



Emergency Medicine Service Line

POLICY/GUIDELINE TITLE: Nerve Block for Hip Fracture	SYSTEM POLICY AND PROCEDURE MANUAL
POLICY #: EMSL.1020	CATEGORY SECTION:
System Approval Date: 12/21/23	Effective Date: NEW
Site Implementation Date: 2/5/2024	Last Reviewed/Approved: NEW
Prepared by: Emergency Medicine Service Line	Notation(s): N/A

GENERAL STATEMENT of PURPOSE

The purpose of this document is to standardize an approach and improve pain control in the evaluation and management of patients found to have acute hip fractures. The use of the fascia iliac nerve block, femoral nerve block or pericapsular nerve group (PENG) block improves the patient’s experience, clinical outcome, and decreases the need for opioid use. Opioid use has been proven to cause hemodynamic compromise, respiratory depression, and delirium in the elderly population.

POLICY

It is the policy of Northwell to provide safe and efficacious regional anesthesia in the emergency department for acute hip fractures. Physicians, nurse practitioners and physician assistants who have met credentialing standards are permitted to perform this procedure. Registered nurses are permitted to assist with this procedure with demonstrated competency.

SCOPE

This policy applies to all Northwell Health employees, as well as medical staff, allied health professional staff, volunteers, students, trainees, physician office staff, contractors, trustees, and other persons performing work for or at Northwell Health; faculty and students of the Donald and Barbara Zucker School of Medicine at Hofstra/Northwell or the Hofstra Northwell School of Nursing and Physician Assistant Studies conducting research on behalf of the Zucker School of Medicine on or at any Northwell Health facility.

DEFINITIONS

N/A

PROCEDURE/GUIDELINES

See Attachment A, Guidelines for Nerve Block

CLINICAL REFERENCES/PROFESSIONAL SOCIETY GUIDELINES

N/A

REFERENCES to REGULATIONS and/or OTHER RELATED POLICIES

Kuthiala, G., & Chaudhary, G. (2011). Ropivacaine: A review of its pharmacology and clinical use. *Indian journal of anesthesia*, 55(2), 104–110. <https://doi.org/10.4103/0019-5049.79875>

ATTACHMENTS

Attachment A: Guidelines for Nerve Block

FORMS

N/A

<u>APPROVAL:</u>	
Northwell Health Policy Committee	11/21/23
System PICG/Clinical Operations Committee	12/21/23

Standardized Versioning History:

Approvals: * =Northwell Health Policy Committee; ** = PICG/Clinical Operations Committee; ☒ = Provisional; ❖ = Expedited

Guidelines Nerve Block

Background:

The fascia iliac block, the femoral nerve block, or the PENG block is a safe and effective analgesic option with rare, reported complications of a neurologic injury and local anesthetic toxicity. Nerve blocks provide an effective analgesia to many patients especially elderly where adverse events are more common with parental medications.

Indications:

- Femoral neck fractures
- Intertrochanteric fracture
- Femoral shaft fractures

Contraindications:

- Absolute
 - Patient refusal
 - Allergy to local anesthetic
 - Overlying infection of the skin at the injection site
 - Prior vascular surgery to inguinal region
 - Clinical signs of femoral nerve injury or vascular injury (abnormal neurovascular exam)
 - Open fracture
 - High risk for developing compartment syndrome
- Relative
 - Anticoagulant/Antiplatelet therapy (i.e., Warfarin, Clopidogrel)
 - Clotting disorders (Platelet count <80,000; INR > 1.7)
 - Intoxicated patients
 - Hardware at or near planned injection site

Documentation Required:

- Procedural Checklist
- Procedural Consent
- Procedure note documentation for the fascia iliac nerve block.

Equipment:

- Ultrasound machine with a linear transducer
- Sterile Gloves
- Chlorhexidine swab
- Sterile ultrasound probe cover with sterile lubricant
- Nerve block needle with extension tubing
- 30mL-60mL syringe
- 25-gauge insulin syringe (for skin wheal)
- 18-gauge needle (to draw up anesthetic)
- Lidocaine 1% (used for skin wheal)

- Anesthetic agent (Ropivacaine or Bupivacaine)
- Sterile saline flushes
- Cardiac monitor
- Lipid (Fat) emulsion 20% rescue at bedside for procedure

Anesthetic options:

Drug	Dose mG/kg	50 kg (mL)	70 kg (mL)	90kg (mL)	Max Dose
Ropivacaine 0.5% *	3mG/kg	150mG (30mL)	200mG (40mL)	200 mG (40mL)	200mG (40mL)
<i>*Ropivacaine 0.5% is the preferred agent</i>					
Bupivacaine 0.5% (5mG/mL)	2mG/kg	100 mG (20mL)	140 mG (28mL)	175 mG (35mL)	175 mG (35mL)

Procedure & Administration:

Pre-Procedure

- Confirm laterality during dedicated timeout
- Confirm signed informed consent
- Confirm patient on cardiac monitor
- Prepare 5mL 1% Lidocaine in a 10mL syringe
- Prepare 3mG/kg of 0.5% Ropivacaine in a 60mL syringe (usually up to 30mL)

Procedure & Administration

- Pre scan area with high frequency linear probe identifying vasculature, nerve, and fascial planes
- Prep area with chlorhexidine prep 2%
- Anesthetize injection area (skin wheal) with 2-3mL of 1% Lidocaine using 10mL syringe and 25-gauge needle
- Using sterile technique, identify area (either femoral nerve or fascia iliac), and using in-plane ultrasound guidance insert 22g Pajunk (nerve block) needle into appropriate position
- With direct ultrasound visualization of needle tip inject up to 10mL of sterile saline to hydro dissect and confirm appropriate placement
- After confirmation with hydro-dissection inject up to 3mG/kg of 0.5% Ropivacaine (usually up to 30mL) into desired location over 2-3 minutes under continued ultrasound guidance with redirection of tip of needle as needed
- Remove needle
- Keep patient on cardiac monitor for at least 30 minutes post procedure
- Reassess pain after 10 minutes post procedure

The RN may assist with the procedure as needed. The RN may aspirate and administer medication under direct observation by the physician, nurse practitioner or physician assistant.

Adjunct Analgesia Options:

In preparation for performing a nerve block, the patient would benefit from analgesia to tolerated imaging and preparation time.

Consider potential NPO status for operating room when considering oral analgesia.

Oral Analgesia	Intravenous Analgesia
Acetaminophen 650mG or 975 mG	Acetaminophen 1000mG/100mL
Ibuprofen 600mG or 800mG	Ketorolac 15mG or 30 mG
Oxycodone 5mG	Fentanyl 0.5-1.0 mcg/kg
	Ketamine 0.25 to 0.5 mG/kg bolus (maximum bolus: 35 milliGRAMS - Administer as IV Intermittent in 100 mL 0.9% sodium chloride (pharmacy-prepared) and infuse over 15 minutes.

Potential Complications:

1. LAST (Local Anesthetic Systemic Toxicity)

- Vital signs x10 x3
- Presents with:
 - Tinnitus, perioral numbness, metallic taste
 - Agitation, tachycardia, hypertension
 - Bradycardia hypotension dysrhythmia
 - Seizure, shock, or cardiac arrest
- Treatment:
 - Lipid (Fat) Emulsion 20%.
 - 1.5mL/kg bolus followed by a 0.25mL/kg/min infusion.
 - Repeat bolus for persistent cardiovascular collapse
 - Double infusion rate to 0.5mL/kg/min if blood pressure remains low.
 - Continue infusion for 10 minutes after attaining circulatory stability
 - Maximum dose 10mL/kg in first 30 minutes.
 - Airway management.
 - 100% oxygen by non-rebreathing, consider intubation
 - Circulation management
 - Manage hypotension with IV fluid bolus & vasopressors.
 - ACLS protocol for dysthymias or arrest
 - Favor Amiodarone for arrhythmias; avoid beta blockers, calcium channel blocks and lidocaine
 - Decreased dose of epinephrine to <1mcg/kg

2. Unsuccessful nerve block

3. Hematoma formation at injection site, potential concern in patients on anticoagulation

4. Nerve injury

5. Intravenous injection of anesthetic

6. Infection

7. Local anesthetic allergy

After Care:

- Vital signs should be assessed and recorded every 10 minutes for 30 minutes post procedure

- Assess neurovascular status of limb to include: color, temp, capillary refill, pain, and sensation every 15 mins for at least 30 mins
- Ensure limb is maintained in a neutral position to prevent injury
- Fall precautions and prevention strategies should be implemented and maintained.