCK

Ref No: 2006

Lead Clinician	:	Dr Dodiy Herman, Consultant Emergency Medicine
Care Group	:	Unscheduled Care (Emergency Assessment)
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Comments	:	Co-Author - Dr Hill Brunner, Consultant Anaesthesia

AIMS

To reduce the requirements for opioid analgesics and to reduce the undesirable side effects of conventional pain treatment pre-operatively in adult patients with:

- radiologically confirmed femoral neck fracture
- radiologically confirmed femoral shaft fracture
- radiologically confirmed dislocated hip prosthesis

INTRODUCTION

Fascia iliaca compartment block (FICB) is a regional block, where a fairly safe large volume of long acting local anaesthetic is injected into the potential space between fascia iliaca and the iliacus muscle (fascia iliaca compartment). The spread of local anaesthetic solution in the fascia iliaca compartment will provide simultaneous blockade of the lateral femoral cutaneous, femoral and obturator nerves.

Compared to other types of regional blocks FICB is relatively easy to learn and to perform. The FICB can be used without the use of a nerve simulator and it is safer as the site of injection is distant from any blood vessels and nerves.

INDICATIONS

FICB is indicated to provide pain relief in adult patients with:

1. Radiologically confirmed femoral neck fracture
2. Radiologically confirmed femoral shaft fracture
3. Radiologically confirmed dislocated hip prosthesis

The guidelines below are to provide the Emergency Medicine Physicians and Orthopaedic Medical Staffs with appropriate knowledge, training and supervision to perform the FICB procedure safely and effectively.

CONTRAINDICATIONS

Absolute

- Patient refusal
- Allergy or anaphylaxis to local anaesthesia

- Open fracture (wound at or around the injection site)
- Inflammation or infection over the injection site

Relative

- Previous femoral bypass surgery
- Anticoagulation increases the risks of bleeding and haematoma formation
- Peripheral nerve neuropathy
- Fracture of tibia and fibula on the same leg that FICB going to be perform, due to a risk of masking lower extremity compartment syndrome
- Severe Cardio-Pulmonary disease
- High Body Mass Index (BMI) will cause problems identifying landmarks

PREPARATION PRE-PROCEDURE

1. Confirm indication
2. Rule out contraindication
3. Obtain informed consent and document in the notes, also document if informed consent was not possible to be obtained but the FICB was done because of perceived benefits
4. Ensure the presence of assistance/ chaperone
5. Cardiac monitoring and pulse oximeter to be attached to patient – monitor and document vital signs
6. Gain patent intravenous access
7. Document pre-existing neurological defects
8. Document pre-procedure pain scores
9. Assemble equipment's required to perform the FICB and calculate the safe volume of chosen local anaesthetics to inject
10. Operator should wash their hands and wear gloves

PROCEDURE: LANDMARK TECHNIQUE

- Measure from anterior superior iliac spine (ASIS) to the pubic tubercle (PT). Draw a line between these two points.
- Divide this line into thirds. Make a mark at the juncture between lateral one third and medial two thirds of this line.
- 2 to 3cm vertically inferior to the previous mark is the point of insertion of needle for FICB.

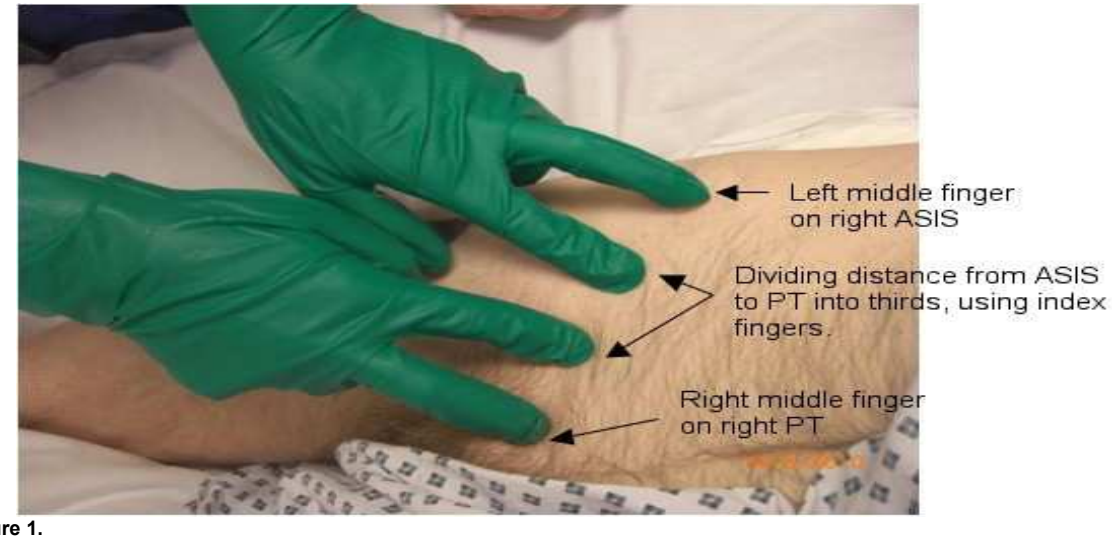

Figure 1.

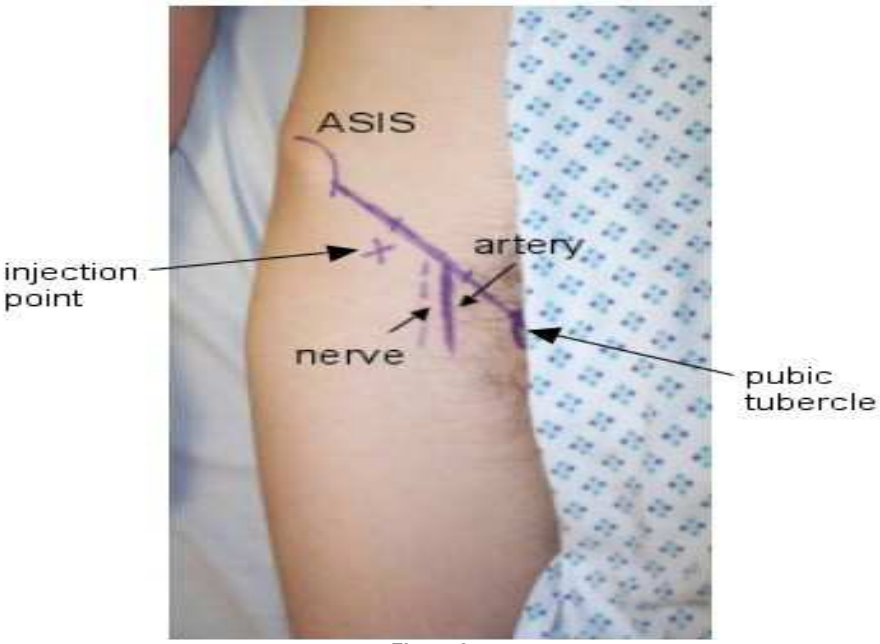

Figure 2.

- Clean the skin with 2% chlorhexidine gluconate and 70% isopropyl alcohol (ChloraPrep®).
- Make subcutaneous wheal with 1 to 2 ml of 1% lignocaine. When effective, pierce the skin with 18G needle which will serve as introducer for the nerve block needle.
- Using a blunted or short bevelled needle pierce the skin at right angle to its surface. Once through the skin adjust the needle angle aiming towards the head at an angle of 60 degrees.
- Two 'pops' should be felt: the first represents the fascia lata and the second fascia iliaca. Just after second 'pops', advance 5 mm and aspirate to ensure the needle is not endovascular.
- If aspiration is negative, start injecting the local anaesthetic. There should be no resistance to injection.
- Inject 30 to 40 ml of local anaesthetic slowly, aspirating every 5 ml.

Guide to the amount of local anaesthetic to use for FICB based on approximation of patient's weight:

Estimated Weight of Patient (in kg)	Volume of 0.25% Bupivacaine (in ml)	Volume of 0.25% of Chirocaine (in ml)
50 - 60	30	30
60 - 70	35	35
> 70	40	40

- In patients weighing < 50 kg the quantity of local anaesthetic solution is reduced by half.

PROCEDURE: ULTRASOUND TECHNIQUE

Evidence suggests that ultrasound guided FICB will provide real time needle guidance and direct observation of local anaesthetic spread within tissue planes. So this will help to improve the success rate of a complete FICB.

- Use an ultrasound machine with a mid to high frequency linear array transducer
- Apply gel on the ultrasound transducer and place the transducer in a transverse orientation on the thigh just inferior to the inguinal ligament and one third of the distance from the ASIS to the PT.
- Identify the femoral artery and the iliacus muscle will be lateral to it.
- The two fascial planes, the fascia lata and the fascia iliaca are sonographically visualised as two hyperechoic lines.

- Blunted or short bevelled needle is introduce through the skin in a lateral to medial orientation and is directed in parallel with the transducer to allow visualisation of the full length of the needle throughout the procedure (in plane approach).
- Advance the needle until the tip is placed underneath the fascia iliaca (appreciating the give as the fascia is perforated) and confirm negative aspiration, then inject the local anaesthetic.
- An expanding anechoic collection just below the fascia iliaca is visual confirmation of correct placement of local anaesthetic

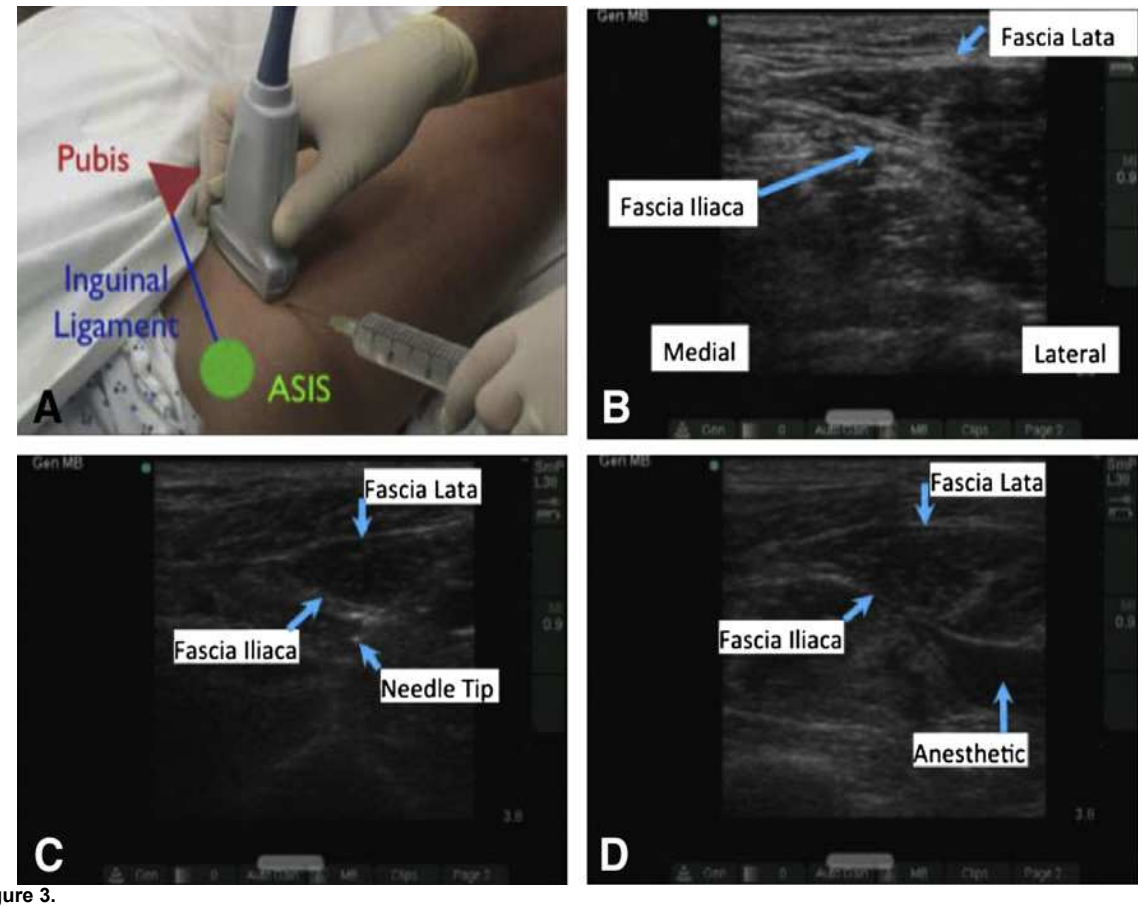

Figure 3.
(A) Transverse position of ultrasound probe. ASIS = anterior superior iliac spine.
(B) Ultrasound visualization of the fascia lata and fascia iliaca. Note the medial and lateral orientation.
(C) Ultrasound image just before injection. Note the needle tip deep to the fascia iliaca.
(D) Image after injection of local anaesthetic. Anechoic collection of local anaesthetic just beneath the plane of the fascia iliaca

POST PROCEDURE

Allow time for the local anaesthetic to take effect. It may takes up to 20 minutes for effective analgesia. Weaker solutions of local anaesthetic may take even longer.

1. Document the FICB procedure in the notes; also document the time, name, strength, volume of local anaesthetic injected.
2. Continue monitoring the patient; repeat and document vital signs at 30 minutes to 1 hour post FICB procedure.
3. Recorded post-procedure pain scores at 30 minutes and at 1 hour.

COMPLICATIONS

During Procedure

a.) Haematoma – usually results from multiple punctures and failure to apply adequate compression on the injured vessels.
b.) Nerve injury – can result from the peripheral block itself i.e. needle trauma or inadvertent injection into the nerve itself, resulting in chemical neuropathy; it may in certain cases originate from factors unrelated to the FICB.
c.) Accidental intravascular injection – occurs when there is inadvertent injection of local anaesthetic into either the artery or vein, or there has been rapid absorption from the tissue into the vascular system.
d.) Hypersensitivity reaction – refer to management of anaphylaxis (http://www.resus.org.uk/pages/anaalgo.pdf).

Following Procedure

a.) Local anaesthetic toxicity – usually caused by inadvertent intravascular administration. Refer to management of local anaesthetic toxicity (http://www.aagbi.org/sites/default/files/la_toxicity_2010_0.pdf).
The bag of lipid emulsion is kept in Emergency Department, Theatre, and Pharmacy.
b.) Infection – observe for signs of inflammation, swelling, redness, discharge

Management of Suspected Local Anaesthetic Toxicity

Symptoms include
- CNS – feeling faint or sick, panic, a 'sense of impending doom', sudden loss of consciousness, seizures
- CVS – hypotension, bradycardia, arrhythmias, cardiac arrest

Beware - it could be a vaso-vagal reaction instead
Immediate action:
- Stop injecting
- Call for help – crash call if necessary
- Inform on call Anaesthetist
- Resuscitate – ABCDE approach
- Give 20% Intralipid 1.5ml/kg iv over 1 minute and then commence infusion as per guideline

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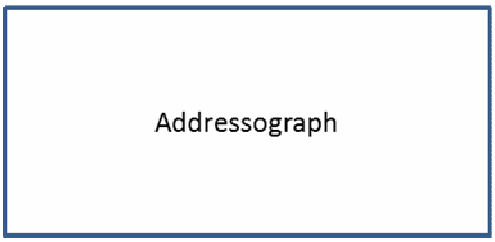
SATH Emergency Department Fascia Iliaca Compartment Block Record



Date:

Personnel present (Roles) 1.

2.

3.

X-ray: # NOF	yes / no	IV access gained:	yes / no
Procedure explained:	yes / no	SaO2 monitoring:	yes / no
Consent:	yes / no	Cardiac monitor:	yes / no
Allergies:	yes / no	ECG:	yes / no

Pre-Procedure

Baseline observations

HR		BP		GCS	/ 15
RR		SaO2	%	PAIN SCORE	/ 10

Details of analgesia given

Drug	Time	Route	Dose

Details of local anaesthesia given

Drug	Time	Strength	Volume (ml)
		%	

Post Procedure observations

HR		BP		GCS	/ 15
RR		SaO2	%	PAIN SCORE	/ 10