

SEPT 19, 2020 DES MOINES EMERGENCY ULTRASOUND CONFERENCE

NERVE BLOCKS

CONFLICT OF INTEREST

CONSULTANT WORK WITH BUTTERFLY NETWORK INC.

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GOALS FOR TODAY

- ▶ Why?
- ▶ How?
- ▶ Where?

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WHY NERVE BLOCKS

- ▶ Relieve pain difficult to do with oral/IV analgesics
- ▶ Reduce use of IV opioids
- ▶ Make procedures easier

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HOW

- ▶ Equipment needed:
 - ▶ US machine
 - ▶ Anesthetic
 - ▶ Needle
 - ▶ Syringe
 - ▶ Gel
 - ▶ Sterile probe cover



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NEEDLE

- ▶ Ideally a block needle (blunt, extension tubing)
- ▶ Can use Quincke tip spinal needle (20-22G)
- ▶ Permanent nerve injury risk 0.029% - 0.2%

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MEDS

- ▶ Lidocaine 1%
 - ▶ 4 mg/kg
 - ▶ 1% = 10 mg/mL
- ▶ Ropivacaine 0.5% and Bupivacaine 0.5%
- ▶ Have a dosing guide or phone app

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LAST

- ▶ Local Anesthetic Systemic Toxicity
- ▶ Neuro and Cardiac adverse effects
- ▶ Intralipid 20% is antidote
 - ▶ 1.5 mL/kg bolus
- ▶ My recommendation: cardiac monitor for proximal blocks



[FDA.gov](#)

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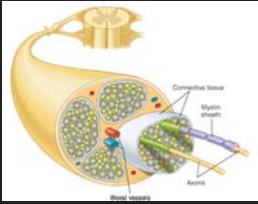
TECHNIQUE

- ▶ In-plane vs out-of-plane
- ▶ Single operator vs two-person block
 - ▶ Hand-on-syringe vs Hand-on-needle
- ▶ Never lose sight of needle tip
- ▶ Hydrodissection is very useful

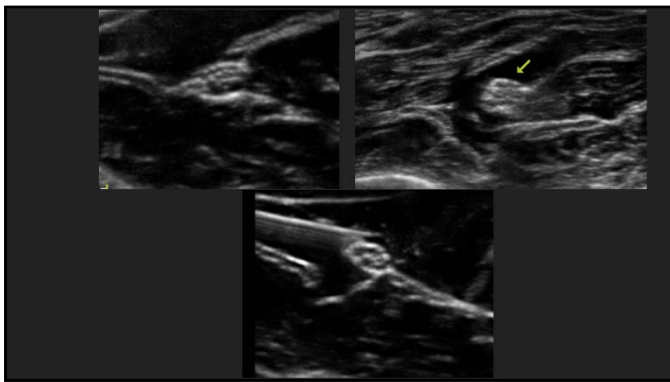
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NERVE ANATOMY

- Typically hyperechoic but not always
- Located near blood vessels
- Anisotropy is a factor



Taber's Medical Dictionary



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WHERE (WHAT NERVES)

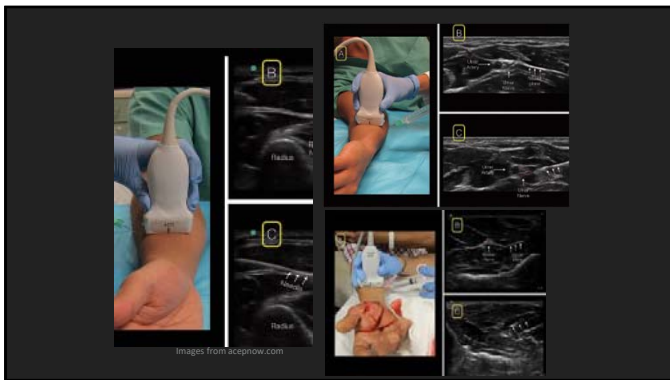
- Wrist
- Hip
- Ankle

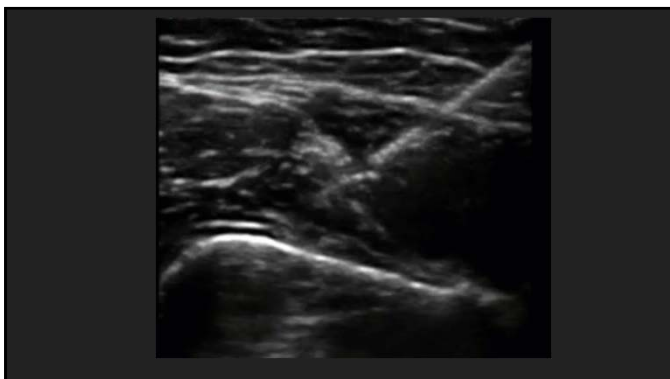
- And later on...neck, chest, back, etc.

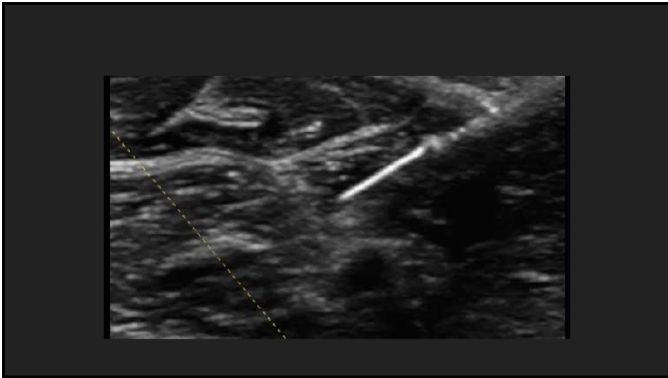
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WRIST BLOCKS

- ▶ Median - laceration to thenar eminence
 - ▶ Radial - Dorsal hand injury
 - ▶ Ulnar - boxer's fx reduction
- ▶ 5-7 mL







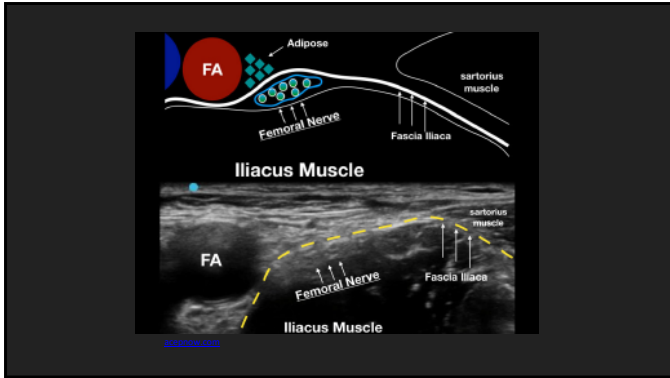


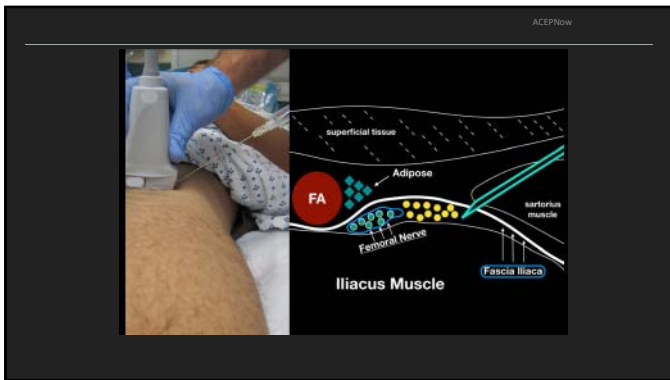
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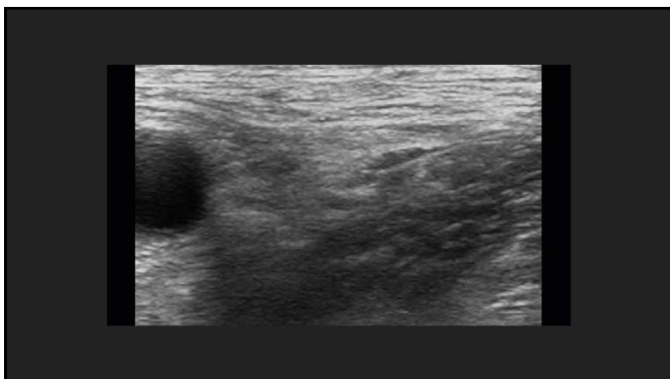
HIP

- Femoral nerve vs fascia iliaca (3-in-1)
- Ideal for femoral shaft fx
- Pretty effective for proximal femur fx

- Need more volume = 30-40 mL









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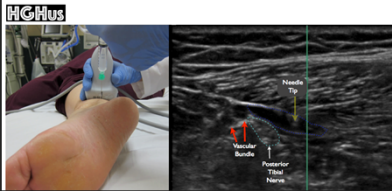
ANKLE

- ▶ Posterior tibial nerve
- ▶ Laceration or foreign body to plantar surface of foot
- ▶ 5-10 mL

Step 4a Out-of-Plane Technique

21-25g needle just in the middle of the probe
Steep angle of entry

HGHus



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YOUR HOMEWORK

- Scan yourself!
- Start with median nerve
- Next radial, ulnar and posterior tibial

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NERVE BLOCK RESOURCES

- <http://highlandultrasound.com>
- 5minosono.com

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REFERENCES

- Highland Emergency Ultrasound
- ALIEM
- ACEP Now
- Hardman, David. Nerve injury after peripheral block: best practices and medico-legal protection strategies. Anesthesiology News. July 2015.

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THANK YOU!

▸ Questions?

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