

# Pectoralis Nerve Block

Jake Hutchins, M.D.

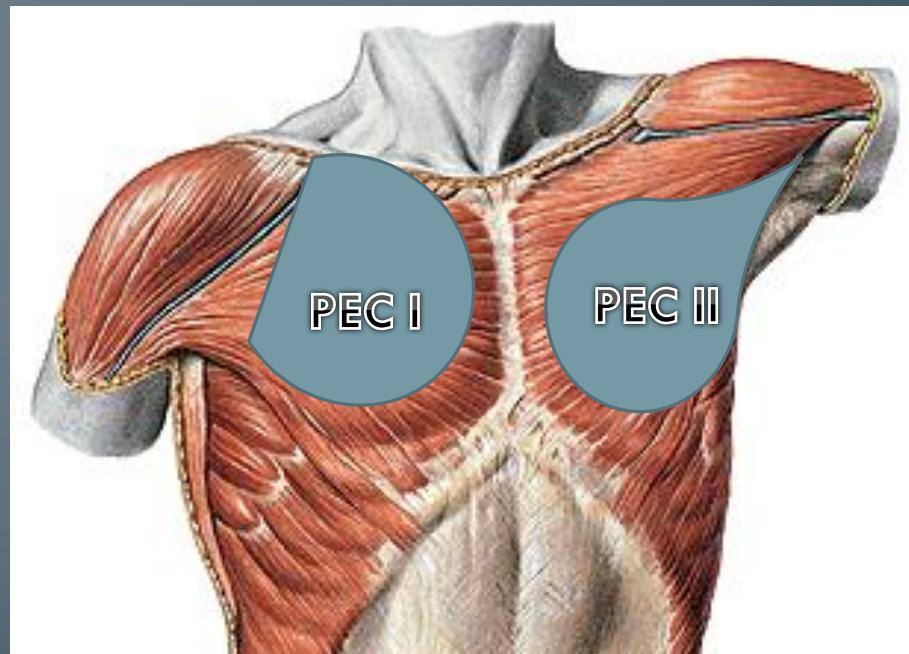
Aaron Berg, D.O.

# Disclosures

- Jacob Hutchins is on the speaker's bureau, is a consultant, and has received research funding from Pacira Pharmaceuticals
- He also is a consultant for Insitu Biologics, and Heron Therapeutics.
- Aaron Berg has nothing to disclose

# Indications

- Breast Surgery: Reduction, augmentation, tissue expanders, sentinel node excision, tumor removal, thoracic surgery, chest wall surgery



# Nerves

- **Lateral Pectoral Nerve: C5-C7**
  - Origin: Lateral cord of the brachial plexus
  - Location: In between the pectoralis major and minor muscles
  - Motor: Pectoralis major muscle
  - Sensory: AC joint, clavicle, cutaneous anterior thoracic, pec major
- **Medial Pectoral Nerve: C8-T1**
  - Origin: Medial cord of the brachial plexus
  - Location: Deep to pectoralis minor (pierces both muscles)
  - Motor: Pectoralis major (sternocostal head) and minor muscles
  - Sensory: Inferior border of the pec major, lateral thoracic wall
- **Spinal nerves T2-6 (intercostal nerves)**
  - Location: in between intercostal muscles
  - Sensory: Medial breast, cutaneous branches/corresponding dermatome

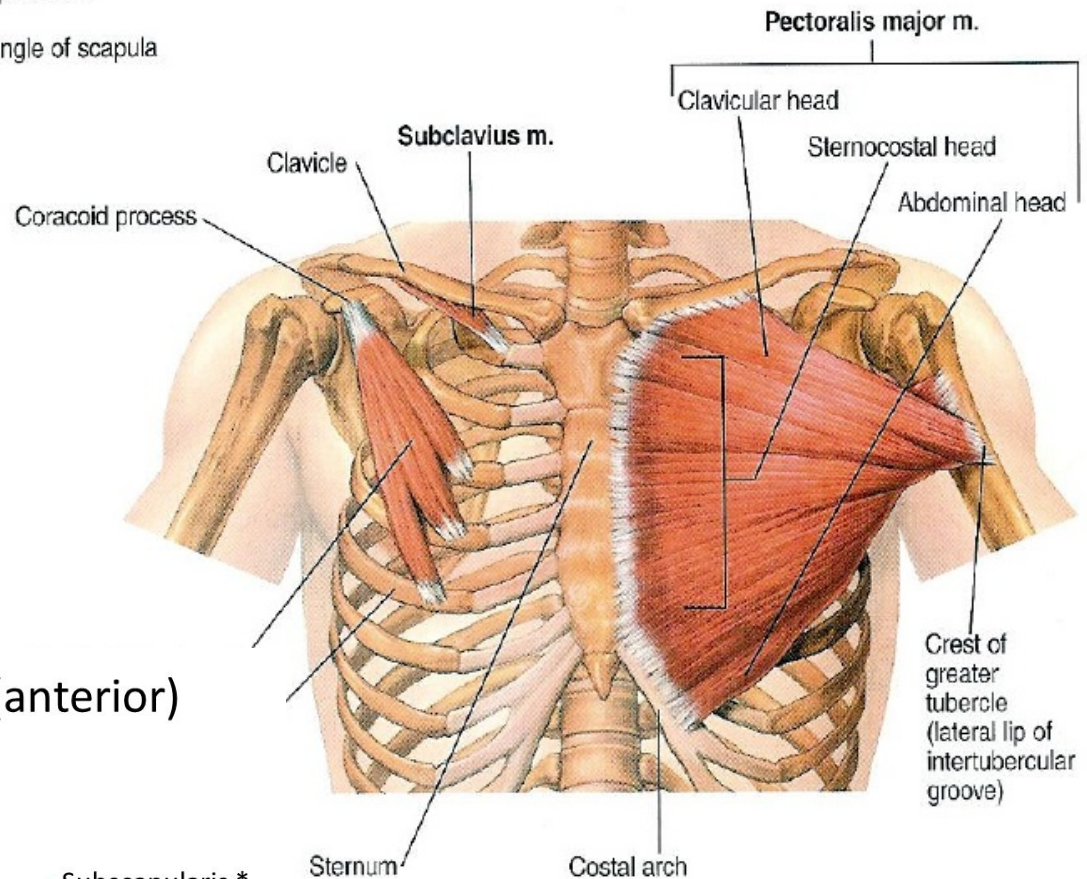


# Anatomy

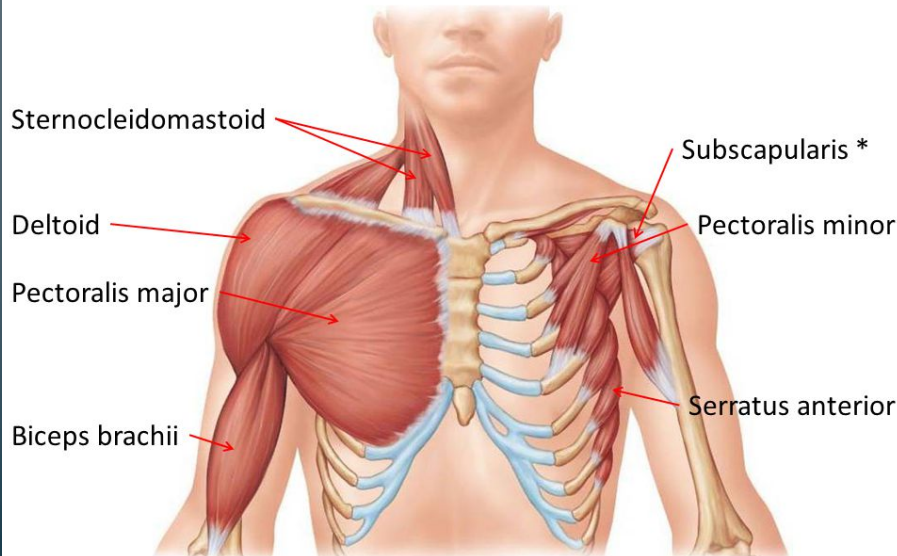
- Pec Major
- Pec Minor
- Serratus anterior

pulae m.

angle of scapula



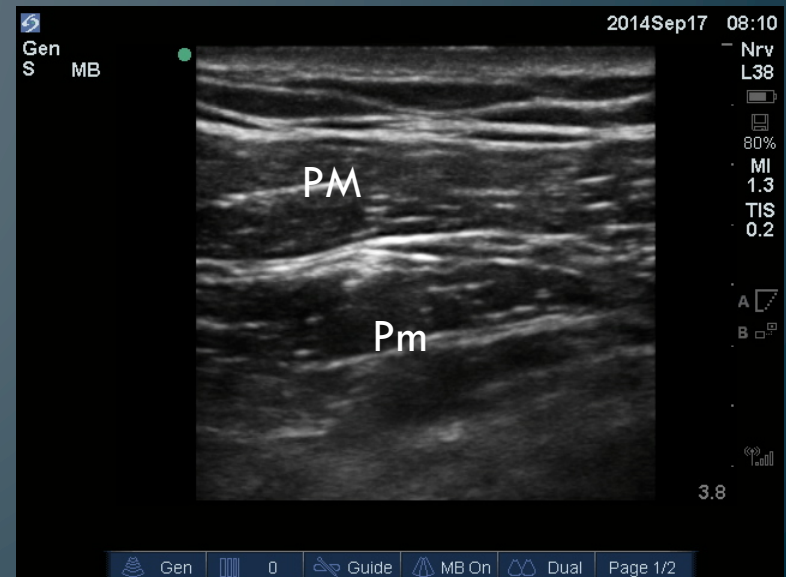
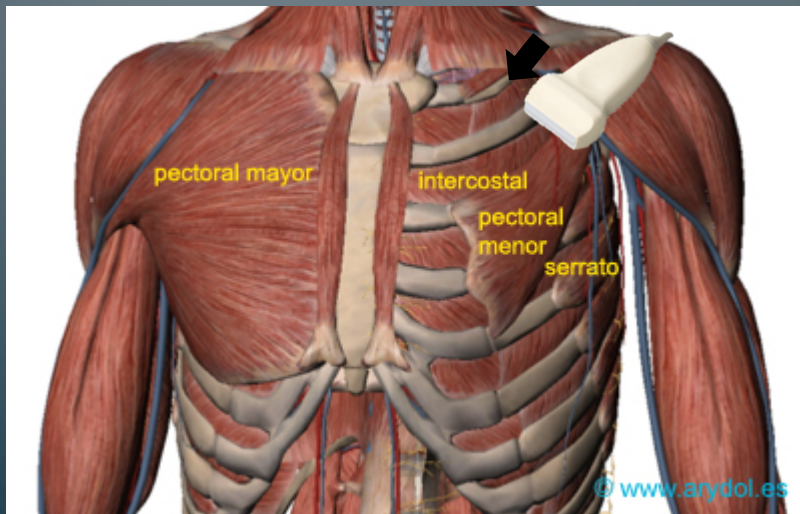
## Muscles of the shoulder (anterior)



\* Rotator cuff muscle

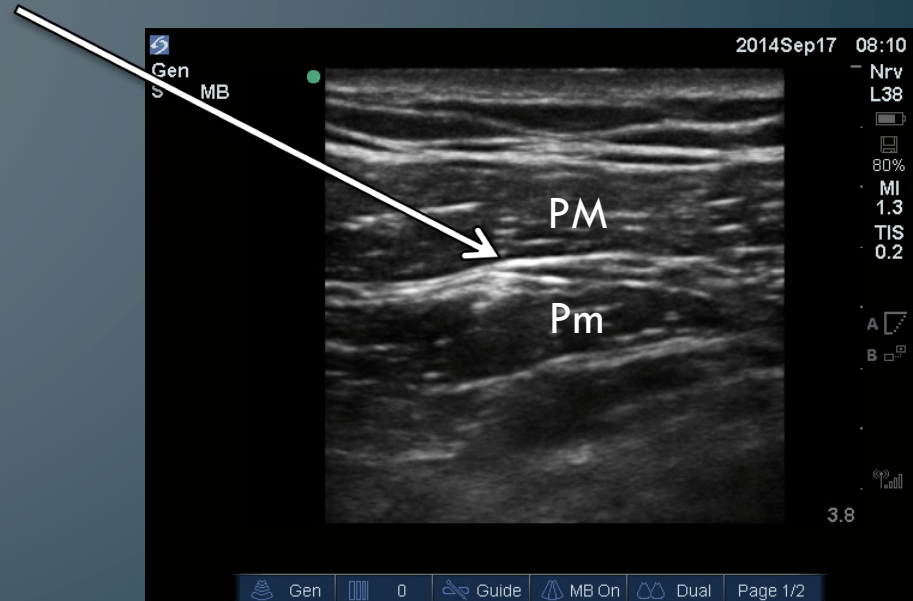
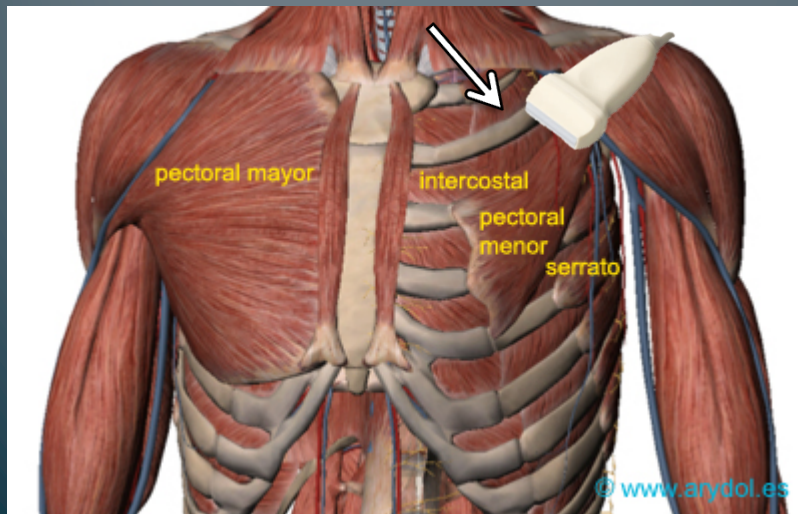
# Technique

- PEC I
  - Use for surgery limited to the Pec major distribution such as pacemaker, port a cath, subclavian TAVR
  - Goal: LA injection in between the Pec major and Pec minor muscles
  - Ultrasound placement: Start at the deltoid/pectoralis groove with the US probe angled inferolateral. Work your way medially until you see a plane between the pec major and minor roughly near the mid-clavicular line.



# Technique

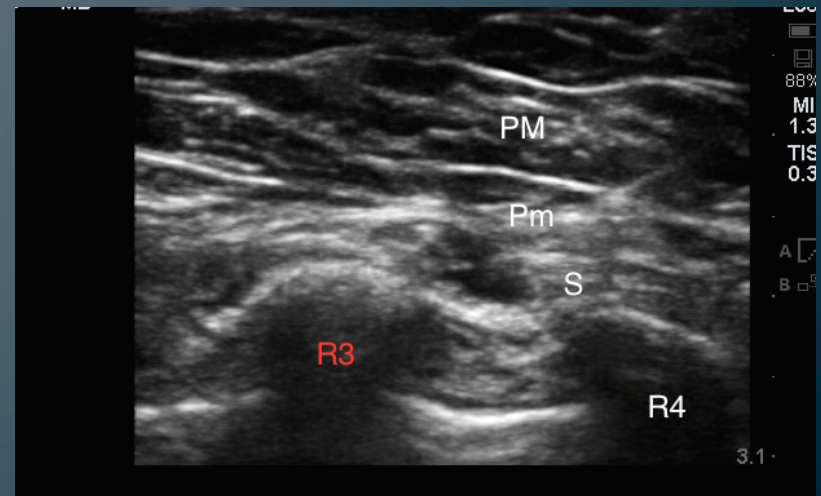
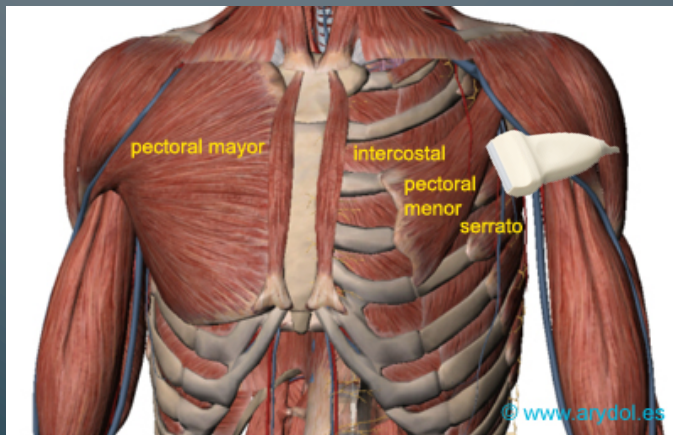
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# Technique

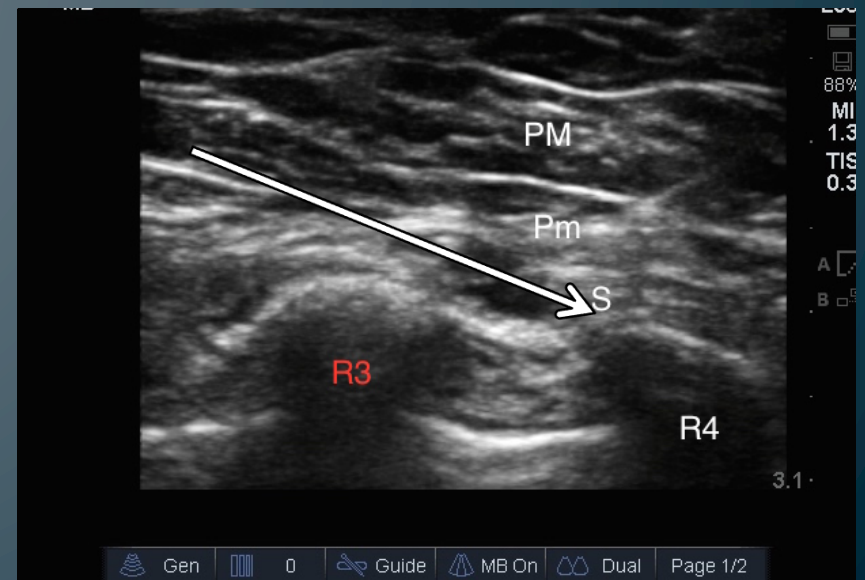
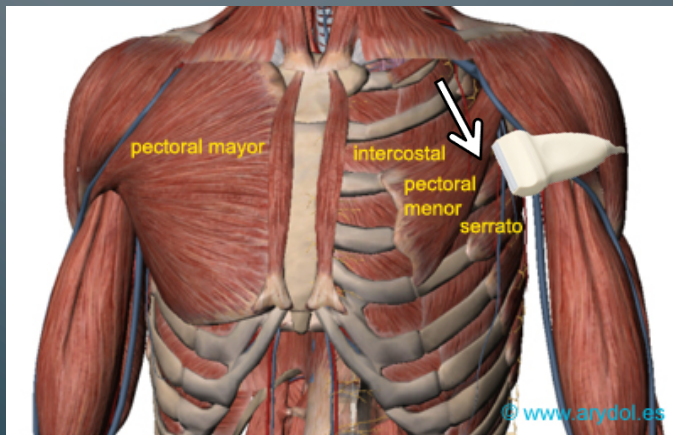
- PEC II
  - Used for more extensive breast surgery; involving the serratus anterior, sentinel node excision, mastectomy, augmentation, tumor resection, etc
  - Goal: Place LA in between pec minor and serratus anterior muscles or deep to the SA (in between SA and 4<sup>th</sup> rib) to block long thoracic nerve, spinal nerves T2-T4 and intercostobrachial nerve.
  - Ultrasound placement: From PEC 1 location, move to the lateral border of the pec minor and work inferior to the level of the 4 rib. Identify pec minor and serratus anterior and the 4 rib.





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# Technique

- PEC I: Roughly 10mL of 0.25% Bupivacaine or 0.2% Ropivacaine or LA of choice
- PEC II: Roughly 20mL of same solution
- Alternatively
  - PEC I: 5 mL 0.25% bupivacaine with 10mL of 1.3% liposomal bupivacaine
  - PEC II: 5 mL 0.25% bupivacaine with 10mL of 1.3% liposomal bupivacaine (diluted with 10mL NS for 20mL total)

# Pec 3 or Serratus Anterior Block

- Injection between Latissimus dorsi and serratus anterior at roughly 5<sup>th</sup> rib level
- Used for rib fractures, VATs, and lat dorsi flap surgery
- Performed with patient supine with arms abducted or lateral
- Can inject above or below the serratus anterior



# Complications

- Bleeding
- Infection
- Thoracoacromial artery injection
- Pneumothorax
- Axillary Fascia Puncture



# References

- Blanco R. The 'pecs block': a novel technique for providing analgesia after breast surgery. *Anaesthesia*. 2011 Sep;66(9):847-848
- Blanco R et al. Ultrasound description of Pecs II(modified Pecs I): A novel approach to breast surgery. *Rev Esp Anesthesiol Reanim*. 2012.
- Blanco R et al. Serratus plane block-a novel ultrasound guided thoracic wall nerve block. *Anaesthesia* 2013 68:1110-1113