

BACKGROUND

- Regional anesthesia is frequently used to reduce pain and opioid consumption while awaiting surgery.
- The **Pericapsular Nerve Group (PENG) block** is a newer regional technique targeting the articular branches of the:
 - Femoral nerve
 - Obturator nerve
 - Accessory obturator nerve
- Because these nerves innervate the **anterior hip capsule**, the PENG block can provide effective analgesia for **intracapsular hip pathology**.
- However, **analgesic success depends on fracture location relative to the hip capsule**.

CLINICAL PROBLEM + PURPOSE

- Hip fractures occur in **different anatomical locations**.
- Clinicians may perform a regional block **without first considering fracture location**, which can lead to incomplete analgesia.
- Understanding the **relationship between fracture subtype and nerve block coverage** may improve block selection.
- To demonstrate how **hip fracture subtype influences the effectiveness of regional anesthesia techniques**.
- To illustrate when a **PENG block vs femoral nerve block** may be more appropriate.
- To emphasize the importance of **matching fracture anatomy with block selection**.

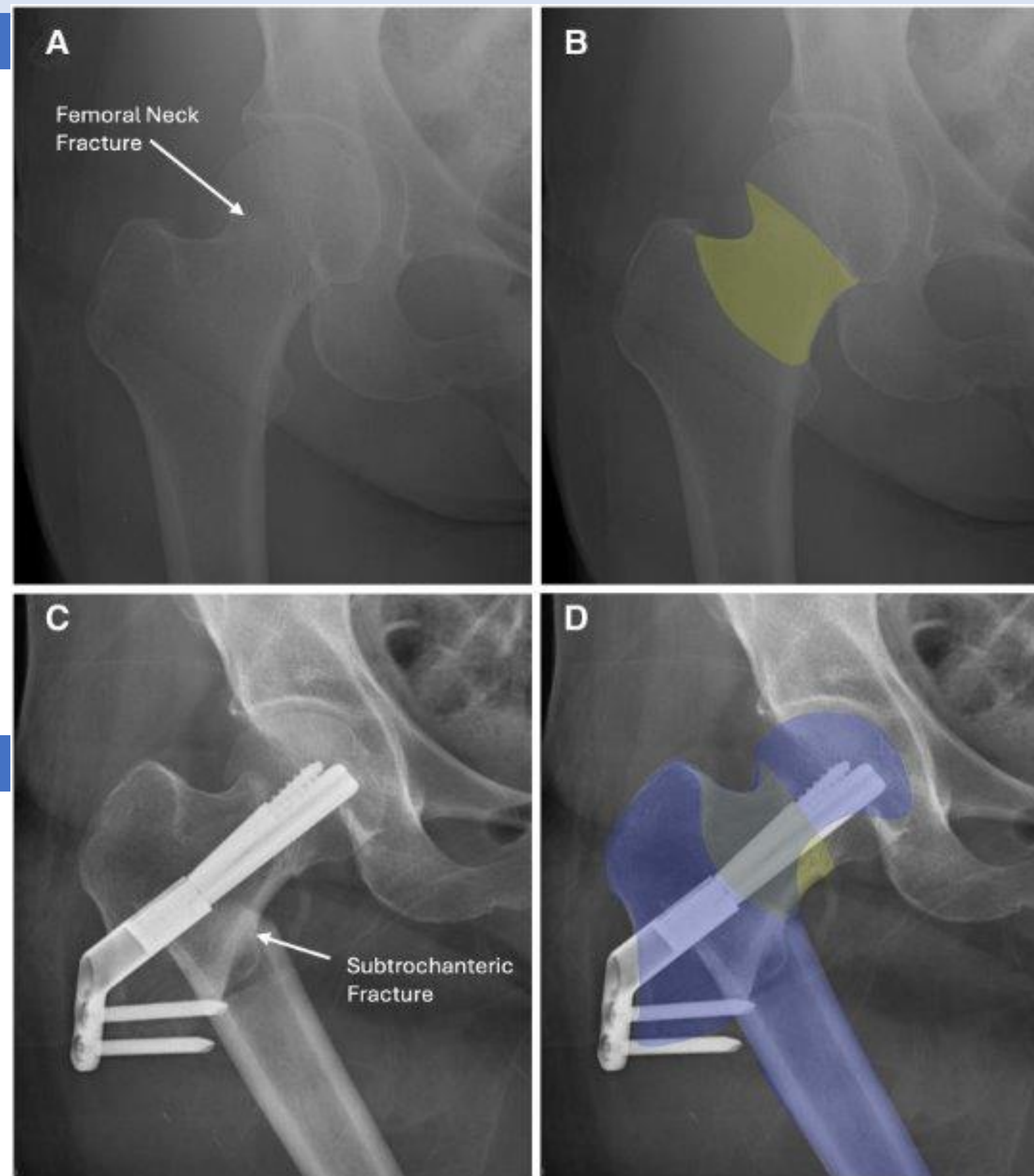


Fig. 1. (A and B) A fracture through the femoral neck (arrow) likely represents the ideal situation for a pericapsular nerve group block, as the fracture is contained within the hip capsule, which is innervated by the articular branches of the femoral and obturator nerves (yellow shading). (C and D) Subtrochanteric femur fractures (arrow) may represent a hip fracture subtype that is too distal to the target of the pericapsular nerve group block (the hip capsule, yellow shading) to provide fracture site analgesia. A femoral nerve block (blue shading) may be a better option to provide fracture site analgesia.

CASE ILLUSTRATION

- A patient presented with **two separate hip fractures at different time points**.
- **Femoral neck fracture (intracapsular)**
→ Responded well to a **PENG block** due to capsular innervation.
- **Subtrochanteric fracture (extracapsular)**
→ Pain persisted after PENG block.
- Analgesia improved after **femoral nerve block**, which targets femoral shaft and periosteal innervation.

CLINICAL INSIGHT

- The **PENG block anesthetizes the articular branches supplying the hip capsule**.
- Intracapsular fractures (e.g., femoral neck fractures) occur **within this capsular territory**.
- Extracapsular fractures (e.g., subtrochanteric fractures) occur **distal to the capsular innervation**.
- Therefore, PENG block may **fail to provide adequate analgesia** for distal femur fractures.
- In these cases, a **femoral nerve block may better target the pain source**.
- Careful review of imaging can help guide **optimal nerve block selection**.

REFERENCES

Garlich et al., JBJS 2020, Girón-Arango et al., Reg Anesth Pain Med 2018
Hinton et al., J Bone Joint Surg Am 1993