

TRUNCAL BLOCKS

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I have no conflicts of
interest and nothing to
declare

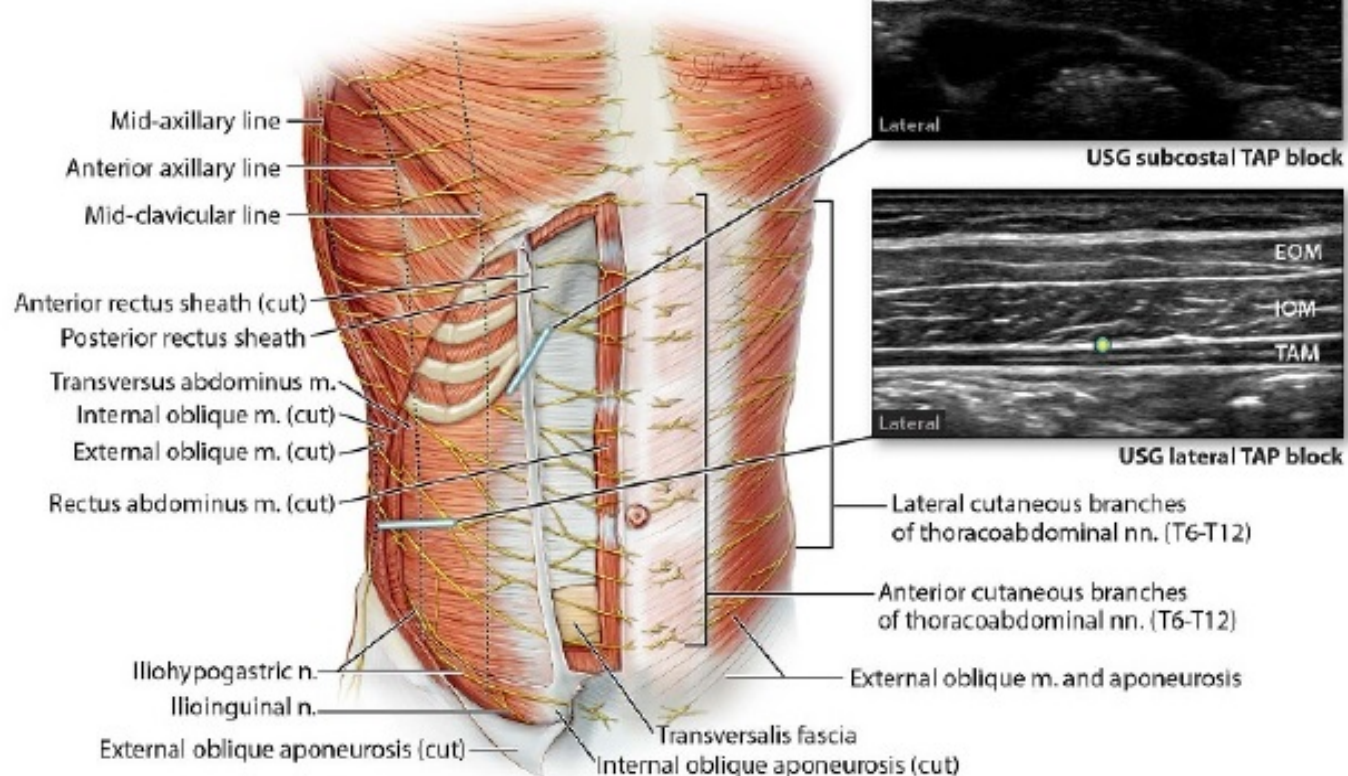
OUTLINE

- ▶ Review anatomy/physiology, ultrasound imaging, indications, contraindications, and complications for the following truncal blocks:
 - ▶ TAP Block (Midaxillary & Subcostal approaches)
 - ▶ Quadratus Lumborum
 - ▶ Ilioinguinal/Iliohypogastric Block
 - ▶ Rectus Sheath Block
 - ▶ PECS I, 2, and Serratus Plane Block
 - ▶ Erector Spinae

TAP BLOCK ANATOMY

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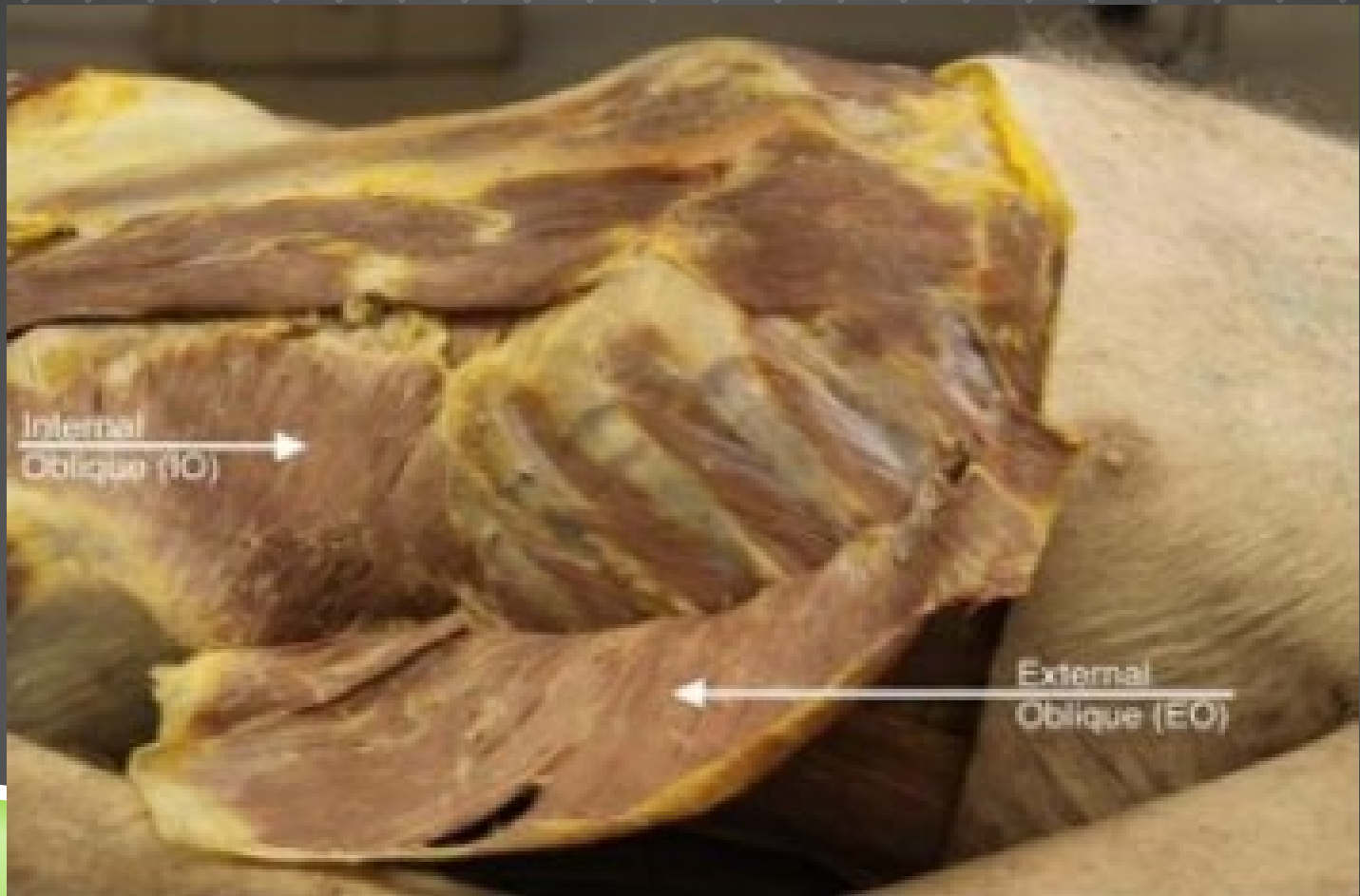
Transversus Abdominis Plane Blocks



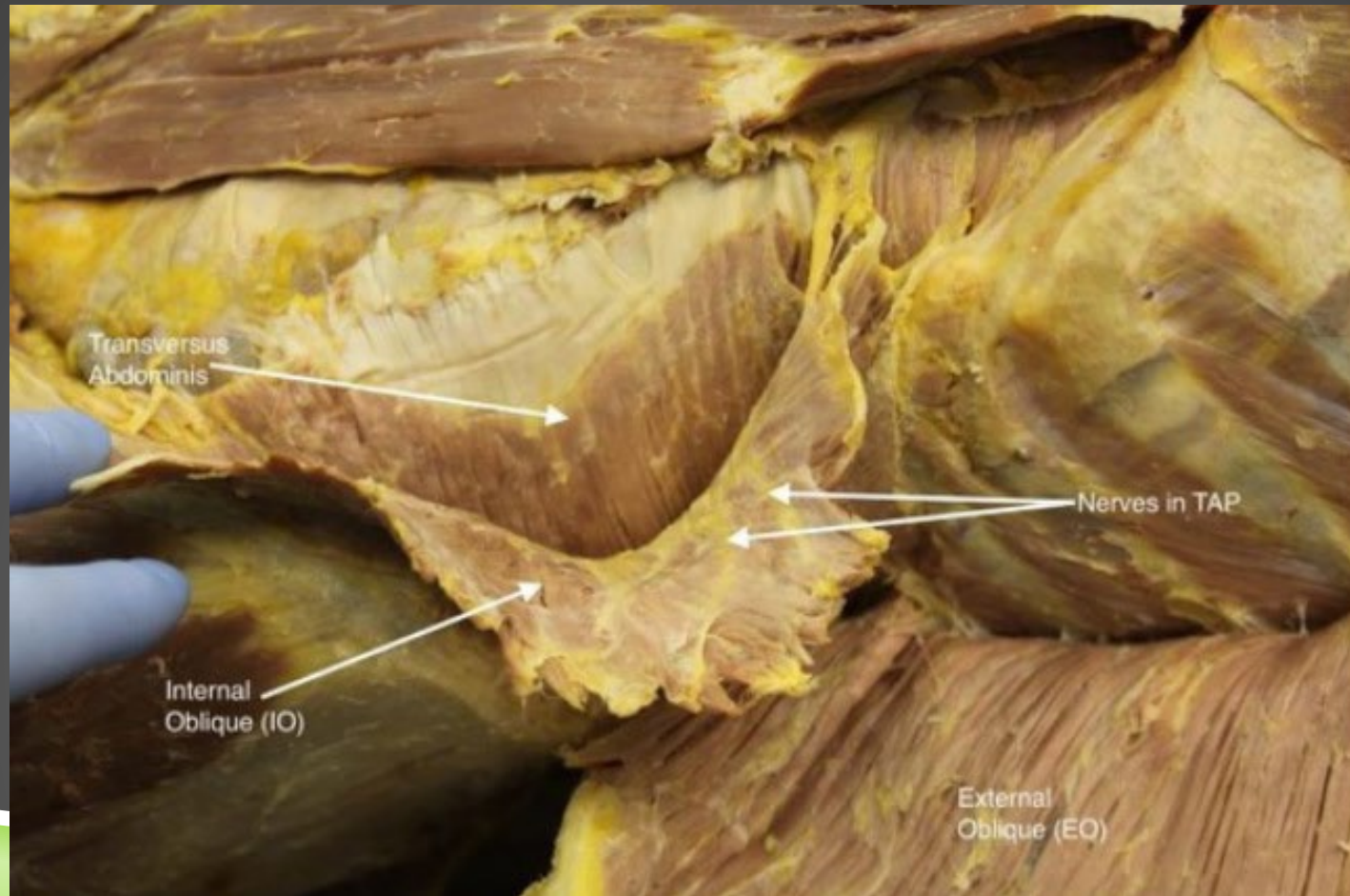
TAP BLOCK ANATOMY



TAP BLOCK ANATOMY



TAP BLOCK ANATOMY



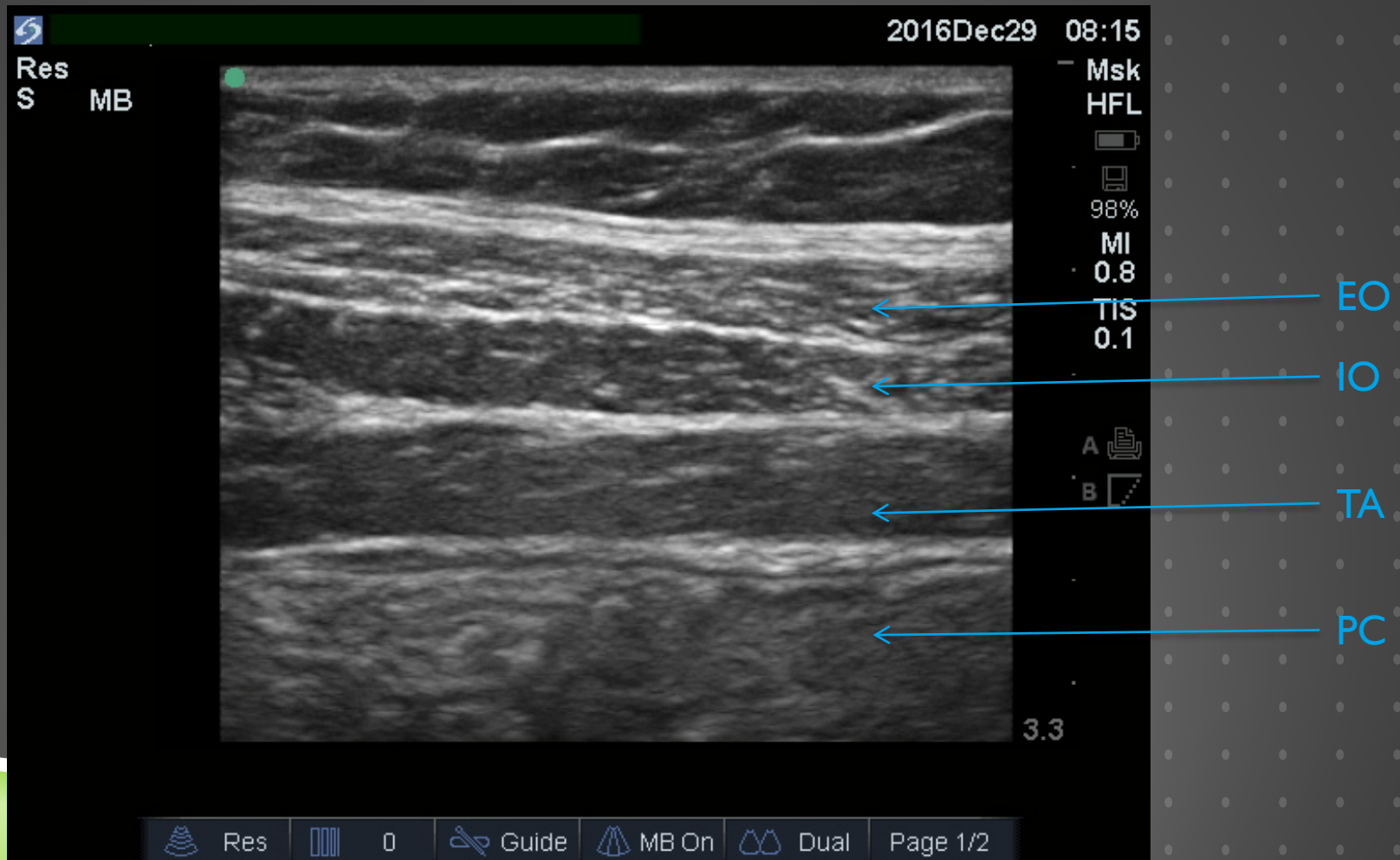
PATIENT POSITION - MIDAXILLARY

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- Supine position
- Arm extended or lowered to allow access to abdomen at the mid-axillary level
- Identify Iliac crest and costal margin
- Probe placement in a longitudinal position in space between IC and CM at the mid-axillary level



ULTRASOUND ANATOMY - MIDAXILLARY



ULTRASOUND ANATOMY - MIDAXILLARY

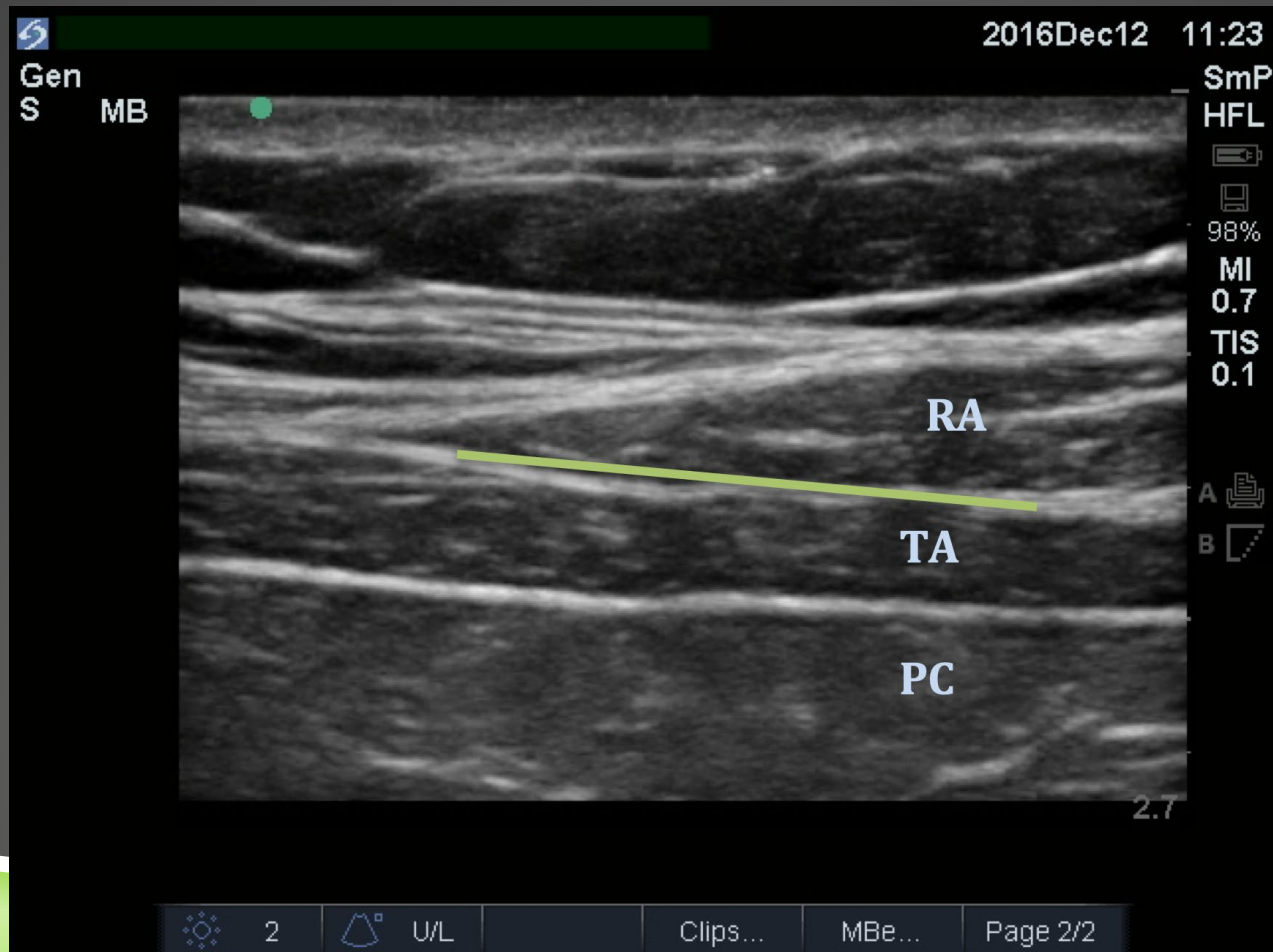


PATIENT POSITION - SUBCOSTAL

- Starting from mid-axillary probe position
- Advance probe inferior to costal margin in oblique position
- Identify rectus muscle, transversus abdominis



ULTRASOUND ANATOMY - SUBCOSTAL



INDICATIONS

- ▶ Any surgery involving the anterior abdominal wall
 - ▶ Laparotomy
 - ▶ Abdominal laparoscopic procedures
 - ▶ Hernia repair with component separation
 - ▶ Cesarean section

EQUIPMENT

- ▶ U/S with linear or curvilinear probe depending on patient size
- ▶ 4 in. 22 gauge block needle
- ▶ Syringe containing LA, syringe containing PF 0.9% NS, 3-way stopcock
 - ▶ NS used for hydrodissection (~2mL in rapid fashion)
 - ▶ Usually use 20-30mL LA/side

COMPLICATIONS

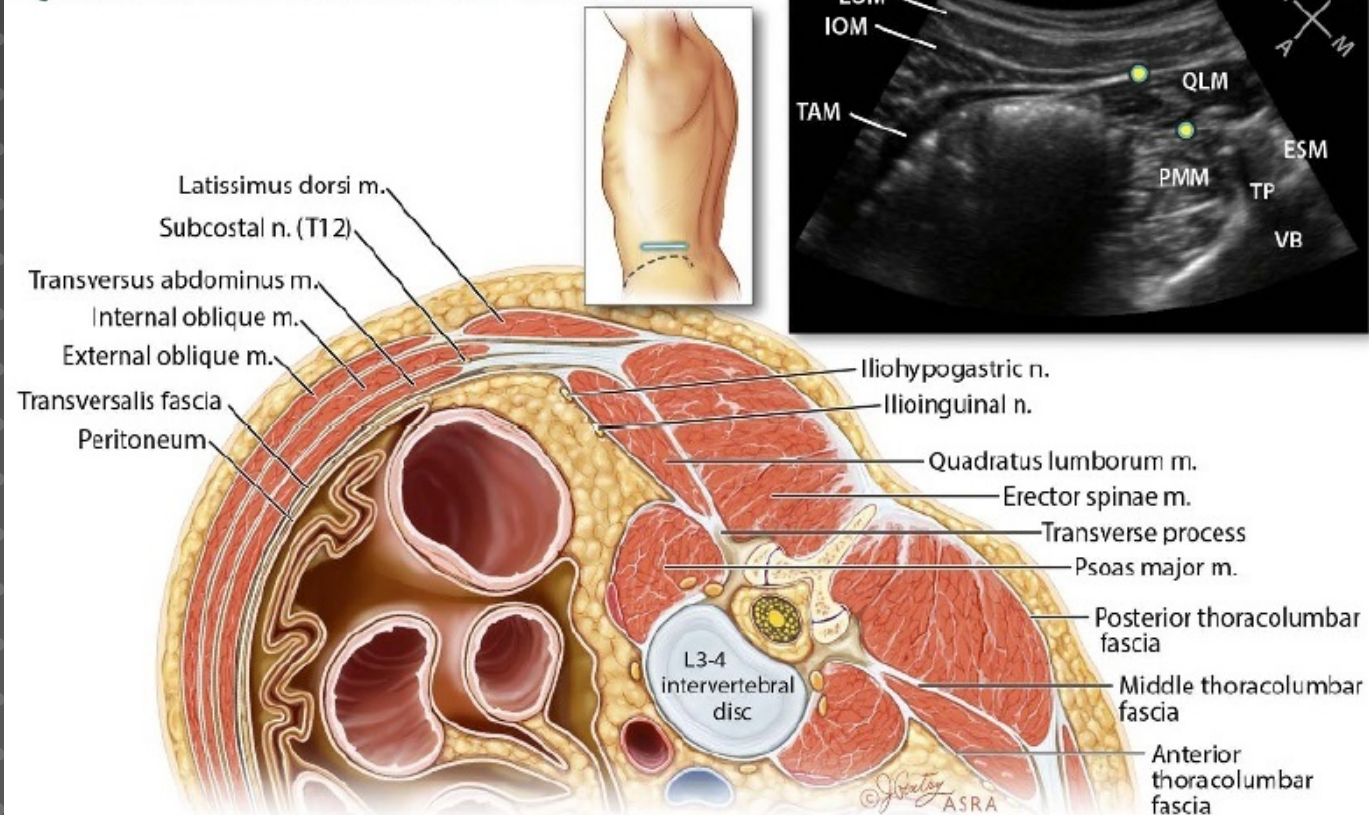
- ▶ Infection and bleeding
- ▶ Allergic reaction
- ▶ Intravascular injection
- ▶ Peritoneal puncture
- ▶ Bowel laceration/puncture
- ▶ Liver laceration
- ▶ LAST
- ▶ *Neurologic injury has never been documented*

Risks are relatively low and are the same for QL, II/IH, & rectus sheath blocks

QUADRATUS LUMBORUM BLOCK ANATOMY

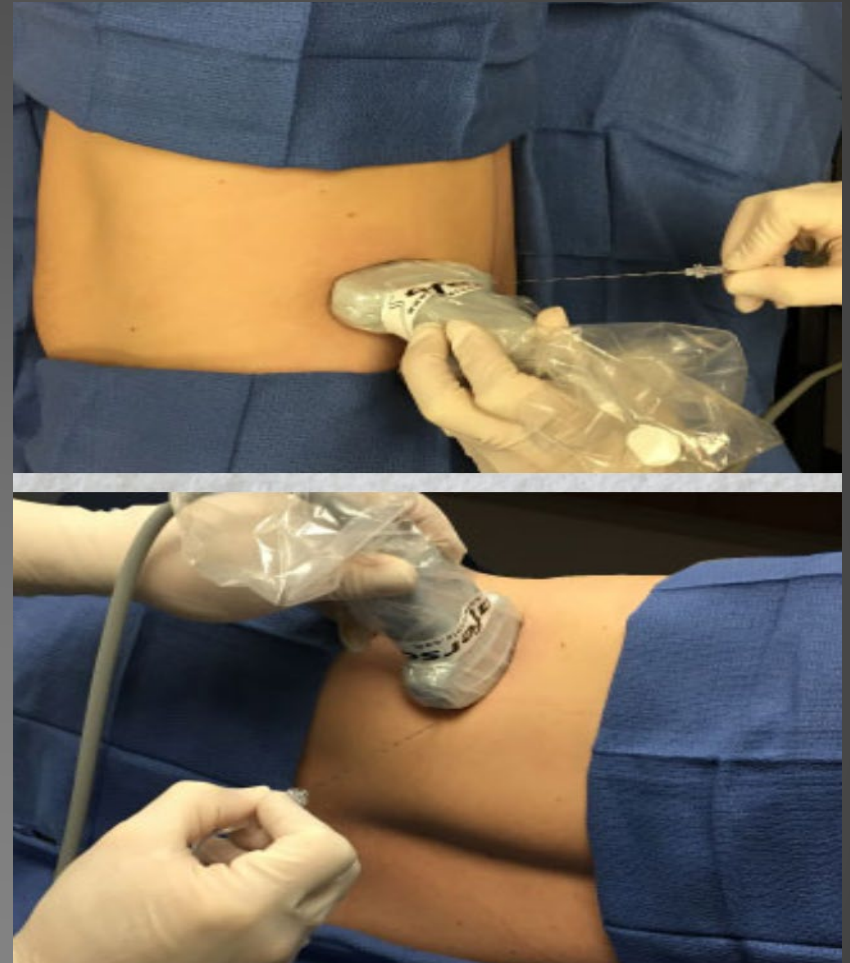
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Quadratus Lumborum Block



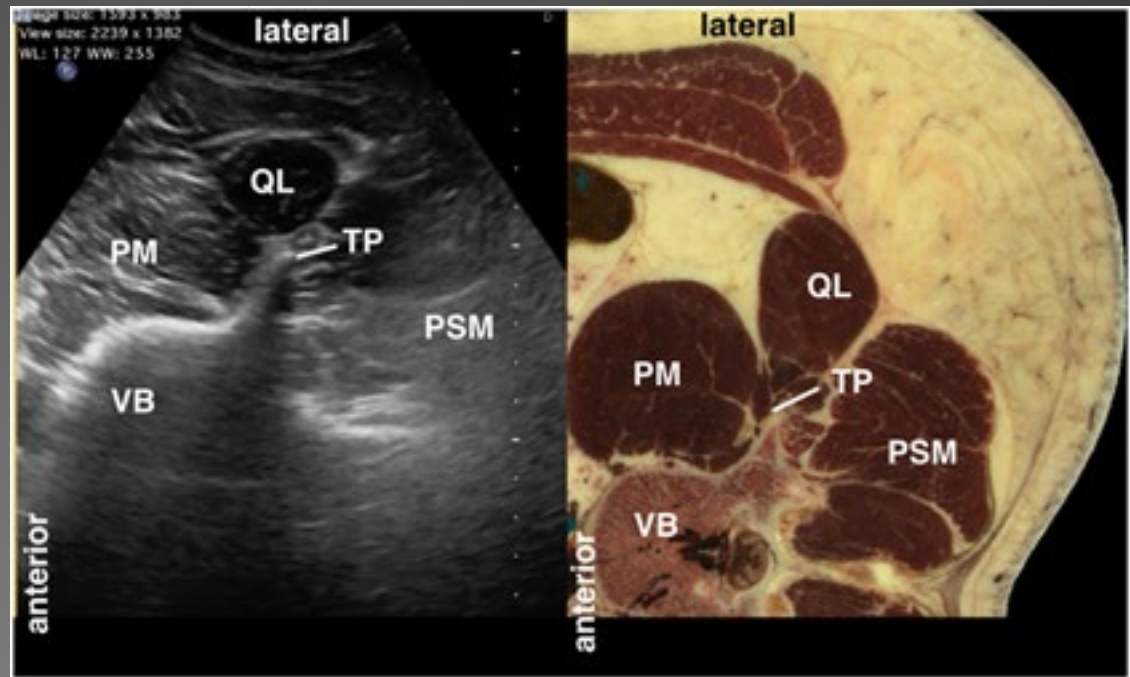
PATIENT POSITION

- ▶ Patient is placed in lateral decubitus position
 - ▶ Block side will be uppermost
- ▶ Provider stands behind patient while others assist with maintaining patient's position



ULTRASOUND ANATOMY

- US transducer placed between costal margin and iliac crest and mid-axillary line
- Anterior: will see the TAM, EOM, and IOM start to taper off (IOM & EOM may be visible); slide posterior until lateral edge of TP as well as PM & ES are identified (QL attached to TP)

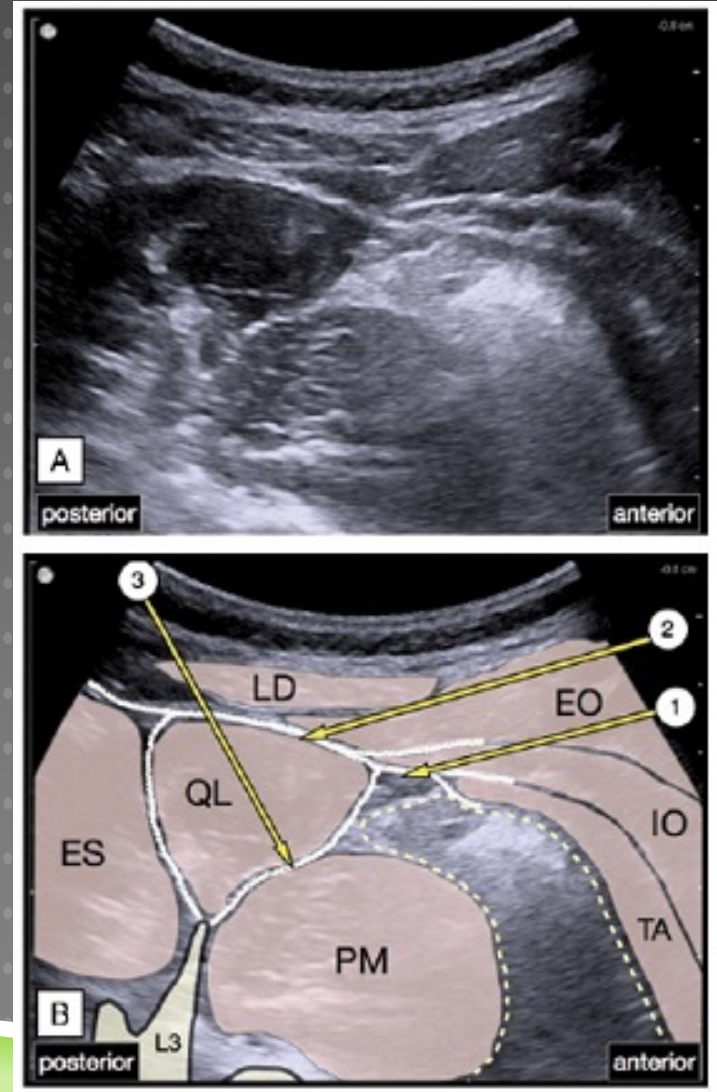


QL: quadratus lumborum; PM: psoas major; PSM: paraspinal muscle (erector spinae); TP: transverse process; VB: vertebral body

ULTRASOUND ANATOMY, CONTINUED

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- QL1: Needle tip where TAM tapers laterally at lateral aspect of QL; LA spreads along anterior surface of QL
- QL2: Needle between posterior (dorsal) surface of QL and the thoracolumbar fascia enveloping QL; LA spreads along posterior surface
- QL3: (Also known as transmuscular injection) occurs between the anterior surface of QL and Psoas Major; LA spreads along the anterior surface of QL



INDICATIONS

- ▶ Colorectal Surgery
- ▶ Laparoscopic Nephrectomy
- ▶ Percutaneous Nephrolithotomy
- ▶ Laparoscopic Cholecystectomy
- ▶ Thoracoscopy/Thoracotomy
- ▶ Cesarean Section
- ▶ Laparotomy (Midline Incision)
- ▶ More extensive laparoscopic procedures (hysterectomy, hemicolectomy, bilateral salpingo-oophorectomy)
 - ▶ Major gynecologic surgery is associated with a large component of visceral pain⁴

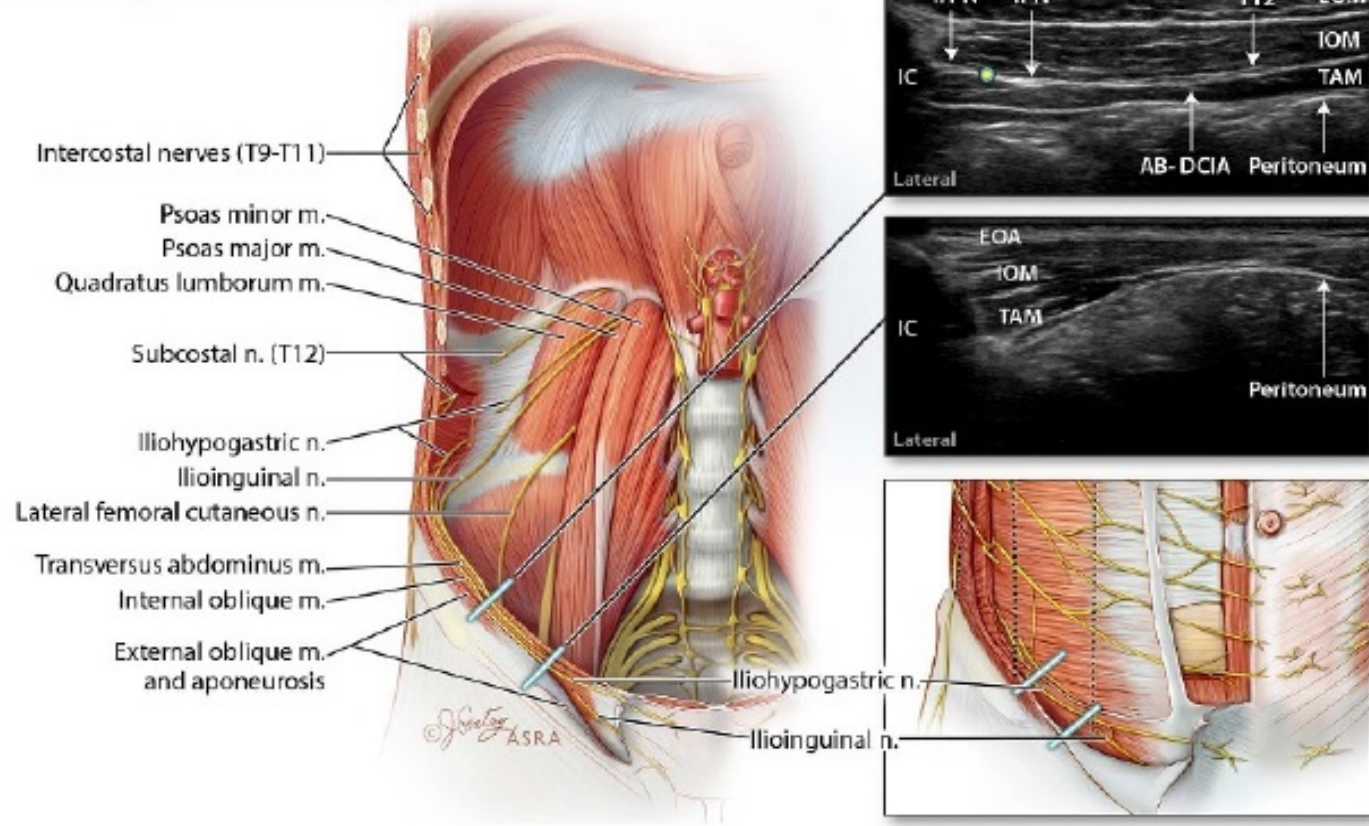
EQUIPMENT

- ▶ Curvilinear probe (low frequency) may work best, depending on patient's body habitus
- ▶ 4 in. 22 gauge block needle
- ▶ Syringe containing LA, syringe containing PF 0.9% NS, 3-way stopcock
 - ▶ NS used for hydrodissection (~2mL in rapid fashion)
 - ▶ Usually use 30mL LA/side

ILIOINGUINAL/ILIOHYPOGASTRIC BLOCK ANATOMY

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Ilioinguinal-Iliohypogastric Blocks

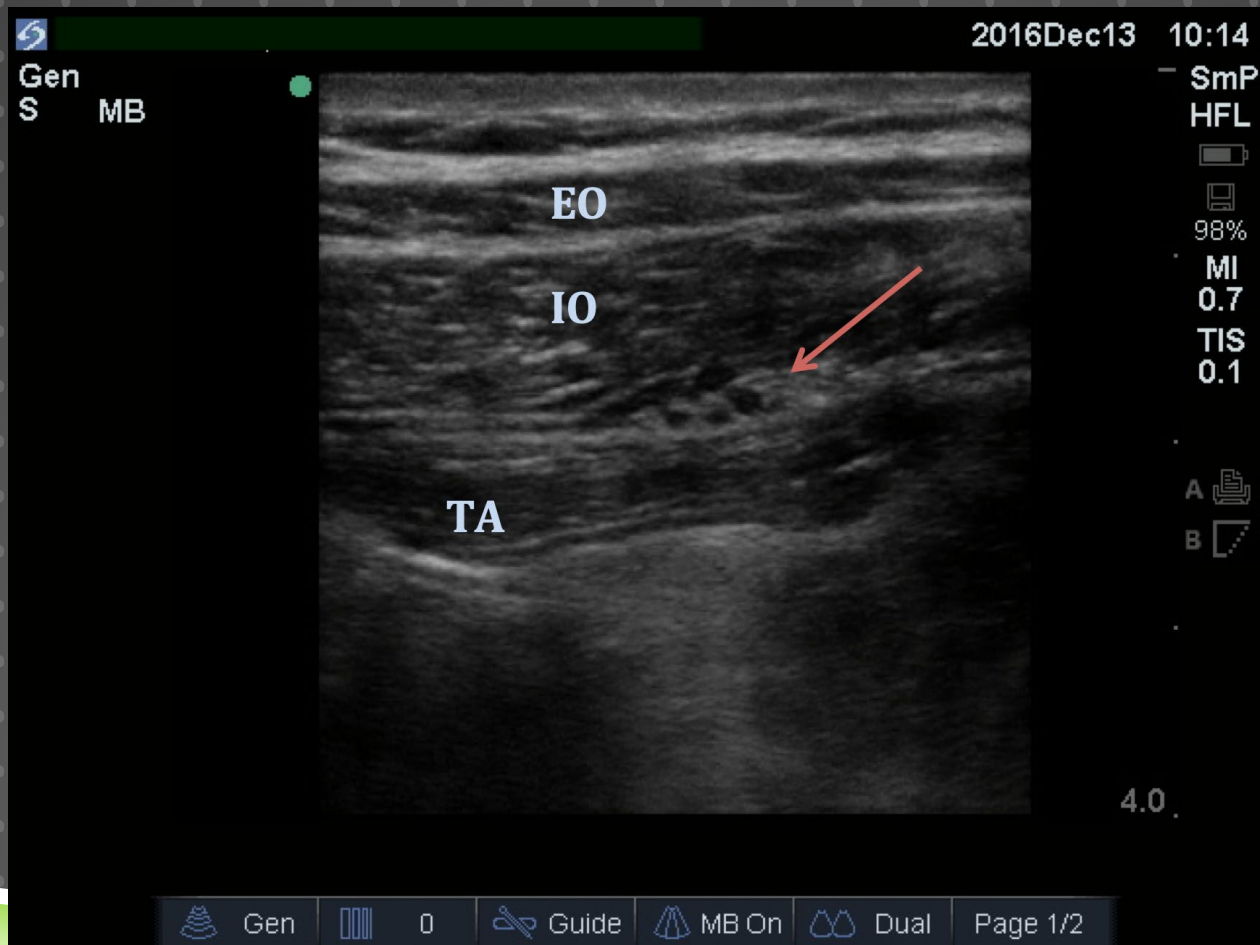


PATIENT POSITION

- Identify ASIS
- Position probe immediately superior and medial to ASIS in an oblique position

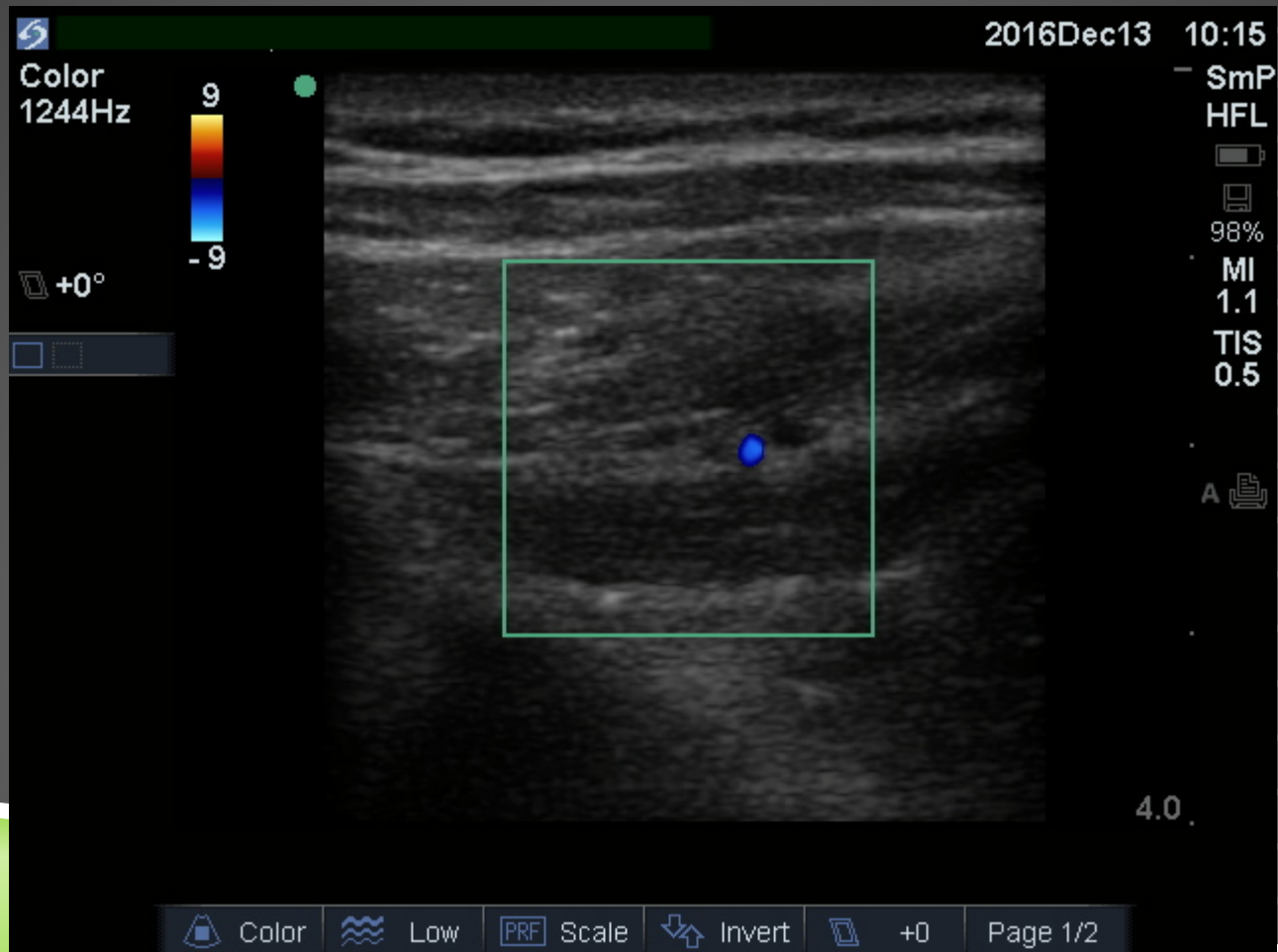


ULTRASOUND ANATOMY



ULTRASOUND ANATOMY

Be careful of small blood vessels!



INDICATIONS

- ▶ Ideal for inguinal hernia repair or suprapubic incisions
 - ▶ Analgesia to skin, muscles and parietal peritoneum *not visceral
 - ▶ Can provide pain management for open or laparoscopic inguinal hernia repairs

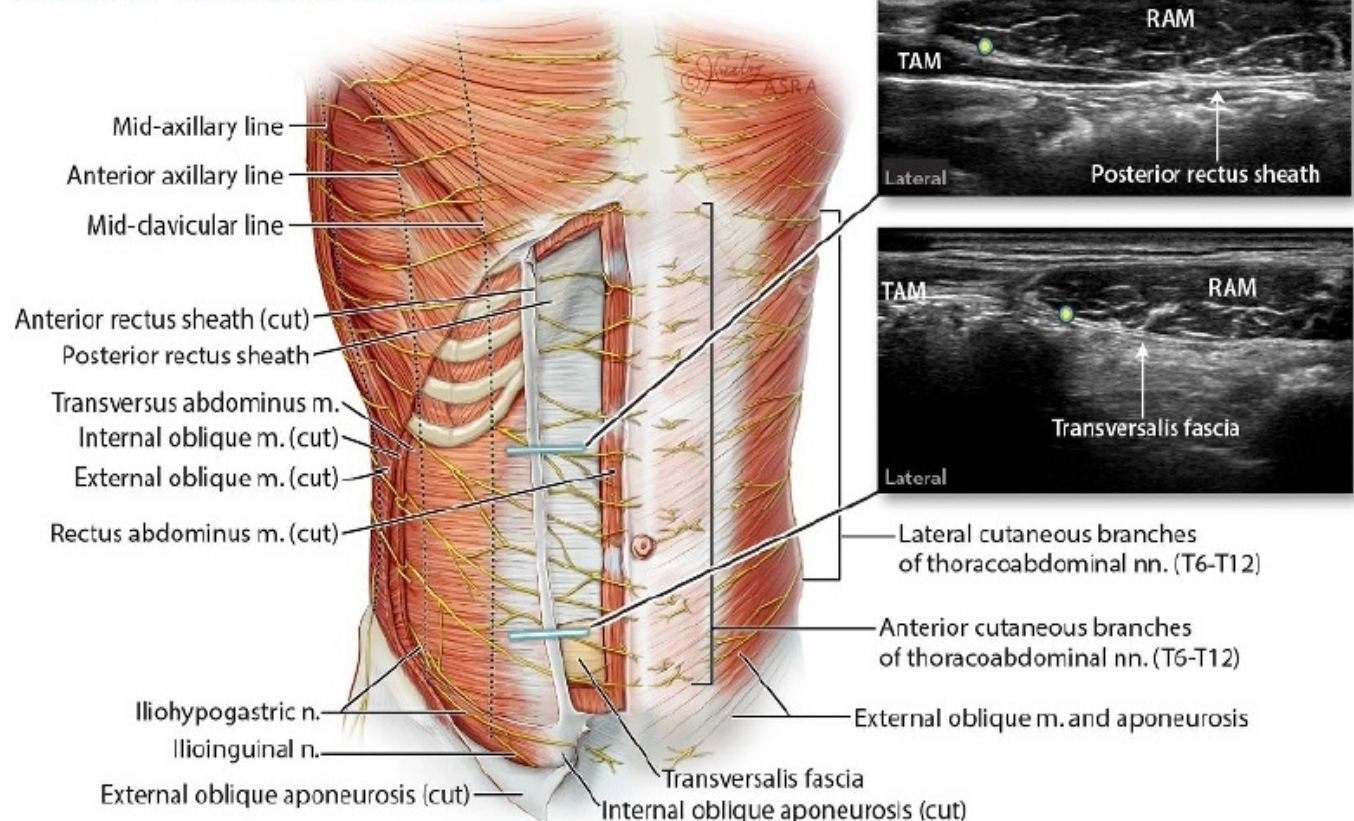
EQUIPMENT

- ▶ U/S with high, mid or low frequency probe
 - ▶ Dependent upon patient size
- ▶ 4 in. 22 gauge block needle
- ▶ Syringe containing LA, separate syringe containing PF 0.9% NS, 3-way stopcock
 - ▶ NS used for hydrodissection (~2mL in rapid fashion)
 - ▶ Usually use 20mL LA/side

RECTUS SHEATH BLOCK ANATOMY

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Rectus Sheath Blocks

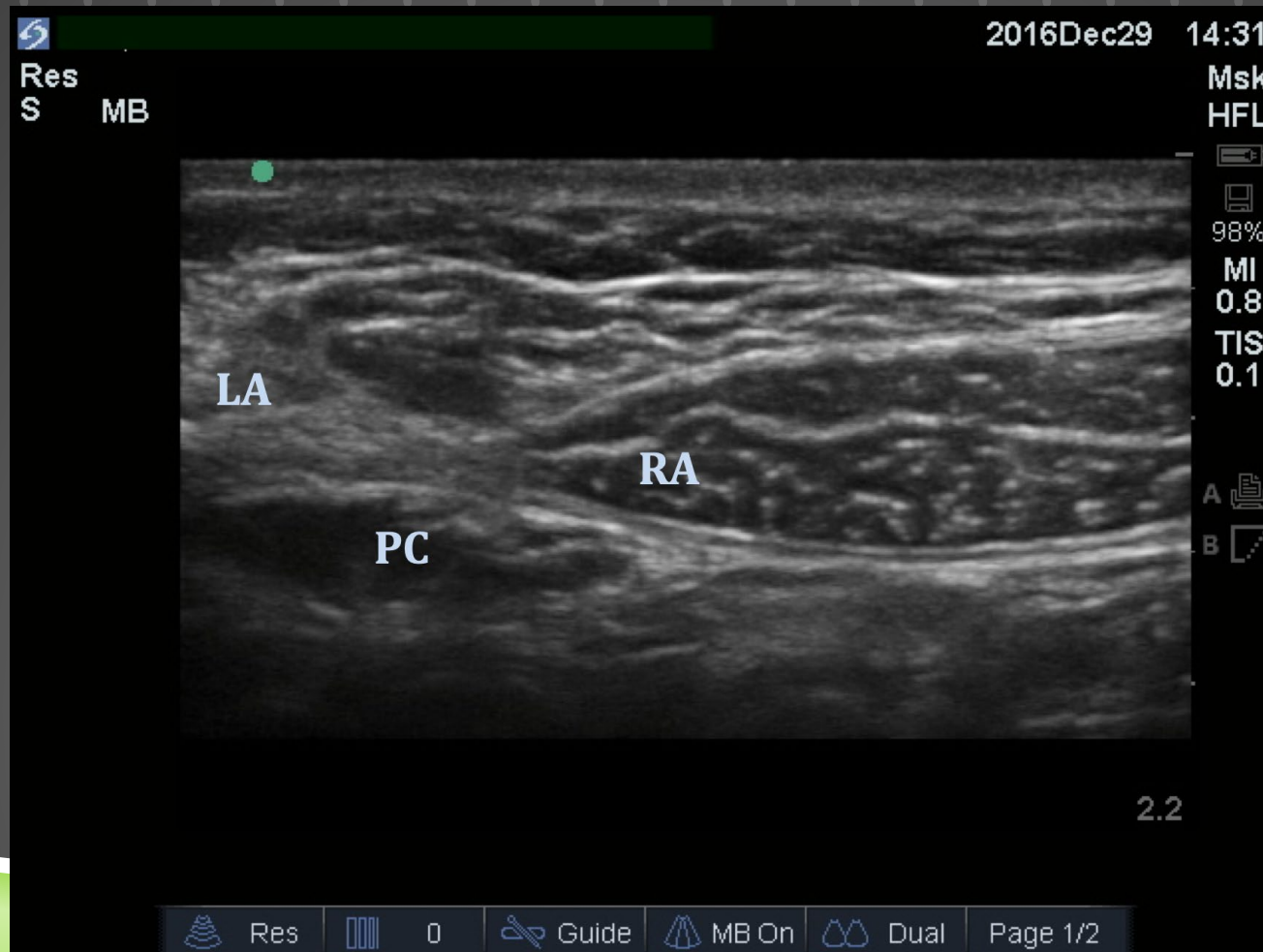


PATIENT POSITION

- Ultrasound midline in a transverse orientation
- Identify linea alba and advance probe lateral to identify rectus sheath muscle



ULTRASOUND ANATOMY



ULTRASOUND ANATOMY



INDICATIONS

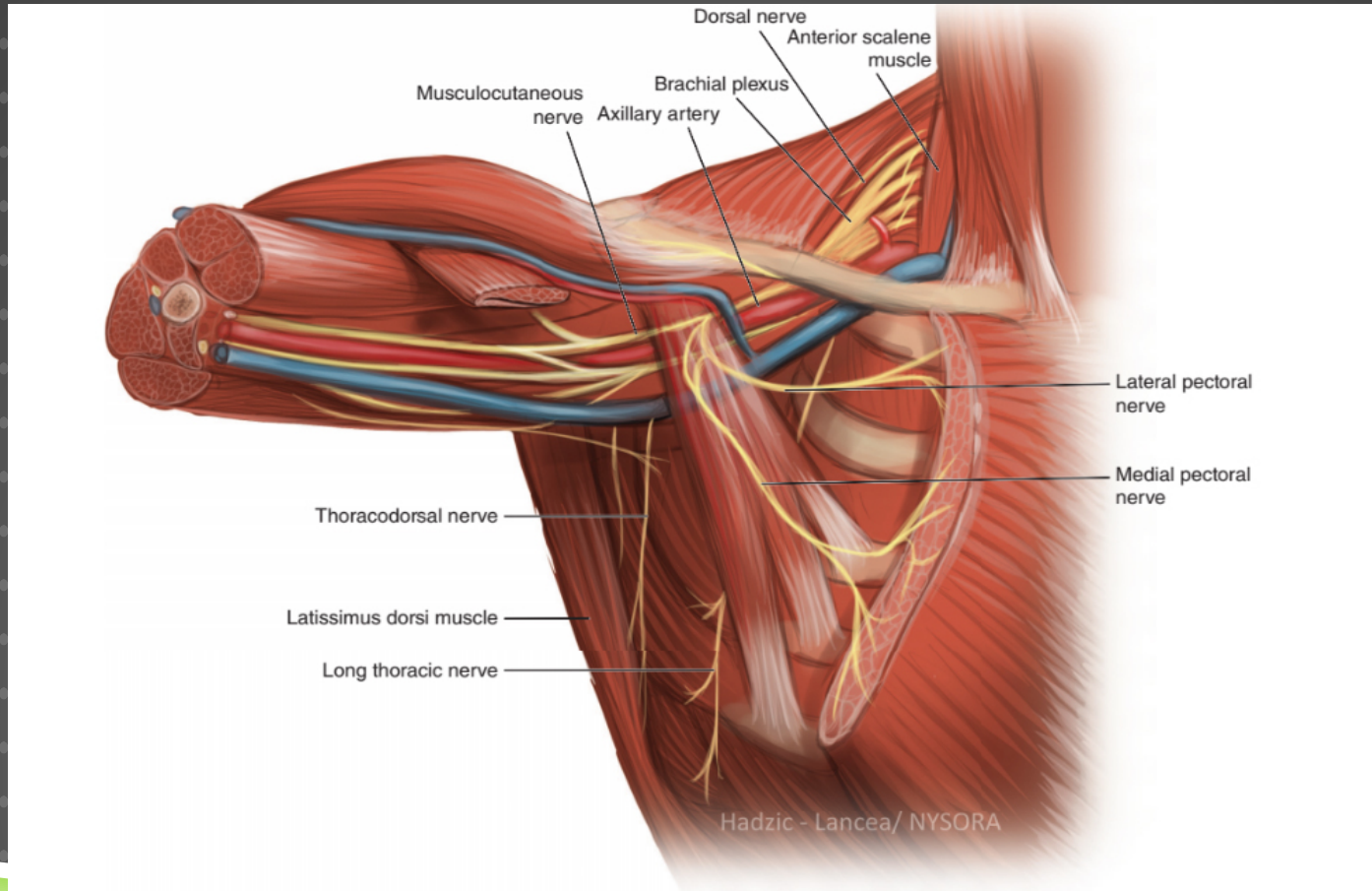
- ▶ Somatic but not visceral pain relief
- ▶ Appropriate for midline abdominal incisions
- ▶ Can be used in both pediatric and adult populations⁴
 - Umbilical hernia repair
 - Pyloromyotomy
 - Midline laparoscopy
 - Duodenal atresia repair

EQUIPMENT

- ▶ U/S with high, mid or low frequency probe
 - ▶ Dependent upon patient size
- ▶ 4 in. 22 gauge block needle
- ▶ Syringe containing LA, separate syringe containing PF 0.9% NS, 3-way stopcock
 - ▶ NS used for hydrodissection (~2mL in rapid fashion)
 - ▶ Usually use 10-15mL LA/side

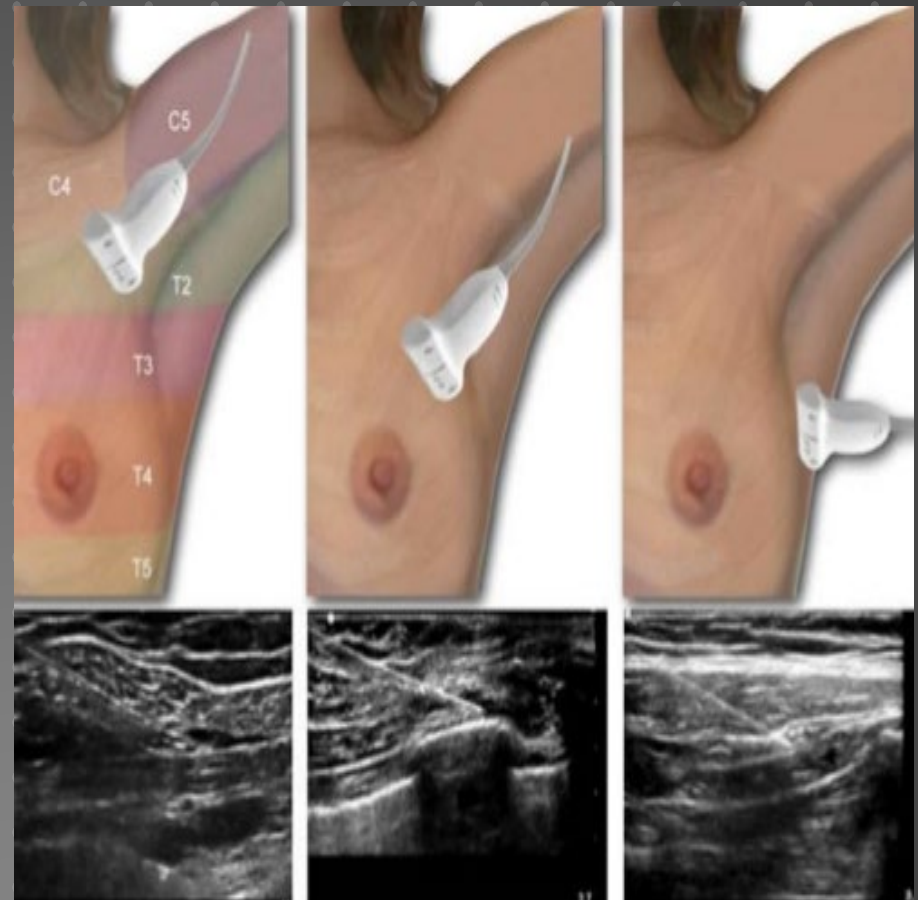
PECS I, II & SERRATUS PLANE BLOCK ANATOMY

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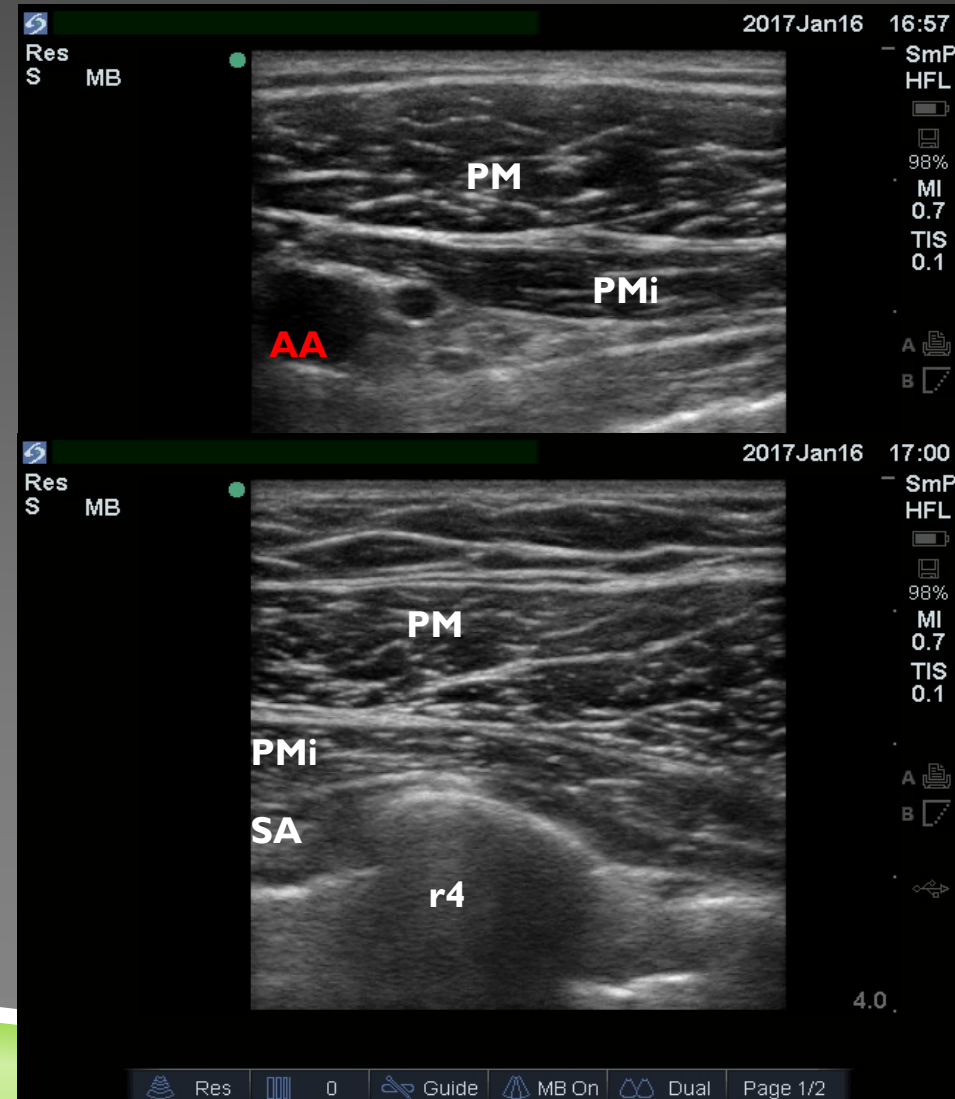
PATIENT POSITION - PECS I & II

- ▶ Supine or semi-recumbent with head turned away from the side being blocked
- ▶ Arm abducted 30-90 degrees
- ▶ US is initially placed inferior to clavicle and medial to coracoid process, identify 2nd rib lying inferior to axillary artery & vein, slide transducer inferior to 3rd/4th ribs, rotate transducer 30-45 degrees & slide laterally toward axilla



ULTRASOUND – PECS I & II

- PECS I
 - Block needle inserted medial to lateral
 - Confirm needle placement in fascial plane between pec major and minor
- PECS II
 - Block needle inserted medial to lateral
 - Confirm needle placement in the fascial plane between pec minor & serratus anterior



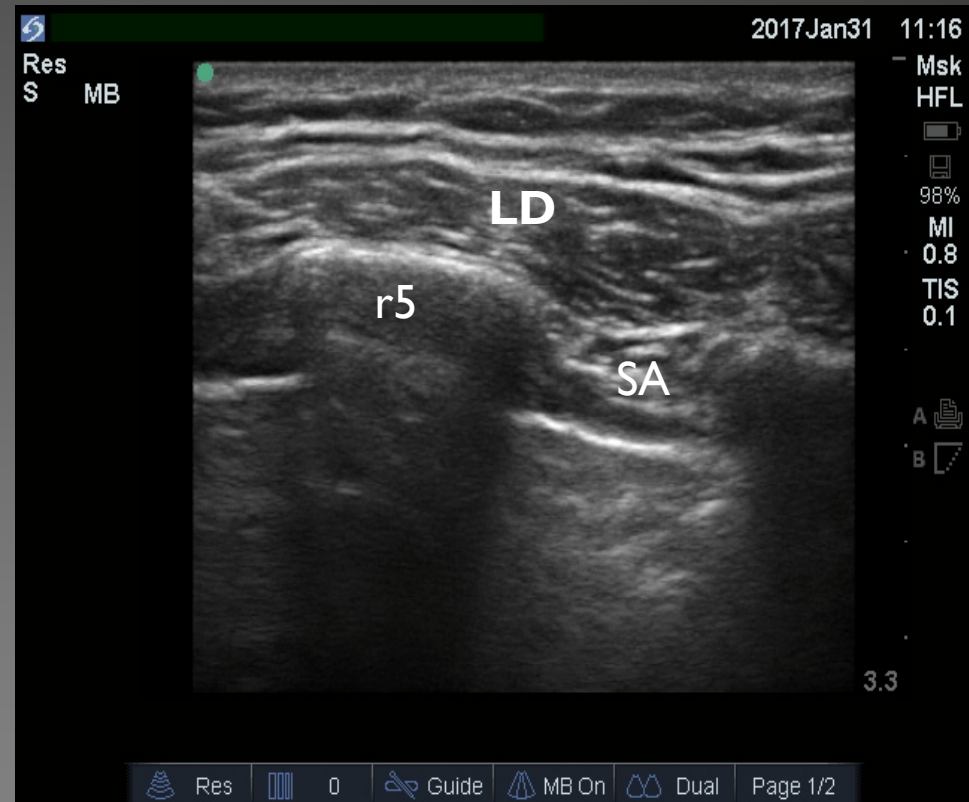
PATIENT POSITION – SERRATUS PLANE

- ▶ Supine or semi-recumbent with head turned away from the side being blocked (can also be lateral)
- ▶ Arm abducted 30-90 degrees
- ▶ US is placed along the mid-axillary line at the level of 4th or 5th rib (latissimus dorsi identified lying over serratus)



ULTRASOUND – SERRATUS PLANE

- Serratus Plane
 - Block needle inserted caudad to cephalad
 - Confirm needle tip is within the fascial plane between the latissimus dorsi and serratus anterior muscles
 - NYSORA recommends this plane or the plane below serratus



INDICATIONS

▶ PECS I

- ▶ Surgeries involving most superficial muscle layers
- ▶ Breast expander
- ▶ Subpectoral prosthesis insertion
- ▶ Pacemaker

▶ PECS 2

- ▶ More invasive breast surgeries
- ▶ Radical mastectomy
- ▶ Deep lumpectomy
- ▶ Sentinel and axillary lymph node dissection

▶ Serratus Plane

- ▶ Lateral thorax procedures
- ▶ Latissimus dorsi flap reconstruction
- ▶ Thoracotomy
- ▶ Rib fractures

EQUIPMENT

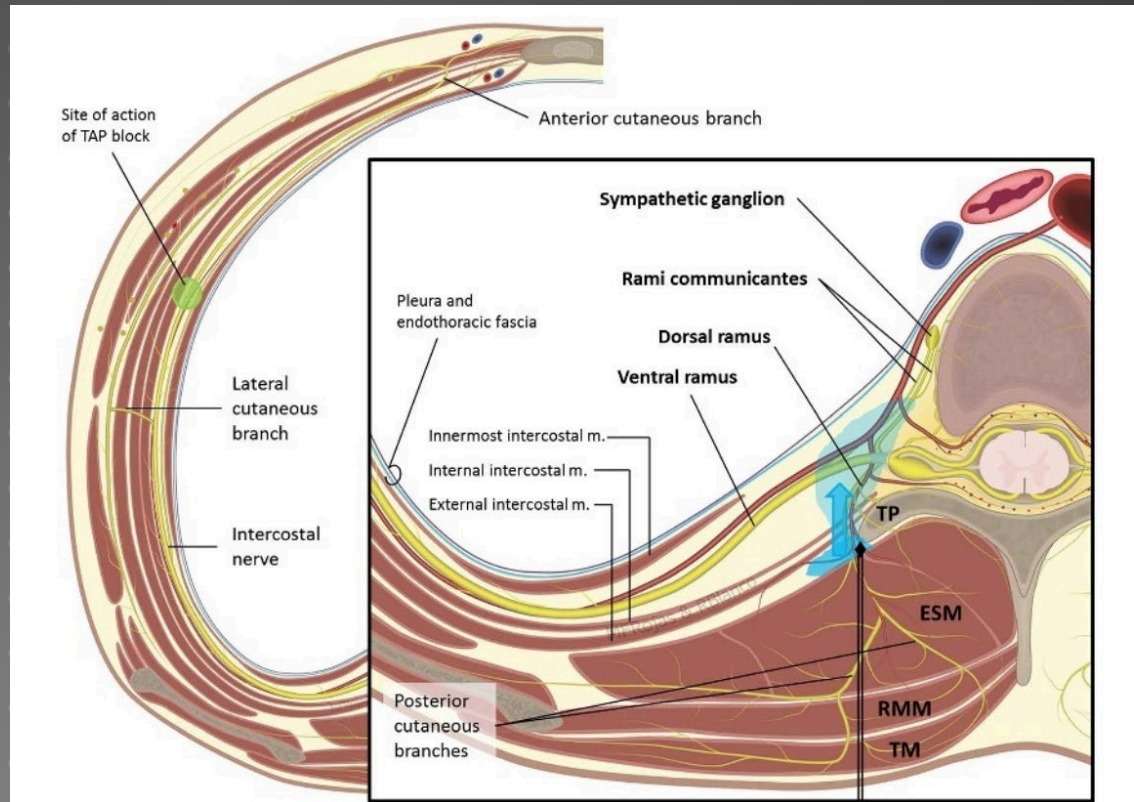
- ▶ U/S with high or mid frequency probe
- ▶ 4 in. 22 gauge block needle
- ▶ Syringe containing LA, separate syringe containing PF 0.9% NS, 3-way stopcock
 - ▶ NS used for hydrodissection
 - ▶ Usually use 10mL LA for PECS I; 20mL LA for PECS II; 20-30mL LA for SP

COMPLICATIONS

- ▶ Infection and bleeding
- ▶ Allergic reaction
- ▶ Intravascular injection
- ▶ LAST
- ▶ Nerve injury (long thoracic, thoracodorsal)
- ▶ Pleural puncture
- ▶ Pneumothorax

ERECTOR SPINAE BLOCK ANATOMY

- Blocks dorsal and ventral ramus providing somatic pain relief; may also block sympathetic chain providing visceral pain relief
- May be blocked at T5 or T8 depending on coverage needed
- Inferior angle of scapula = T7 (used to locate T5 or T8)
 - At T8 rhomboid muscle will be tapered off



PATIENT POSITION

- ▶ Per patient comfort: can be sitting, lateral or prone
- ▶ US transducer is placed 2-3 cm lateral to the spinous process
- ▶ Cephalad to caudad approach for block needle



ULTRASOUND ANATOMY

5

- Provider will insert needle until transverse process is contacted, then back off slightly
- 1-2 mL NS will confirm tip placement
- Erector spinae should begin to hydrodissect away from TP as local anesthetic is injection



TM: Trapezius, RM: rhomboid major, ES: erector spinae

INDICATIONS

- ▶ When performed at T5:
 - ▶ Bariatric surgery
 - ▶ Rib fracture
 - ▶ Thoracic procedures (VATS)
 - ▶ Breast surgery
 - ▶ Neuropathic pain
- ▶ When performed at T8:
 - ▶ Abdominal surgical procedure
 - ▶ Lower rib fractures

EQUIPMENT

- ▶ U/S with high or mid frequency probe
- ▶ 2 or 4 in. 22 gauge block needle
- ▶ Syringe containing LA, separate syringe containing PF 0.9% NS, 3-way stopcock
 - ▶ NS used for hydrodissection
 - ▶ Usually use 20-30mL LA/side

COMPLICATIONS

- ▶ Infection and bleeding
- ▶ Allergic reaction
- ▶ Intravascular injection (unlikely in this space)
- ▶ LAST
- ▶ Relatively safe overall

YOUR QUESTIONS

GIVE THEM TO ME NOW

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