WEBINAR

Ultrasound-Guided Brachial Plexus Blocks: Techniques from the Expert!

May 2022





Your Host



Shelley Guenther, CRGS, CRCS

Clinical Marketing Manager



Is Ultrasound-Guidance Standard of Care?



"...the use of ultrasound hastens the onset of sensory and (less so) motor block, often decreases performance time, and results in fewer needle passes."



Neal JM, Brull R, Horn JL, Liu SS, McCartney CJ, Perlas A, Salinas FV, Tsui BC. The Second American Society of Regional Anesthesia and Pain Medicine Evidence-Based Medicine Assessment of Ultrasound-Guided Regional Anesthesia: Executive Summary. Reg Anesth Pain Med. 2016 Mar-Apr;41(2):181-94. doi: 10.1097/AAP.00000000000331. PMID: 26695878. Source: https://pubmed.ncbi.nlm.nih.gov/26695878/

Are We Safe?

"USG nerve block is a safe and efficient procedure, yielding a low complication rate

Froeba G, Seyfried TF. Ultrasound-guided regional anesthesia: are we safe? Minerva Anestesiol. 2022 Mar;88(3):110-111. doi: 10.23736/S0375-9393.22.16465-5. PMID: 35315626.

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EDITORIAL

Ultrasound-guided regional anesthesia: are

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The lesion of peripheral nerves is a possible risk of regional anesthesia. Causes of peripheral nerve injury in the perioperative period are very extensive: direct trauma, Localization of the needle in regional anesthesia started with triggering paresthesia,

followed by nerve stimulation. The sole use of nerve stimulation, however, does not entirely prevent intraneural injections. Over the last two decades, ultrasound (US) has become the

US has many advantages including visualization of spread of injectate, reduced dose and volume of local anesthetic required, and decreased intravascular puncture and incidence of local anesthetic systemic toxicity. US can detect nerve swelling, which should prompt cessation of injection, but it is unable to distinguish accurately between inter- and interfascicular needle-tip location.1

In our daily practice, the needle touches the nerve, the nerve moves a short distance, and then the needle may pierce the fascia. The practitioner might feel a pop, the patient often reports a paresthesia or dysesthesia. Especially in anesthetized patients a sufficient ultrasound guidance is essential since paresthesia cannot be detected in comparison to the awake patient. Reliable visualization of the needle tip is one of the key techniques to

There are certain visual signs of a potential nerve penetration, using US guidance: injection of 2-3 mL of local anesthetic usually proceeds with minimal pain and resistance. The injected nerve seems to swell with a uniform stippled image and little or no black ring around it. Some of the local anesthetic forms a black hypoechoic shadow in the nerve and some of the local anesthetic leaks out of the nerve. forming a small hungare In this issue of Minerva Anestasialarias

Safety of USG Blocks for Outpatient Hand Surgeries



Background: Ultrasound-guided (056) assistants and anesthesia and efficient alternative to traditional general anesthesia. However, limited anesthesia as a safe and efficient alternative to traditional general anesthesia. However, limited data exist regarding the safety of supraclavicular blocks used in common hand surgery procedures. The purpose of this retrospective study was to evaluate a large sample of cases to determine the effectiveness and complication rate of supraclavicular nerve blocks and confirm the safety of its use within the ambulatory surgery center (ASC) setting. Methods: Nerve blocks for the upper extremity were performed via the supraclavicular approach using the USG technique. Records were analyzed for all patients monitored during the immediate postoperative recovery and step-down phases at the ASC and contacted by phone or evaluated within 2 weeks at their first postoperative visit. Adverse outcomes related to the regional block anesthesia were identified via phone interview or postoperative surgical visit and documented. Results: In all, 713 records were reviewed with 56% female (n = 398) and 44% male (n = 315) patients. Of the 713 cases, 4 adverse events were 56% female (n = 398) and 44% male (n = 315) patients. Of the 713 cases, 4 is study is the first report to

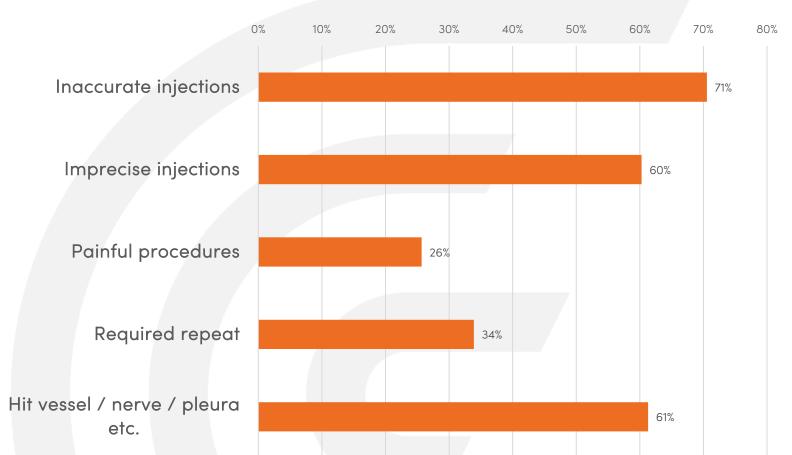
"USG nerve block is a safe and efficient procedure, yielding a low complication rate"

Voskeridjian AC, Calem D, Rivlin M, Beredjiklian PK, Wang ML. An Evaluation of Complications Following Ultrasound–Guided Regional Block Anesthesia in Outpatient Hand Surgery. Hand (N Y). 2021 Mar;16(2):183–187. doi: 10.1177/1558944719851207. Epub 2019 Jun 10. PMID: 31179730; PMCID: PMC8041414.



Poll

What do you see as the risks and limitations to blind injections for anesthesiologist?



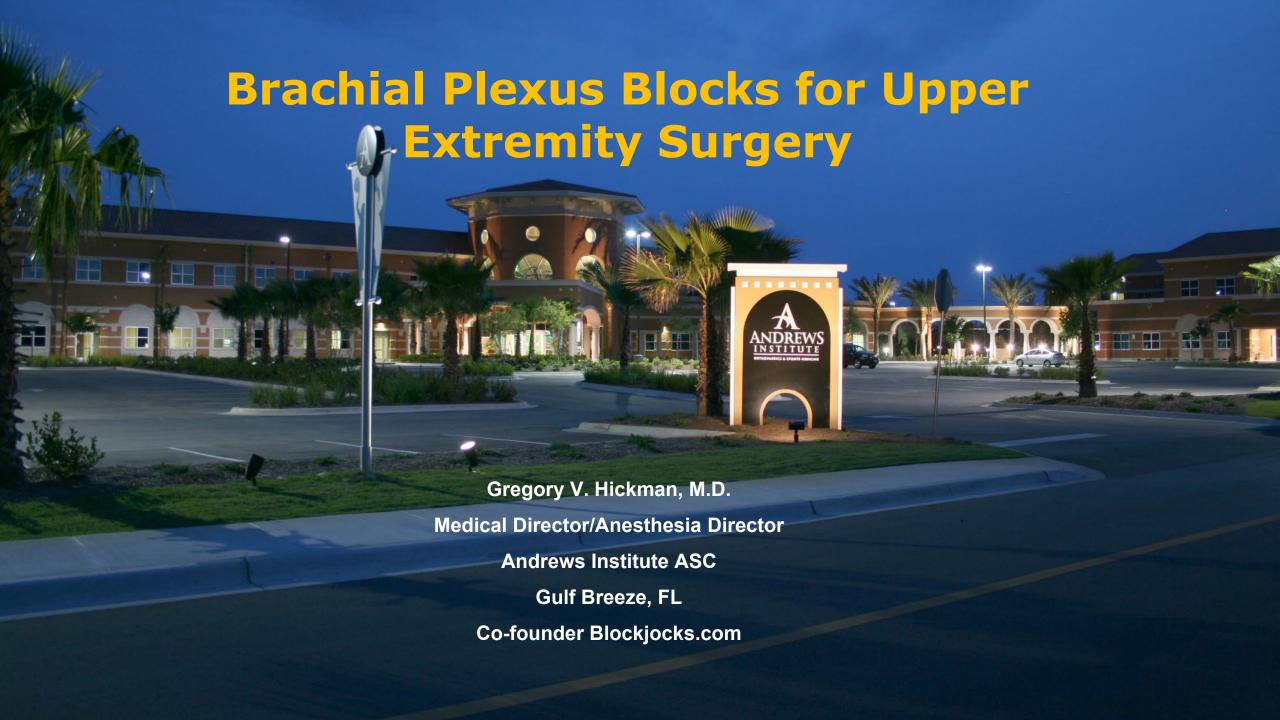
Your Expert Guest Speaker



Gregory Hickman, M.D.

Medical Director and Anesthesia Director, Andrews Institute Ambulatory Surgery Center Founder, BlockJocks.com







Gregory V. Hickman, M.D.

- Private Practice
- 1990 UAB first Acute Pain Service
- 1992 HealthSouth AL Sports Medicine
 & Orthopedic Center
- 2007 Andrews Institute (Medical/Anes. Director)
- 2011 Co-founder BlockJocks.com
- 2006 USRA

Upper Extremity - Three blocks

- Supraclavicular block
- Infraclavicular block
- Axillary block

Interscalene block - NO

Three blocks

- Ropivicaine 0.5% or Bupivicaine 0.5%
- Bupivicaine 0.25%
- Lidocaine 2%
- 20-30 ccs
- Dexamethasone 2-4mg Bupi/Ropi
- Epi +/-
- Nerve stimulator

Supraclavicular Block

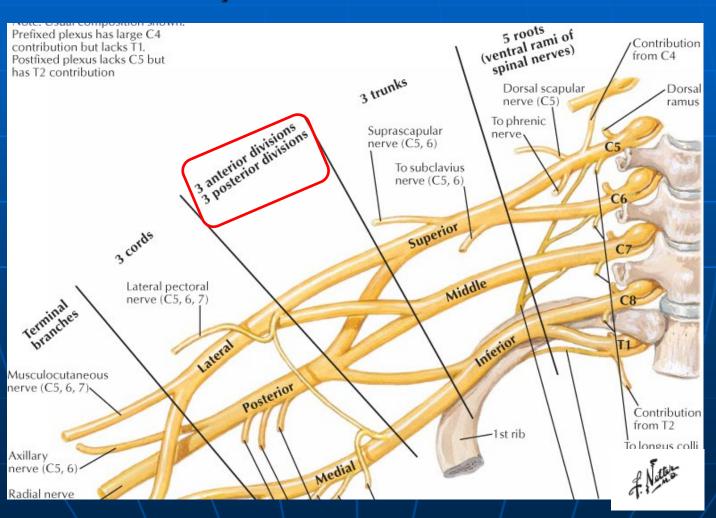
"Spinal of the Arm"

 Provides rapid & highly effective anesthesia/analgesia for all upper extremity surgery

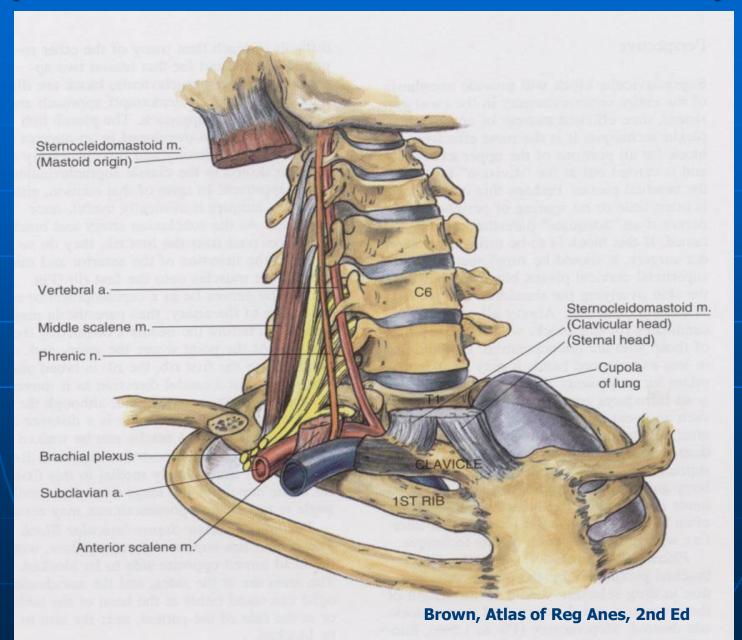
Go to at Andrews

Supraclavicular Brachial Plexus

Blocks brachial plexus at level of the divisions



Supraclavicular Block Technique



11:47 AM Mon May 24 100%















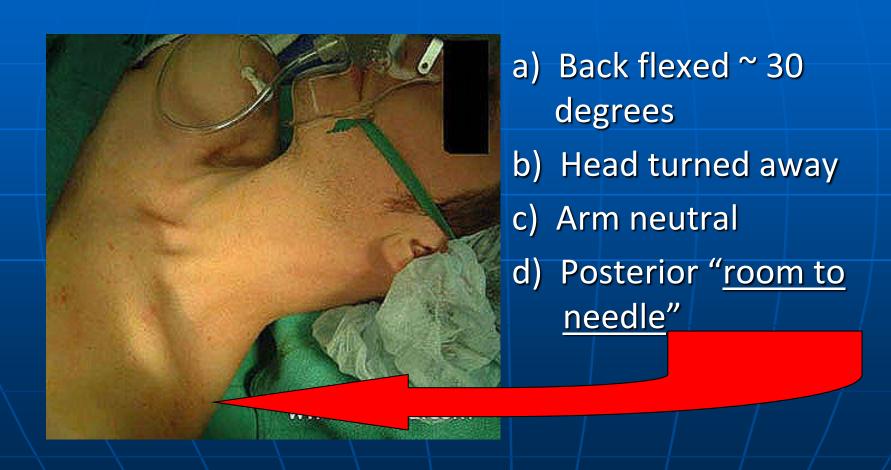






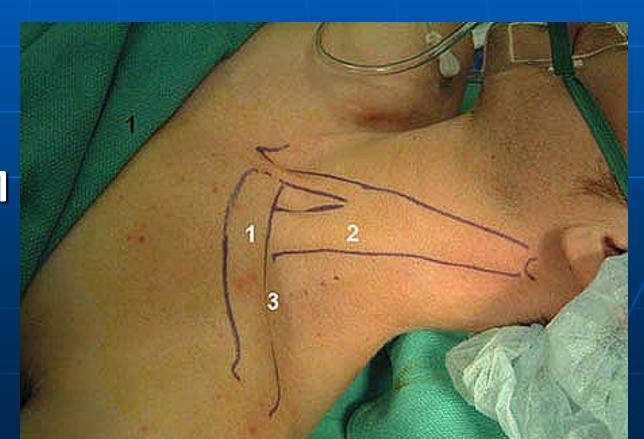


Patient Positioning



I.D. Two Landmarks for Probe Placement

- 1) Clavicle
- 2) Posterior border of SCM





Proper Alligment of U/S Probe

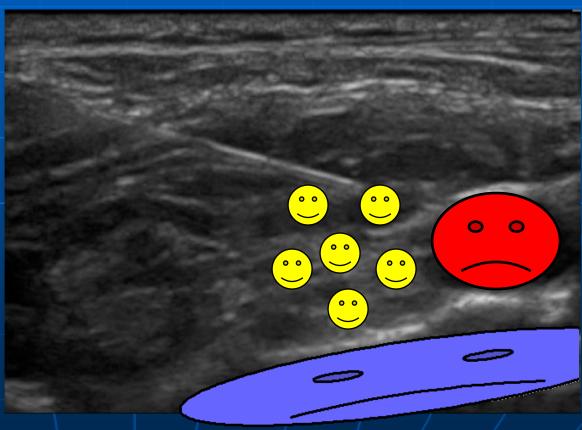


Two Pearls:

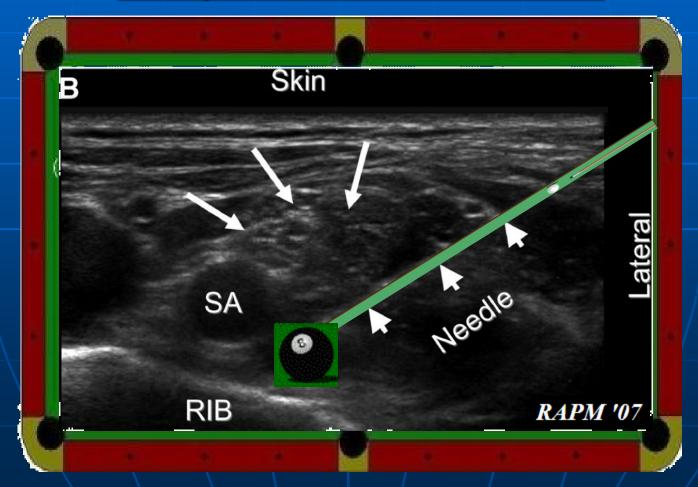
- 1) Rotate lateral end of probe 1-2 cm off of clavicle
- 2) Angle U/S beam under clavicle

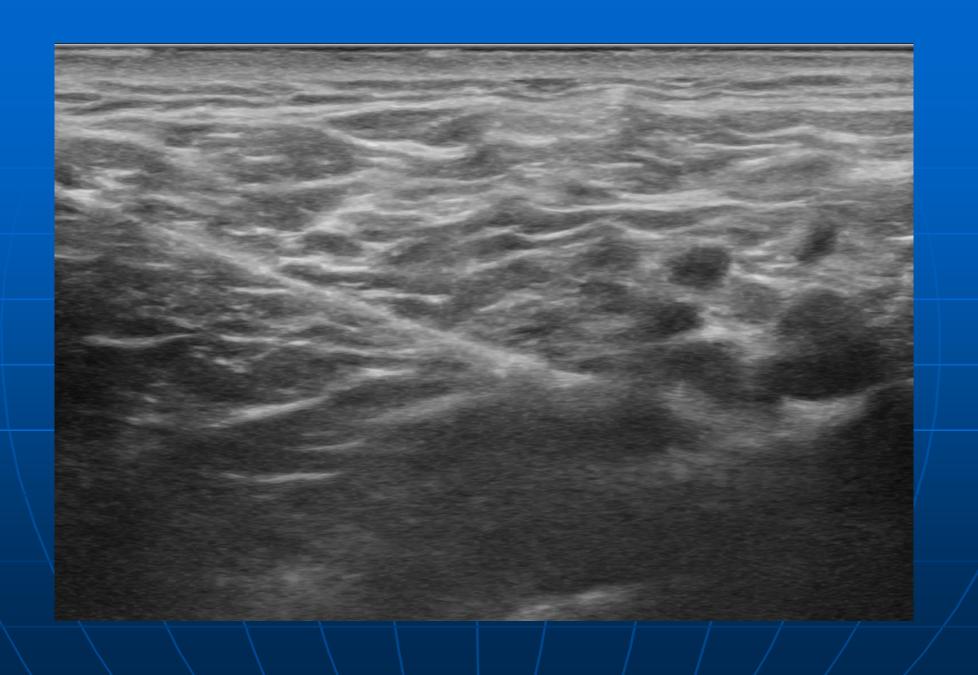
Identify Subclavian Artery & First Rib Identify Brachial Plexus Trunks



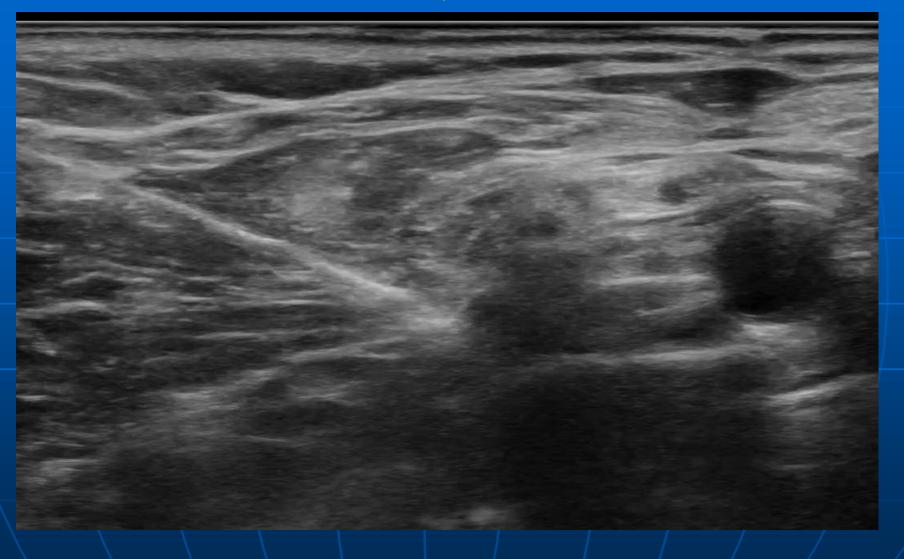


1st Injection "Corner Pocket"

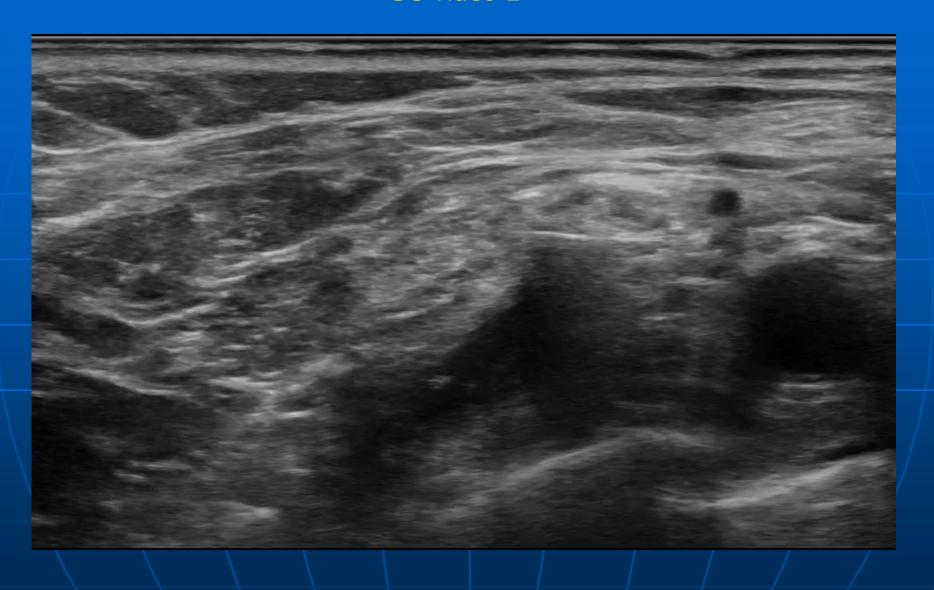




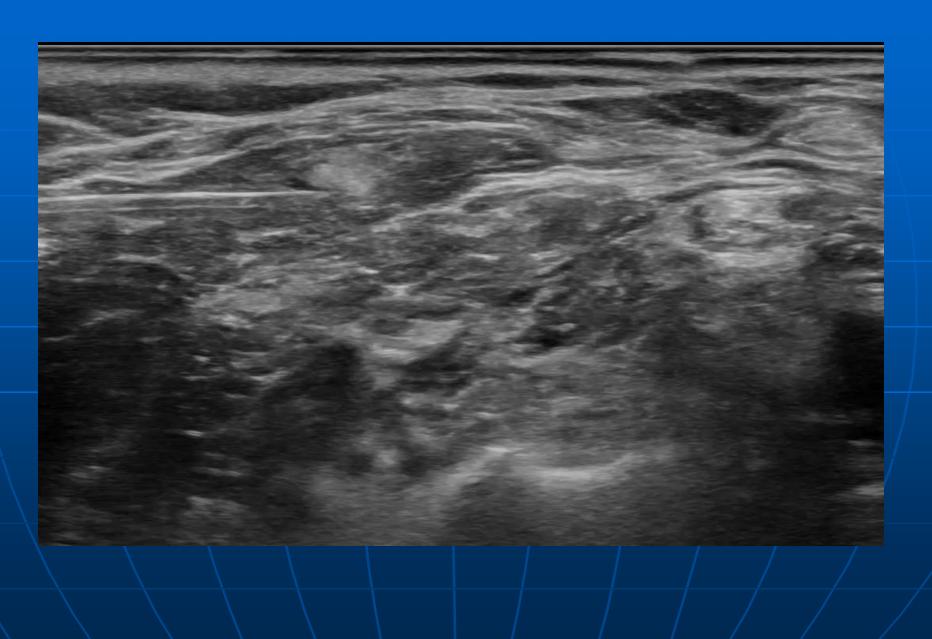
SC corner pocket video



SC video 2



SC video 3 upper trunk



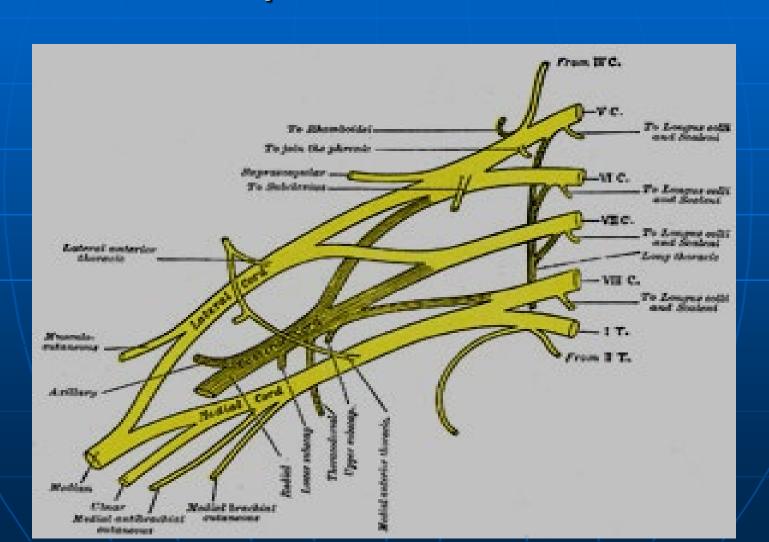
Side Effects

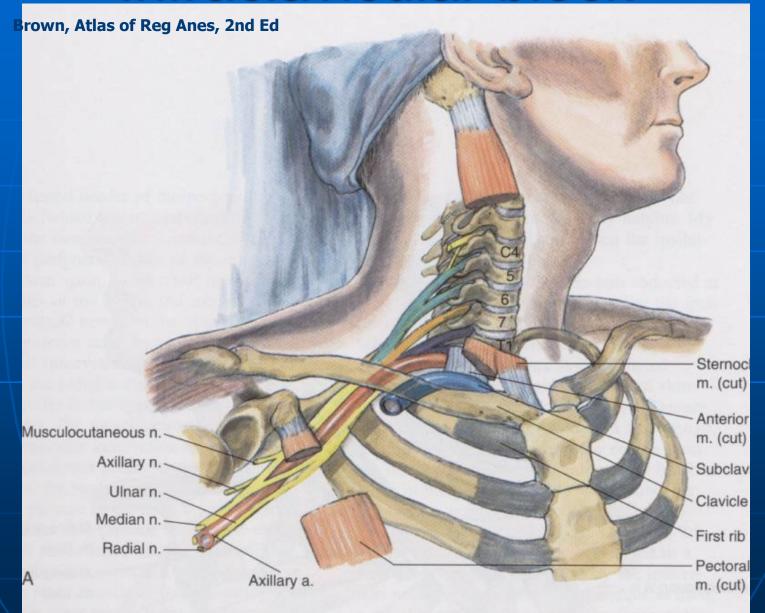
- Phrenic N.
- Horner's syndrome
- Recurrent Laryngeal N.
- Pneumothorax

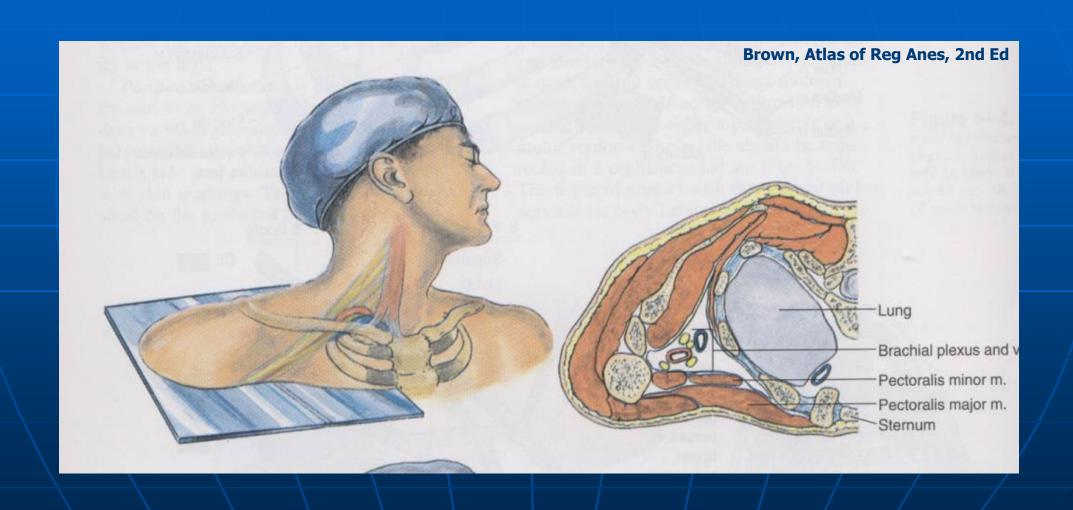
- Between axillary and SC blocks
- Level of the plexus "cords" lateral, medial, posterior
- Predictable, fast onset like SC

Infraclavicular Brachial Plexus

Blocks brachial plexus at level of the cords







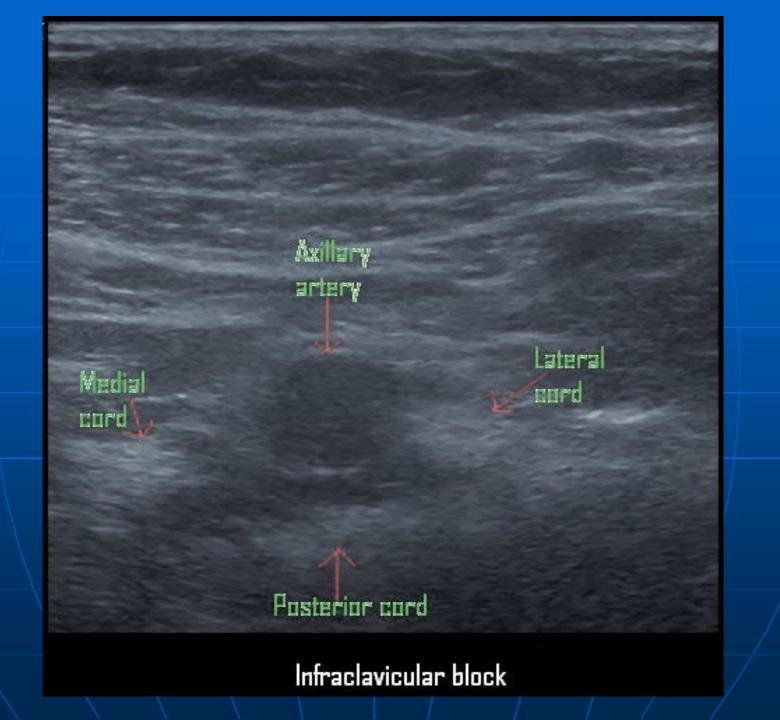
Good for catheter tech – preferred

Potential vascular complications

Infraclavicular Brachial Plexus

- Head of bed up 30 degrees
- Turn the patient's head away from the side of interest
- Transducer is positioned just below the clavicle, medial to the coracoid process
- Sagittal plane, probe in the delto-pectoral groove superiormedial to inferior-lateral orientation





Distal nerves

 Lateral cord – Musculocutaneous and median nerves

Posterior cord – Radial n.

 Medial cord – Median and ulnar nerves



Steep needle approach

Positioning for U/S blocks

- Abduct shoulder
- Clavicle "houdini" effect
- Drs. Gonzales, Benonis, Auyong
- Moves clavicle posterior

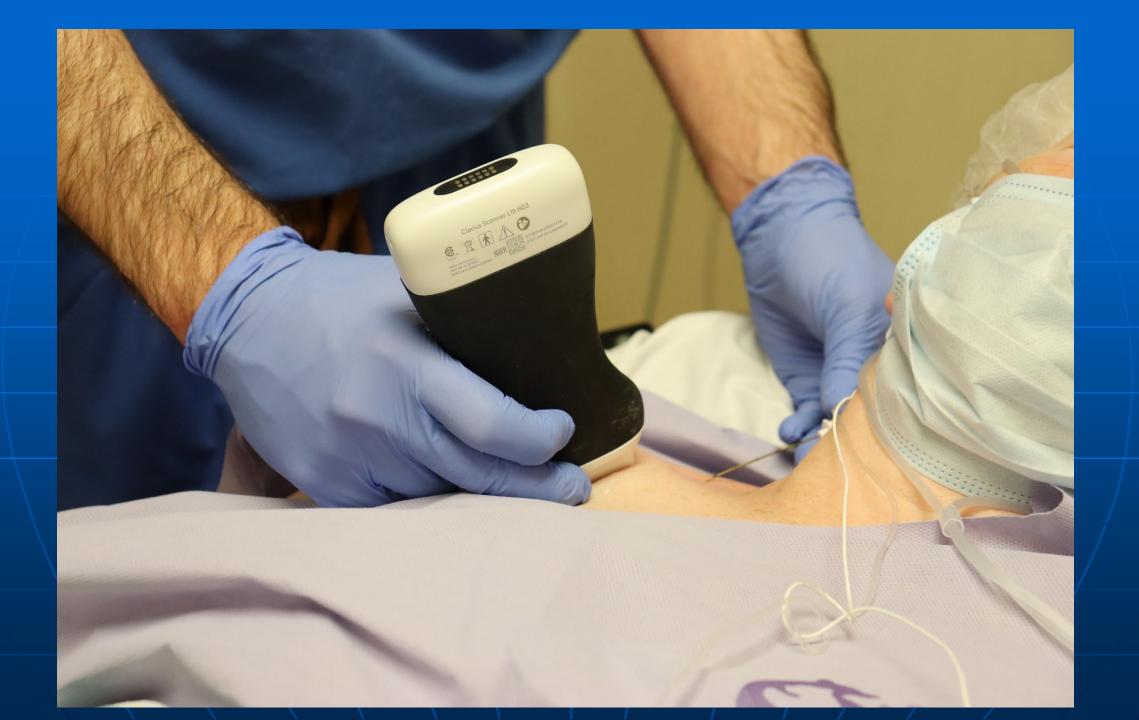


Retroclavicular Approach

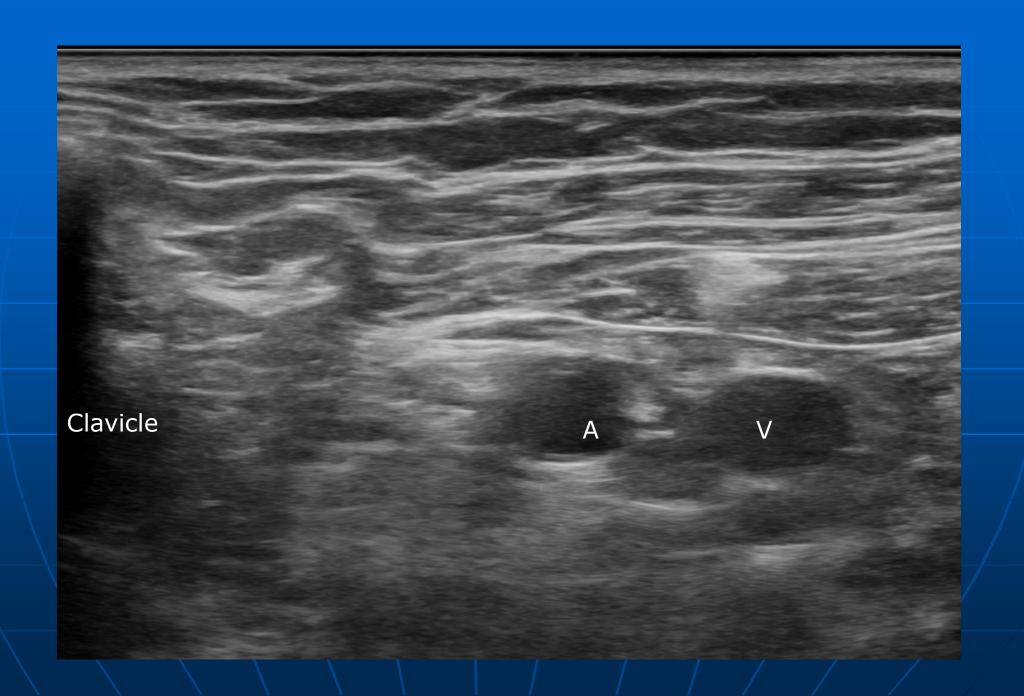
- 3rd approach to IC block
- Now done at AI
- No special patient positioning
- Good needle visualization

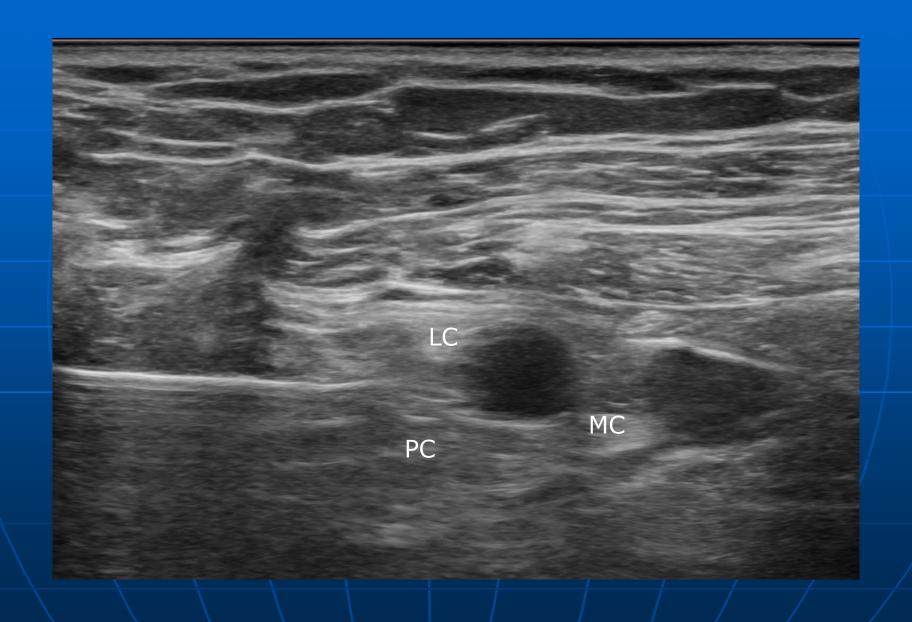
Retroclavicular Approach

- Start needle posterior to clavicle
- Needle not seen until comes under clavicle
- Needle image better
- Good needle control to manipulate to cords
- No arm manipulation







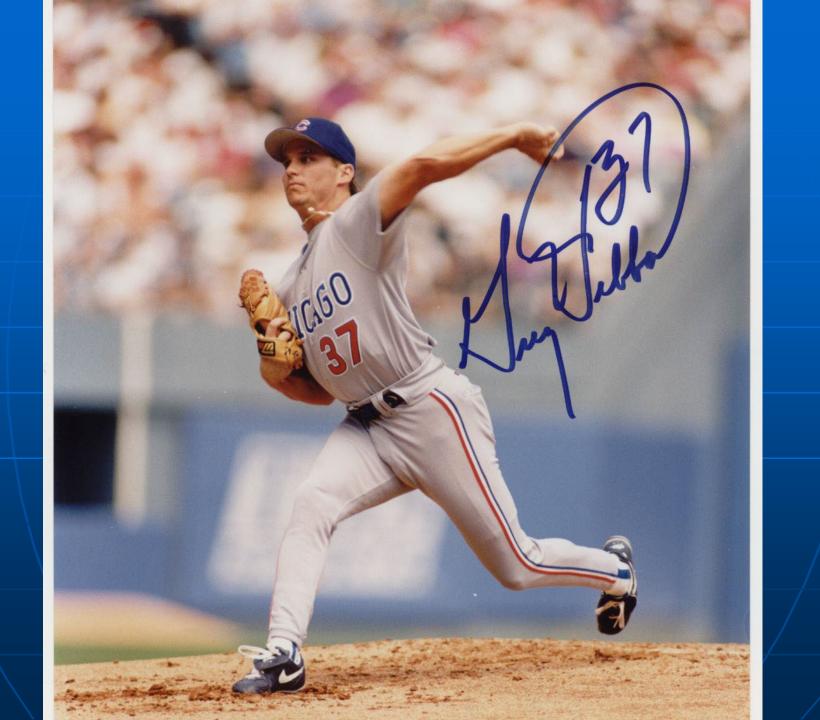


Retroclavicular Approach

- Easy for catheter insertion
- Go to for catheter placement
- Bupivicaine 0.125%
- 8cc auto bolus q4h
- 8cc demand dose q2h
- Bolus dosing spread to cords

Side Effects

- Phrenic N. rare
- Horner's rare
- Recurrent Laryngeal rare
- Pneumothorax
- LAST



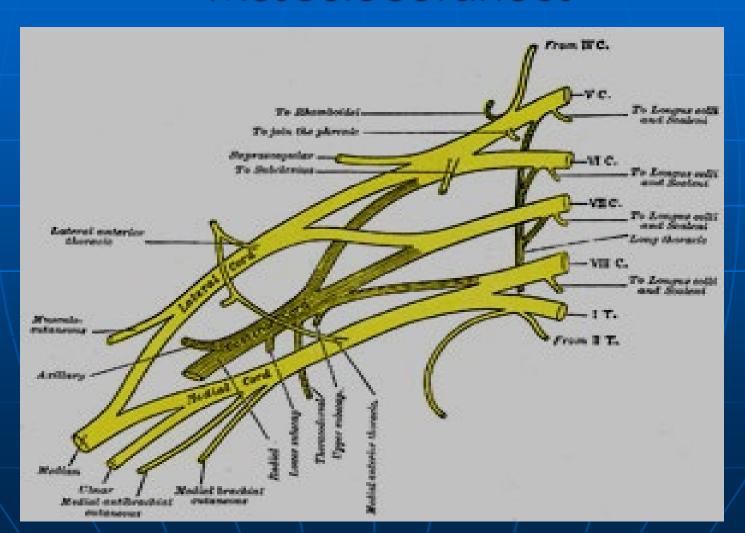
Axillary block

Axillary Block

- Multiple injections
- Four distal nerves
- Highly vascular small veins
- Superficial and technically easy

Axillary Brachial Plexus

Distal nerves: Radial, Median, Ulnar, Musculocutanous

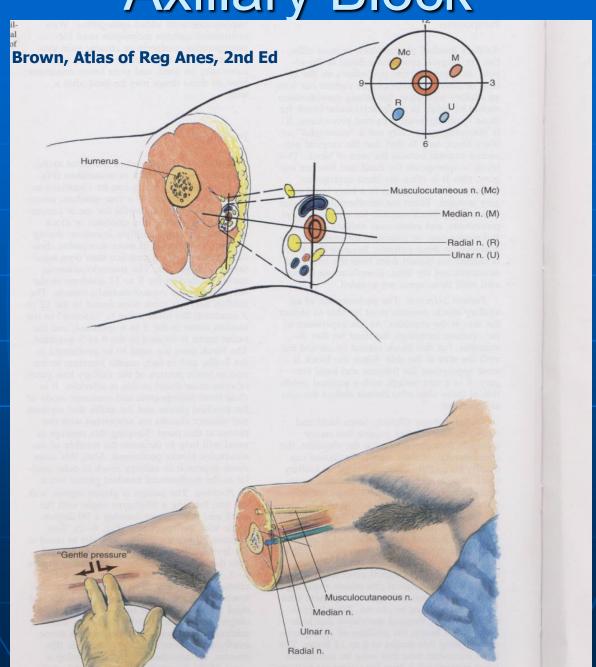


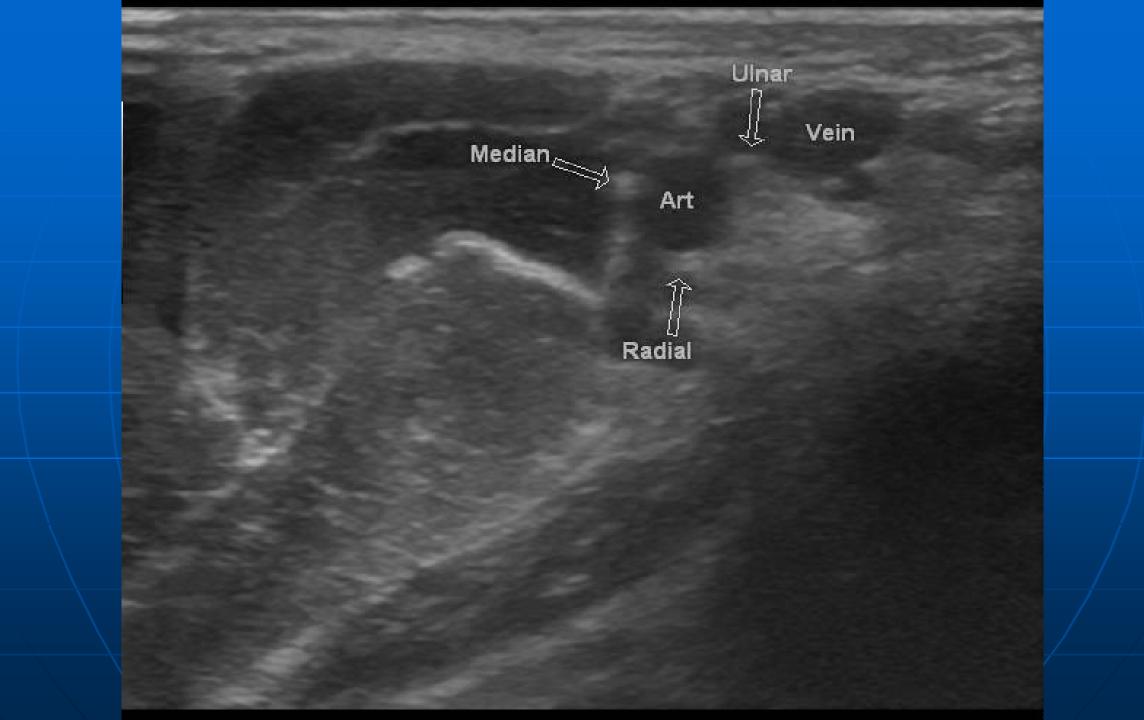
Why do Axillary Blocks?

- Go to block
- Superficial
- Easy
- Or at AI

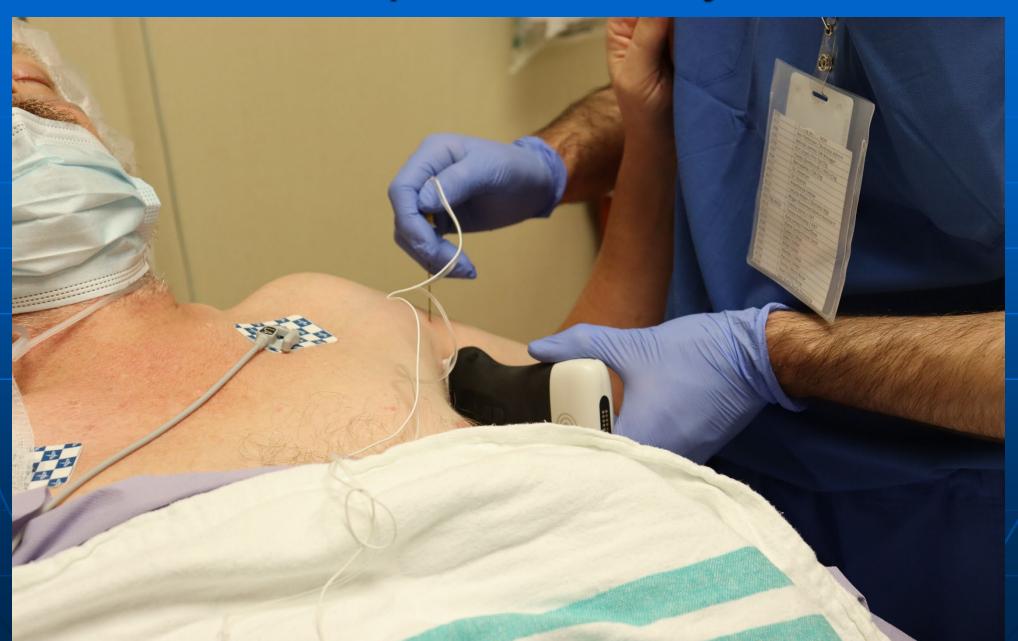


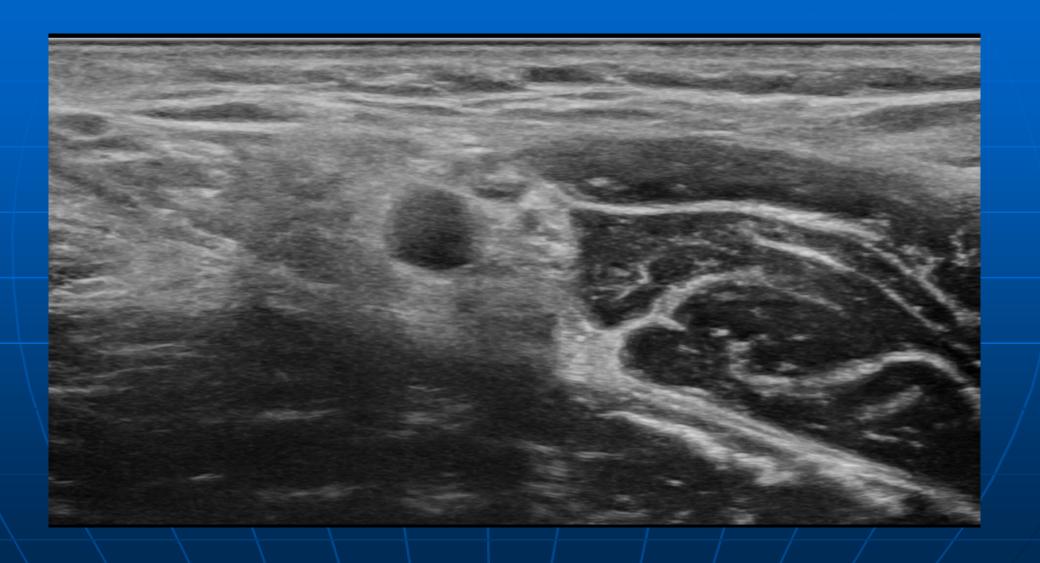
Axillary Block





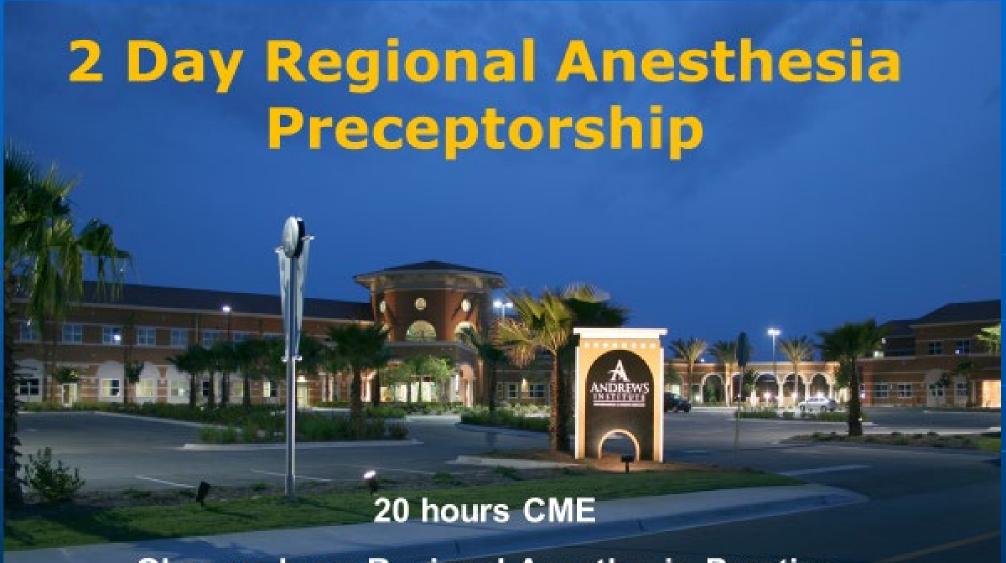
In plane axillary





Side effects

- Pneumothorax
- LAST



Observe busy Regional Anesthesia Practice

Contact Andrews Research and Education Foundation (AREF) about Regional Anesthesia Preceptorship or ASA website



Live Demonstration



Shelley Guenther

Clinical Marketing Manager







Dr. Alan M. Hirahara, MD, FRCSC

Orthopaedic Surgeon, Specialist in Sports Medicine

The new Clarius HD3 is almost like a traditional cart-based probe without the wire and the cart. If you put it behind the iPhone, you literally can't see it. And what I was most blown away by was actually the new color Doppler feature. In addition to the actual quality of the image, you're getting it wirelessly. It's on par with any corded device I have.





Clarius L7/L15 HD₃

- 30% Smaller & More Affordable
- Wireless Freedom
- High-Definition Imaging
- Easy App for iOS & Android
- Needle Enhance
- Clarius Cloud Storage
- Clarius Live Telemedicine
- Unlimited Users

Questions?



Dr. Greg Hickman



Shelley Guenther





Thank you!

