

Proximal Humerus

Identify the proximal humerus:

- Place the patient's hand over the abdomen (elbow adducted and humerus internally rotated)
- Place your palm on the patient's shoulder anteriorly
 - The area that feels like a "ball" under your palm is the general target area
 - You should be able to feel this ball, even on obese patients, by pushing deeply
- Place the ulnar aspect of one hand vertically over the axilla
- Place the ulnar aspect of the opposite hand along the midline of the upper arm laterally
- Place your thumbs together over the arm
 - This identifies the vertical line of insertion on the proximal humerus
- Palpate deeply as you climb up the humerus to the surgical neck
 - It will feel like a golf ball on a tee – the spot where the "ball" meets the "tee" is the surgical neck
 - The insertion site is on the most prominent aspect of the greater tubercle, 1 to 2 cm above the surgical neck
- If necessary, for further confirmation, locate the inter-tubercular groove:
 - With your finger on the insertion site, keeping the arm adducted, externally rotate the humerus 90-degrees
 - You may be able to feel the inter-tubercular groove
 - Rotate the arm back to the original position for insertion
 - The insertion site is 1-2 cm lateral to the inter-tubercular groove

Insertion:

- Prepare the site by using antiseptic solution of your choice
- Remove the needle cap
- Aim the needle tip downward at a 45-degree angle to the horizontal plane
 - The correct angle will result in the needle hub lying perpendicular to the skin
- Push the needle tip through the skin until the tip rests against the bone
- The 5mm mark must be visible above the skin for confirmation of adequate needle length
- Gently drill into the humerus 2cm or until the hub reaches the skin in an adult.
 - Stop when you feel the "pop" or "give" in infants
- Hold the hub in place and pull the driver straight off
- Continue to hold the hub while twisting the stylet off the hub with counter clockwise rotations
 - The needle should feel firmly seated in the bone (1st confirmation of placement)
- Place the stylet in a sharps container
- Place the EZ-Stabilizer dressing over the hub
- Attach a primed EZ-Connect extension set to the hub, firmly secure by twisting clockwise
- Pull the tabs off the EZ-Stabilizer dressing to expose the adhesive, apply to the skin
- Aspirate for blood/bone marrow (2nd confirmation of placement)
- Secure the arm in place across the abdomen

Proximal Humerus

Use in patients responsive to pain:

Consider IO 2% preservative free lidocaine without preservatives.

Confirm lidocaine dose per institutional protocol

Prime EZ-Connect extension set with lidocaine

Slowly infuse lidocaine over 90 seconds

Allow lidocaine to dwell in IO space 60 seconds

Flush the IO catheter with 5 to 10 ml of normal saline in adults

2-3 ml in infants and small children

Administer a subsequent dose of lidocaine IO after the flush and PRN for pain

Connect fluids if ordered and pressurize to 300 mmHg for maximum flow

Assess for any signs of extravasation

Use in patients unresponsive to pain:

Prime EZ-Connect extension set with normal saline

Flush with 5 to 10 ml of normal saline

Connect fluids as needed and pressurize to 300 mmHg for maximum flow

Should patient develop signs that indicate responsiveness to pain, refer to section "Use in patients responsive to pain"

To remove:

- Remove EZ-Connect and Stabilizer dressing
- Stabilize needle hub and attach a Luer lock syringe to the hub
- Maintaining axial alignment, twist clockwise and pull straight out
 - Do not rock the syringe
- Dispose of needle with syringe attached into sharps container

EZ-IO Proximal Humerus Identification & Insertion Technique

Identify the proximal humerus:

Place the patient's hand over the abdomen (elbow adducted and humerus internally rotated)

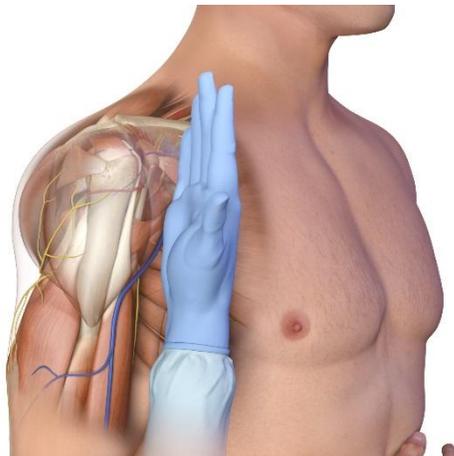


Place your palm on the patient's shoulder anteriorly

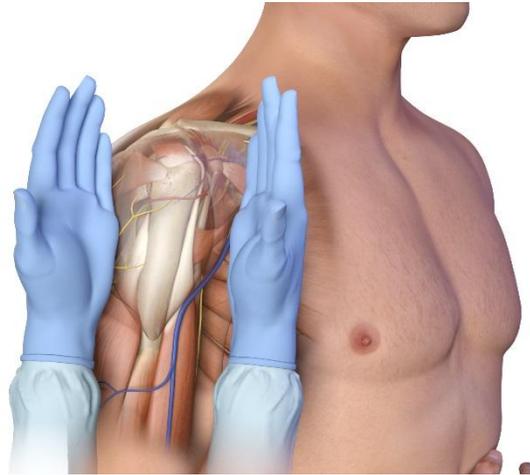
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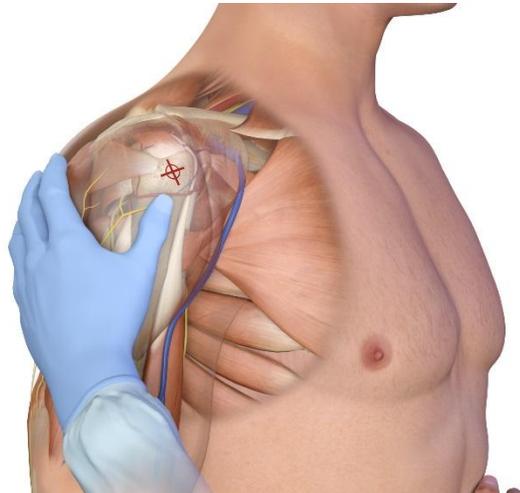
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- This identifies the vertical line of insertion on the proximal humerus

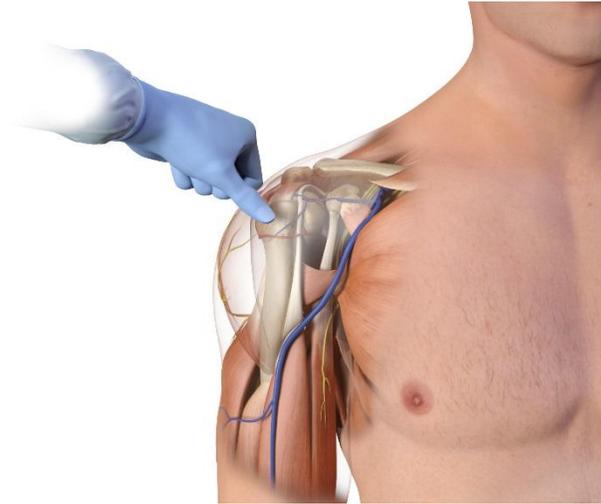


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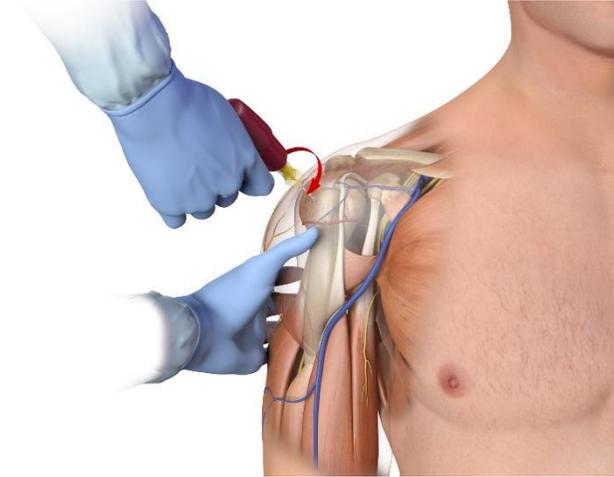


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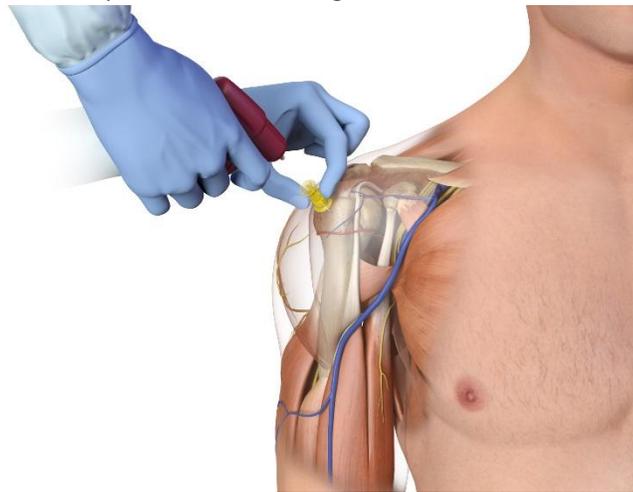
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