THORACIC WALL BLOCKS
FOR BREAST CANCER SURGERY

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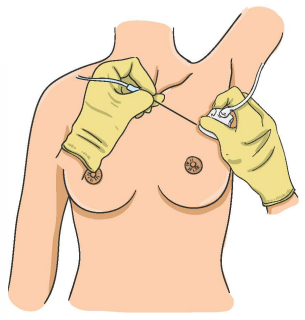
	PROBE AND NEEDLE	ULTRASOUND IMAGE	INDICATIONS

PECS II

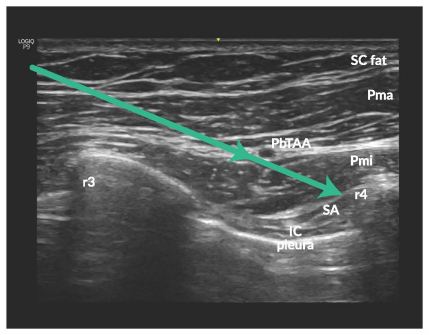
Patient position: supine, arm abducted
Transducer: linear
Needle: 22G, 5cm short bevel
Local anesthetic: 20 + 20 ml

ABBREVIATIONS

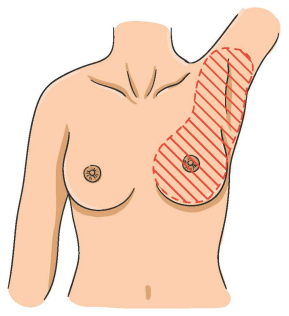
Pma	Pectoralis major
Pmi	Pectoralis minor
SA	Serratus anterior
IC	Intercostal
r	rib
SC fat	subcutaneous fat tissue
PbTaa	Pectoral branch of thoraco acromial artery



Transducer position: Place transducer under lateral third of clavicula, at level of third-fourth rib. Then, turn probe 45° clockwise.
Needle approach: in plane from medial to lateral.



Required view: r3 and r4 in combination with Pma, Pmi. If possible, with PbTaa and SA.
Technique: needle insertion towards r4 aiming medial of PbTaa. First, lower injection (20ml) under Pmi. Then retract needle for upper injection (20ml) between Pma and Pmi.
Spread of LA: linear fluid spread underneath Pmi and between Pma and Pmi. Avoid globular spread, which indicates intramuscular injection.



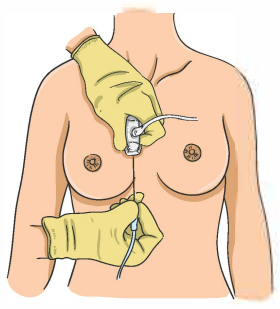
Indications: unilateral breast and axillary analgesia.
Tips: Aim needle at underlying rib to avoid pleura puncture. For breast surgery Pecs I + Serratus plane block at this level will give similar effect as Pecs II. Use 20ml + 20 ml to ensure sufficient spread in the axillary region.

SUBPECTORAL INTERFASCIAL PLANE

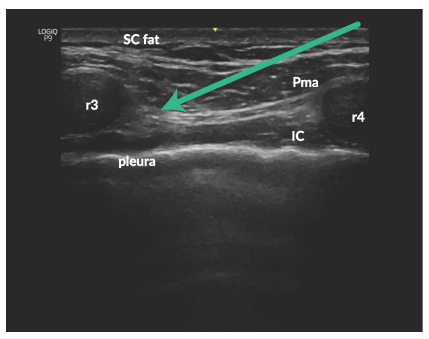
Patient position: supine
Transducer: linear
Needle: 22G, 5cm short bevel
Local anesthetic: 20 ml

ABBREVIATIONS

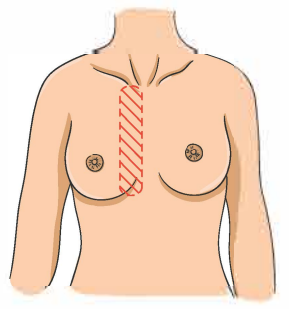
Pma	Pectoralis major
IC	Intercostal
r	rib
SC fat	subcutaneous fat tissue



Transducer position: place transducer parasagittal at level of r3-r4 rib, 2cm lateral to sternum.
Needle approach: in plane from caudal to cephalad.



Required view: r3 and r4 in combination with Pma.
Technique: needle insertion aiming towards r3. Injection under Pma.
Spread of LA: linear fluid spread underneath pectoralis major. Avoid globular spread, which indicates intramuscular injection.



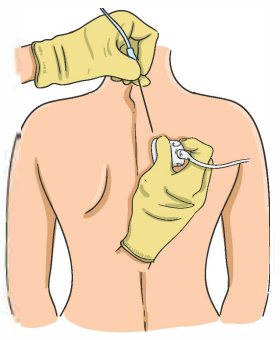
Indications: unilateral parasternal analgesia.
Tips: Add to Pecs II block in case of medial breast surgery. Aim needle towards rib to avoid pleura puncture. The caudal to cephalad needle insertion prevents interference between the clavicula and the path of the needle insertion.

ERECTOR SPINAE PLANE

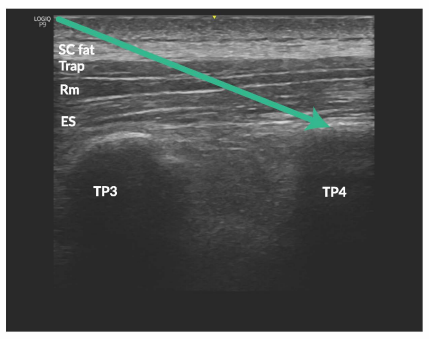
Patient position: sitting, lateral or prone position
Transducer: linear or curved depending on body posture (switch at TP depth +/- 4cm)
Needle: 18G epidural Tuohy needle or 8-10cm short bevel needle
Local anesthetic: 20-40 ml

ABBREVIATIONS

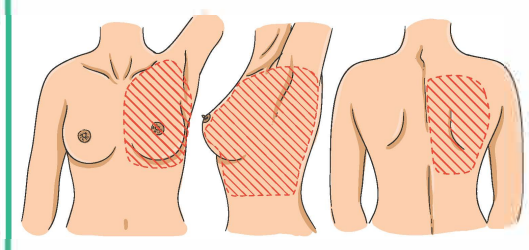
Trap	Trapezius
Rhom	Rhomboideus
ES	Erector spinae
TP	transverse process
SC fat	subcutaneous fat tissue



Transducer position: place transducer parasagittal at level of fourth spinous process, then move ±3cm lateral, visualising the transverse process.
Needle approach: in plane, cephalad to caudal.



Required view: TP3 and TP4 in combination with Trap, Rm and ES.
Technique: needle insertion aiming towards top of TP4. Injection under ES.
Spread of LA: linear fluid spread lifting the erector spinae muscle off the tip of the TP. Avoid globular spread, which indicates intramuscular injection.



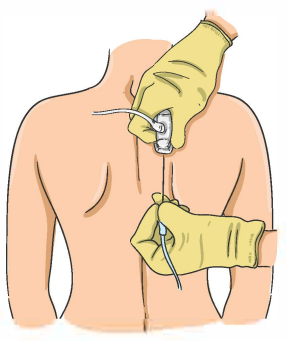
Indications: analgesia of unilateral thoracic wall T2-T6.
Tips: higher volume generates broader spread, dilute LA with NaCl 0.9% if necessary.

PARAVERTEBRAL

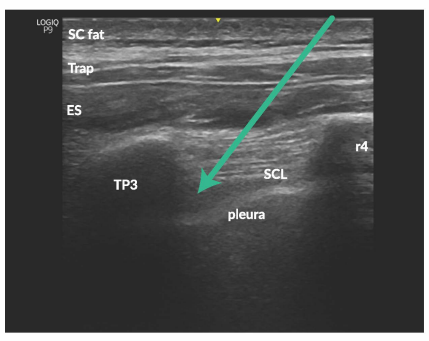
Patient position: sitting position with arched back, lateral 'foetal' position or prone
Transducer: linear or curved depending on body posture (switch at TP depth +/- 4cm)
Needle: 18G epidural Tuohy needle or 8-10cm short bevel needle
Local anesthetic: 10-20ml

ABBREVIATIONS

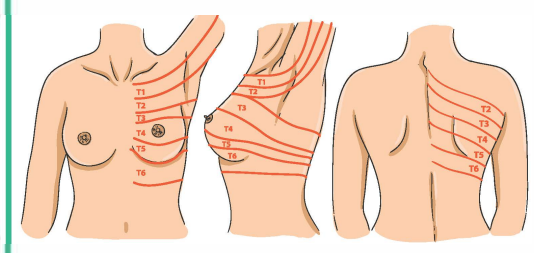
Trap	Trapezius
ES	Erector spinae
SCL	superior costotransverse ligament
TP	transverse process
SC fat	subcutaneous fat tissue



Transducer position: place transducer medial at level of third spinous process for parasagital view, then move ±3cm lateral, visualising the transverse process.
Needle approach: in plane, cephalad to caudal untill.



Spread of LA: lateral spread uderneath superior costotransverse ligament, pushing the pleura down.
Technique: needle insertion aiming towards SCL, then breach SCL to reach paravertebral space.
Required view: TP superiorly, rib inferiorly, connected through SCL.

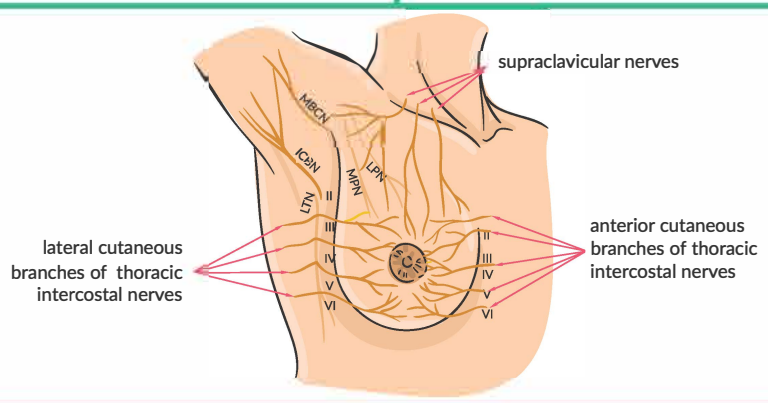


Indications: unilateral analgesia of segmental somatosensory and sympathetic nerves without axilla.
Tips: Rotate caudad part of US beam away from midline to optimize your ultrasound image. Due to the steep angulation of the needle, visualisation of needle tip may be challenging, use an echogenic needle. Perform the block at a mid-dermatomal level with reference to the surgical site, T3-4 for simple mastectomy. When greater dermatomal spread is desired, perform multilevel injections.

THE INNERVATION OF THE BREAST AND AXILLARY REGION

ABBREVIATIONS

MBCN	Medial brachial cutaneous nerve
ICBN	Intercostobrachial nerve
LTN	Long thoracic nerve
MPN	Medial pectoral nerve
LPN	Lateral pectoral nerve



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