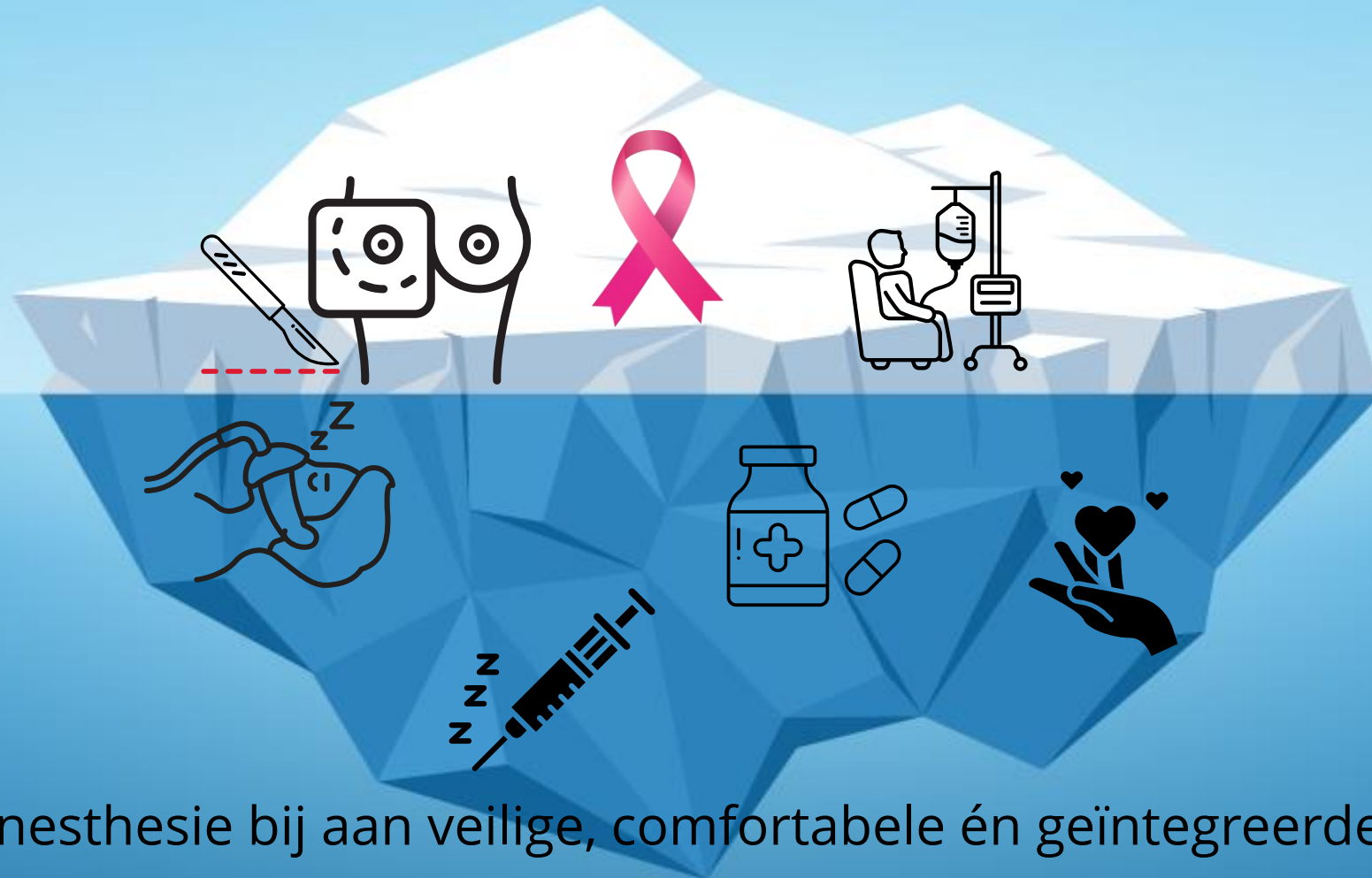


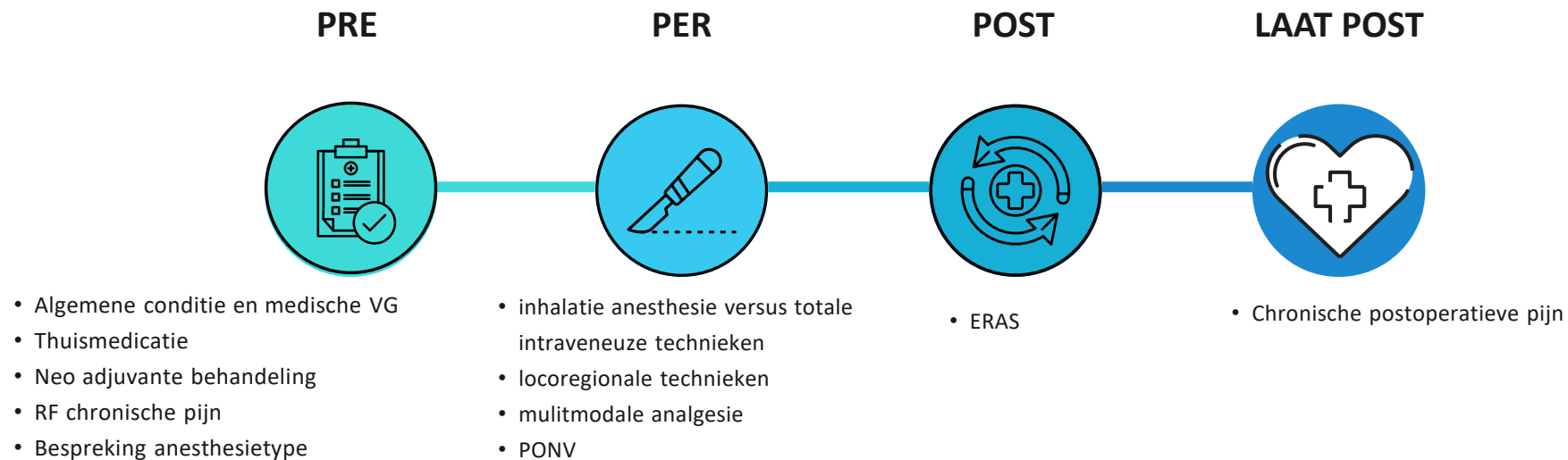
Niet zichtbaar, wel essentieel

de rol van anesthesie in de multidisciplinaire aanpak van borstkanker



Hoe draagt anesthesie bij aan veilige, comfortabele én geïntegreerde zorg?

HET ANESTHESIETRAJECT BIJ BORSTKANKER: EEN TIJDSLIJN



VG= voorgeschiedenis

RF= risicofactoren

PONV= postoperative nausea & vomiting

ERAS = enhanced recovery after surgery



pain after breast cancer surgery



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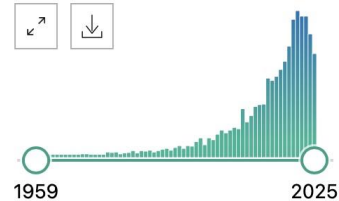
Display options

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3,612 results

Page 1 of 362

RESULTS BY YEAR



PUBLICATION DATE

- ☐ 1 year
- ☐ 5 years
- ☐ 10 years
- ☐ Custom Range

TEXT AVAILABILITY

- ☐ Abstract
- ☐ Free full text

☐ **Breast Surgery: Management of Postoperative Complications Following Operations for Breast Cancer.**

1
Cite

Al-Hilli Z, Wilkerson A.

Surg Clin North Am. 2021 Oct;101(5):845-863. doi: 10.1016/j.suc.2021.06.014. Epub 2021 Aug 7.
PMID: 34537147 [Review](#).

Breast cancer surgery is associated with low rates of **surgical** morbidity. Postoperative complications related to **breast surgery** include seroma, infection, hematoma, mastectomy flap necrosis, wound dehiscence, persistent postsurgical **pa** ...

☐ **Treating Persistent Pain After Breast Cancer Surgery.**

2
Cite

Khan JS, Ladha KS, Abdallah F, Clarke H.

Drugs. 2020 Jan;80(1):23-31. doi: 10.1007/s40265-019-01227-5.
PMID: 31784873 [Review](#).

Persistent **pain** lasting greater than 3 months after **breast cancer surgery** is unfortunately a common complication affecting approximately 30% of patients after tumour resection. ...This review serves to provide an overview on persistent **pain** afte ...

☐ **Effectiveness of physical therapy in axillary web syndrome after breast cancer: a systematic review and meta-analysis**

PIJN

Onaangenaam gevoel, infiltratie kloppend, verdrietig, trekkend, lyrica, fentanyl, neuralgie, onwetendheid, gefrustreerd, Raar gevoel, stekend, allodynie, gebroken, onzeker, palliatief, drukkend, benzodiazepines, Acut, NRS>4, machteloosheid, snijdend, Lokale anesthesie, angst, scherp, neerslachtig, hopeloos, hyperalgesie, stekend, paracetamol, leeg, bonzend, tinteling, Chronisch post operatieve pijn, persistierend, uitputting, gabapentine, verstijfd, moedeloos, kanker, zeurend, chronisch, verlamd, Anti depressiva, brandend, cymbalta, infiltratie, somber, overweldiging, oncomfortabel, tramadol, myalgia, ibuprofen, gevoelloos, morfine, ontsteking, krampend, subjectief, Anti epileptica, spierontspanners



- 45jarige dame
- **VG:** hypertensie, hypothyroidie, 8maanden geleden rechtszijdige mastectomie met okselklierevidement ikv invasief ductaalcel carcinoom
- Surveillance onderzoeken laatste maand geen evidentie voor metastatische ziekte
- **Huidige klacht:** Steeds erger wordende rechter thorax pijn
 - Brandende pijn
 - jeuk
 - Bij minimale aanraking ontstaat er hevige pijn
 - Af en toe tintelingen richting de rechter hand zonder motorische uitval
 - Huidige medicatie: ibuprofen 600mg 3/d en oxycodone 7,5mg tot 4/d

CPSP = Chronic post surgical pain

Pijn die ontstaat of erger wordt na heekunde/weefseltrauma

Op de plaats van letsel of de pijn wordt geprojecteerd naar de innervatiezone van de verantwoordelijke zenuw of is gerelateerd tot een dermatoom

Onderscheid tussen geplande heekunde en ongecontroleerde settings

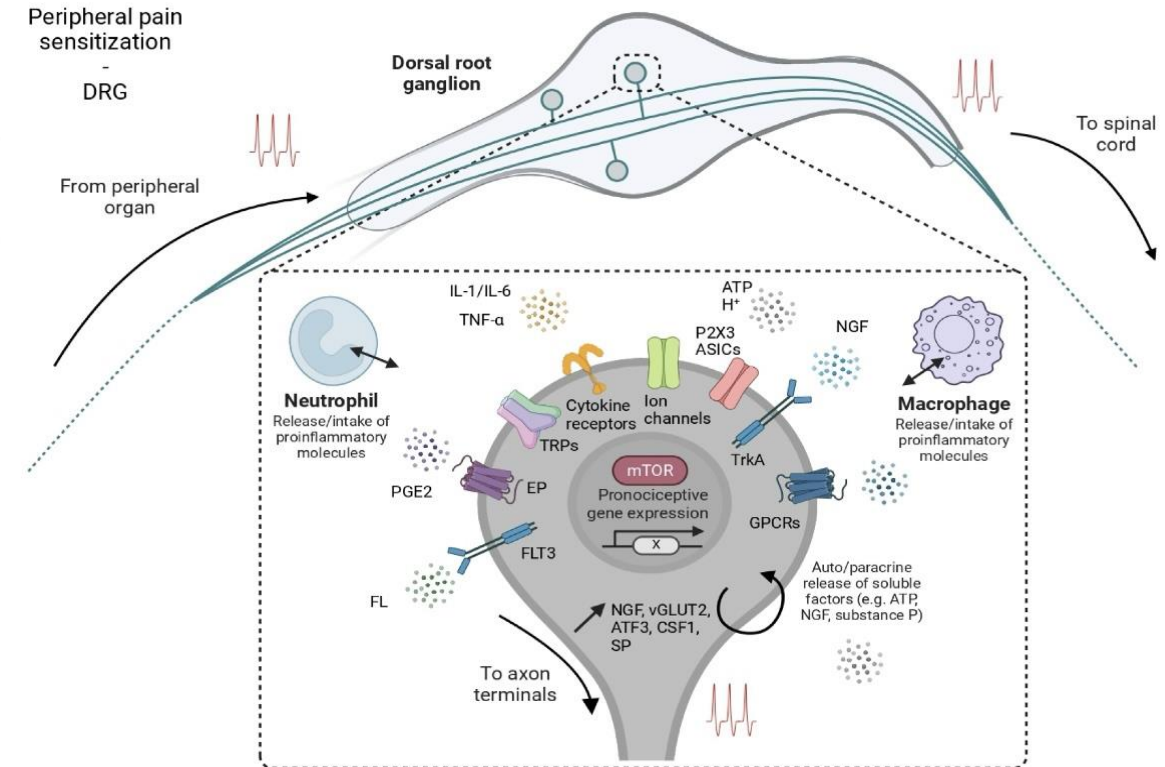
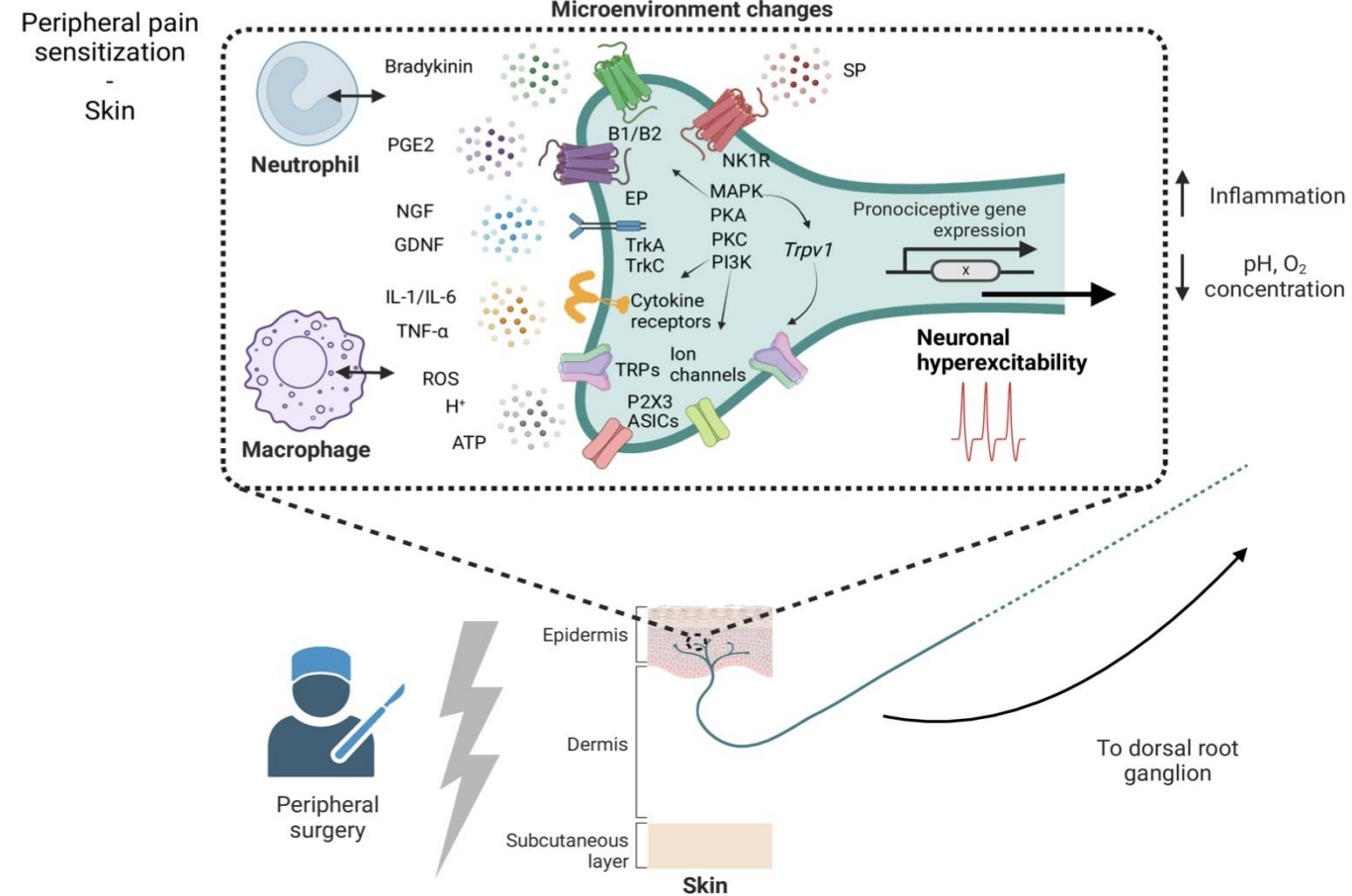
Pijn kan karakteristieken van neuropathische pijn bevatten

Pijn blijft bestaan na het herstelproces, >3 maanden na het event

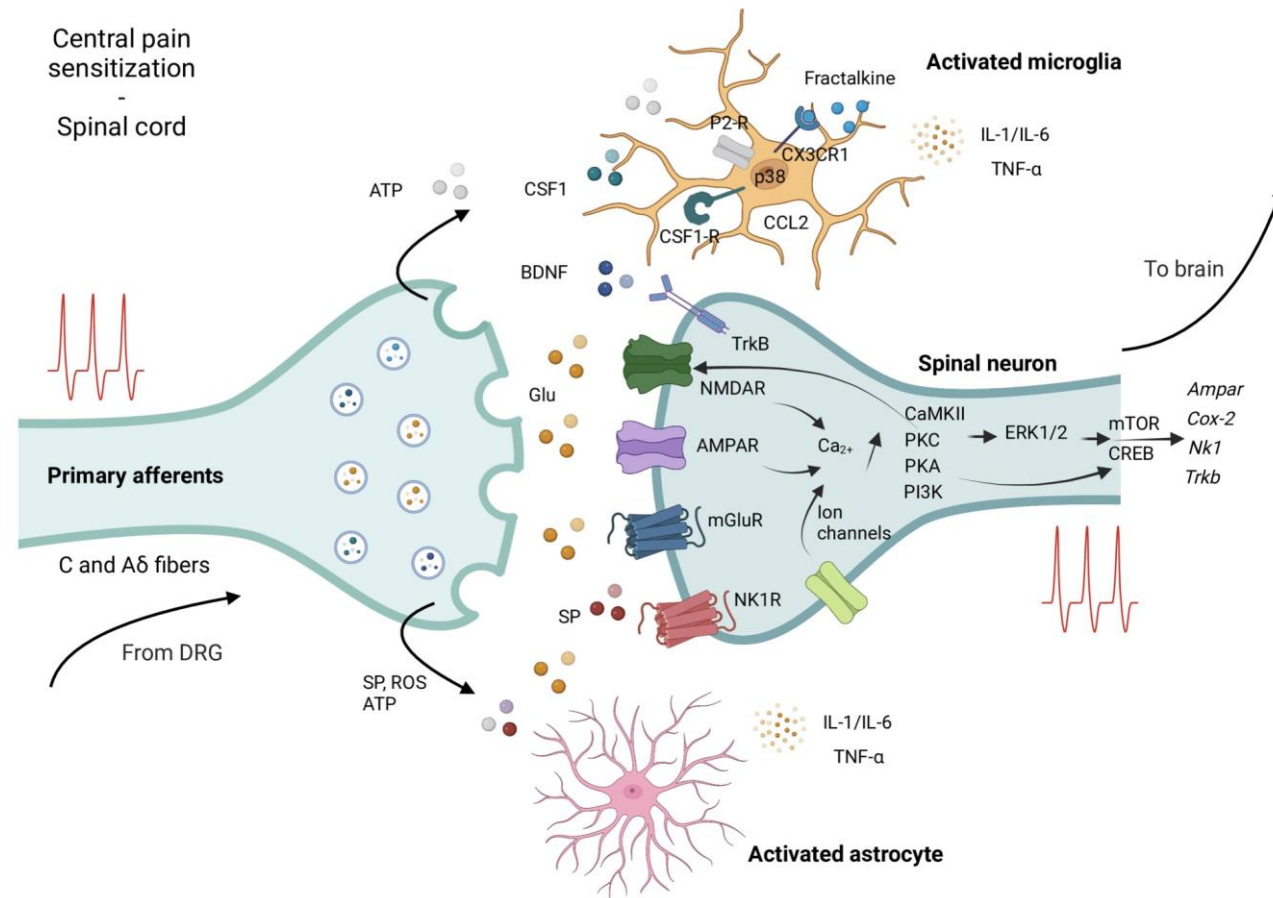
Andere oorzaken van pijn zijn uitgesloten (infectie, kanker)



PERIFERE SENSITIZATIE



CENTRALE SENSITIZATIE





- 45jarige dame
- **VG:** hypertensie, hypothyroidie, 8 maanden geleden rechtszijdige mastectomie met okselklierevidement ikv invasief ductaalcel carcinoom

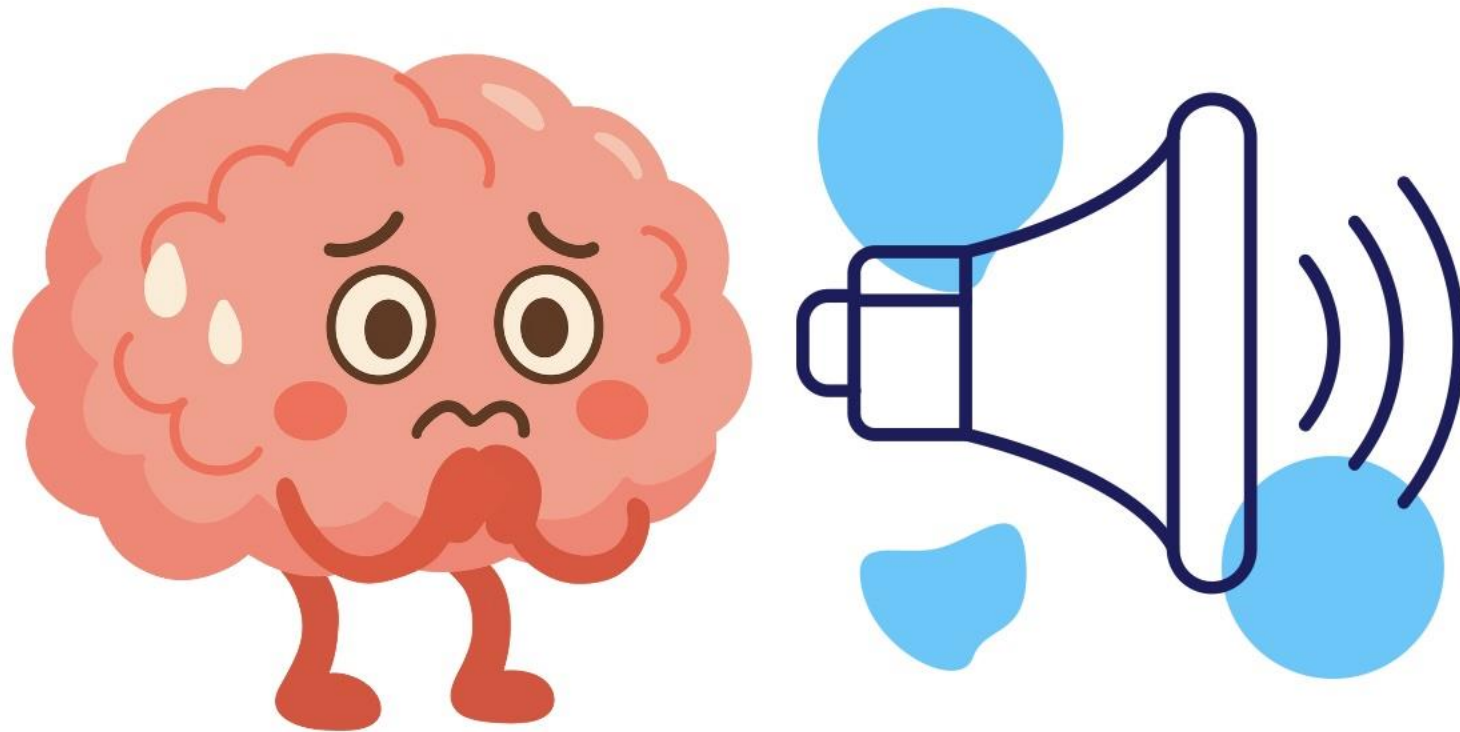
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 - Brandende pijn
 - jeuk
 - Bij minimale aanraking ontstaat er hevige pijn
 - Af en toe tintelingen richting de rechter hand zonder motorische uitval

5/4 en oxycodone 7,5mg tot 4/4

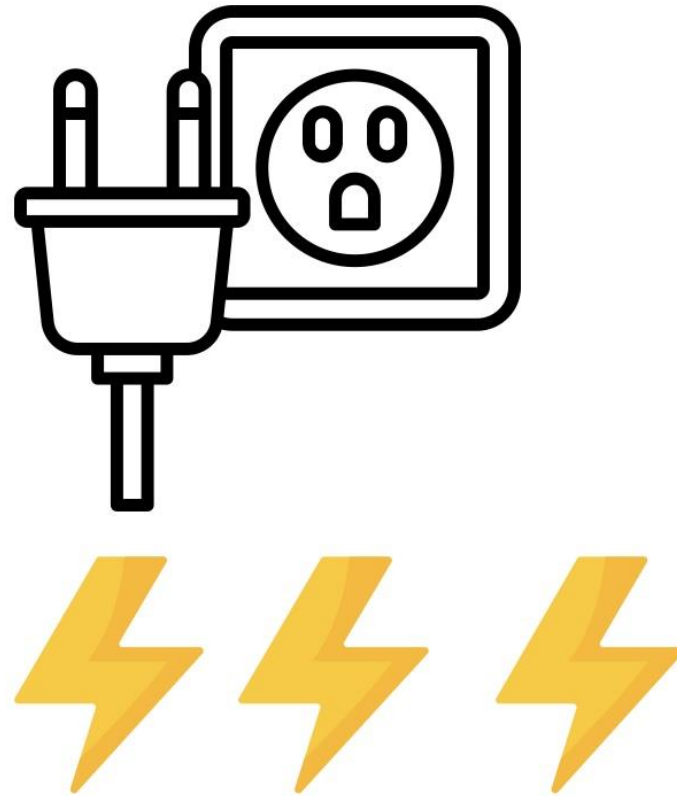
ALLODYNIE



HYPERALGESIE



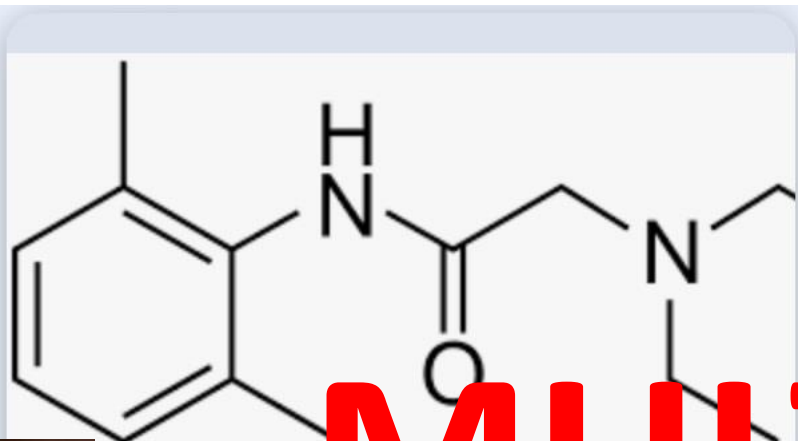
DYSESTHESIE



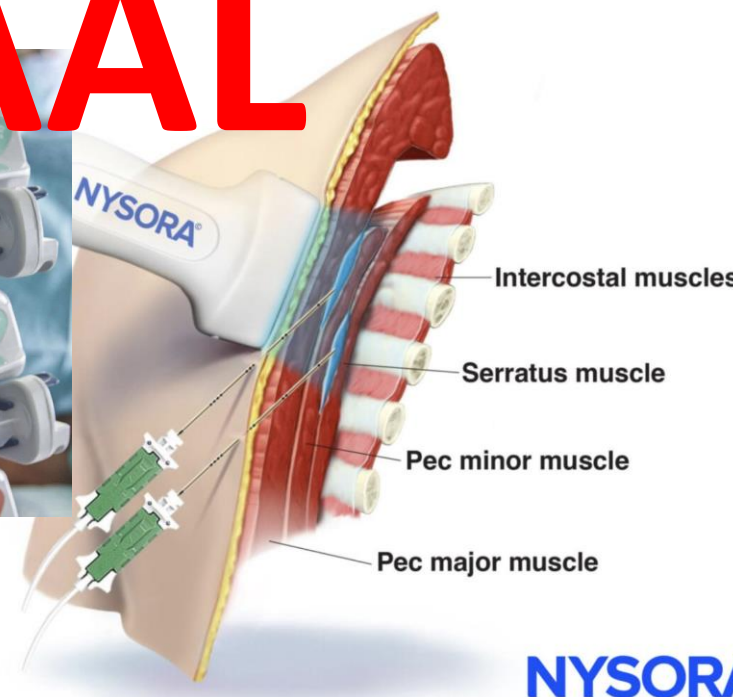
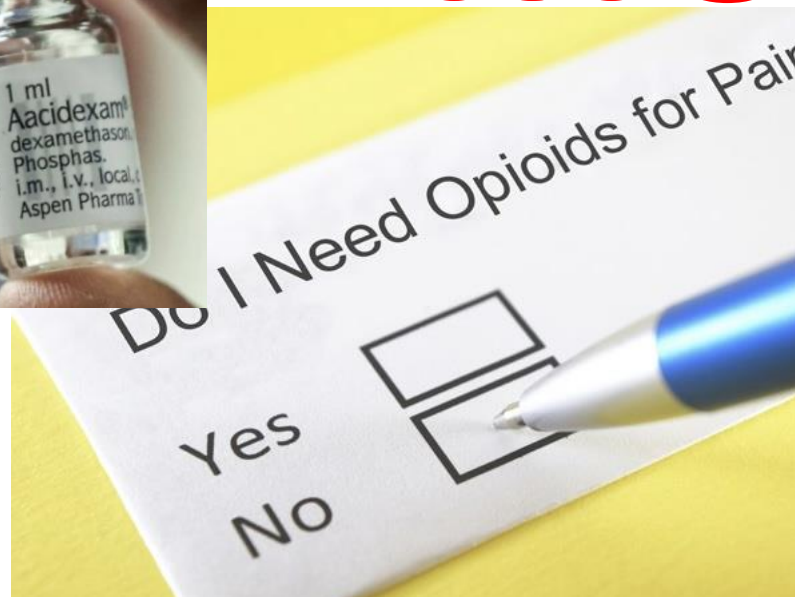




Preventie



MULTIMODAAAL



NYSORA

← VIEW ALL PROCEDURES

Oncological Breast Surgery 2019

Summary Recommendations →

Evidence Review Process →

PROSPECT Publication on
Oncological Breast Surgery →

PROSPECT Publication on Oncological Breast Surgery

Publication of current systematic review and recommendations:

Jacobs A, Lemoine A, Joshi GR, Van de Velde M, Bonnet F on behalf of the PROSPECT Working Group collaborators (G. P. Joshi, E. Pogatzki-Zahn, M. Van de Velde, S. Schug, H. Kehlet, F. Bonnet, N. Rawal, A. Delbos, P. Lavand'homme, H. Beloeil, J. Raeder, A. Sauter, E. Albrecht, P. Lirk, S. Freys and D. Lobo).

Recommendations

1. Systemic analgesia should include paracetamol and non-steroidal anti-inflammatory drugs (NSAID) administered pre-operatively or intra-operatively and continued postoperatively.
2. Pre-operative gabapentin is recommended.
3. A single dose of intravenous (i.v.) dexamethasone is recommended for its ability to increase the analgesic duration of peripheral nerve blocks, decrease analgesia use and anti-emetic effects.
4. Opioids should be reserved as rescue analgesia in the postoperative period.
5. Paravertebral blockade is recommended as the first-choice regional analgesic technique. Pectoral nerves block may be used as an alternative to paravertebral block. Local anaesthetic wound infiltration may be added to regional analgesia techniques.

Locoregionale techniek

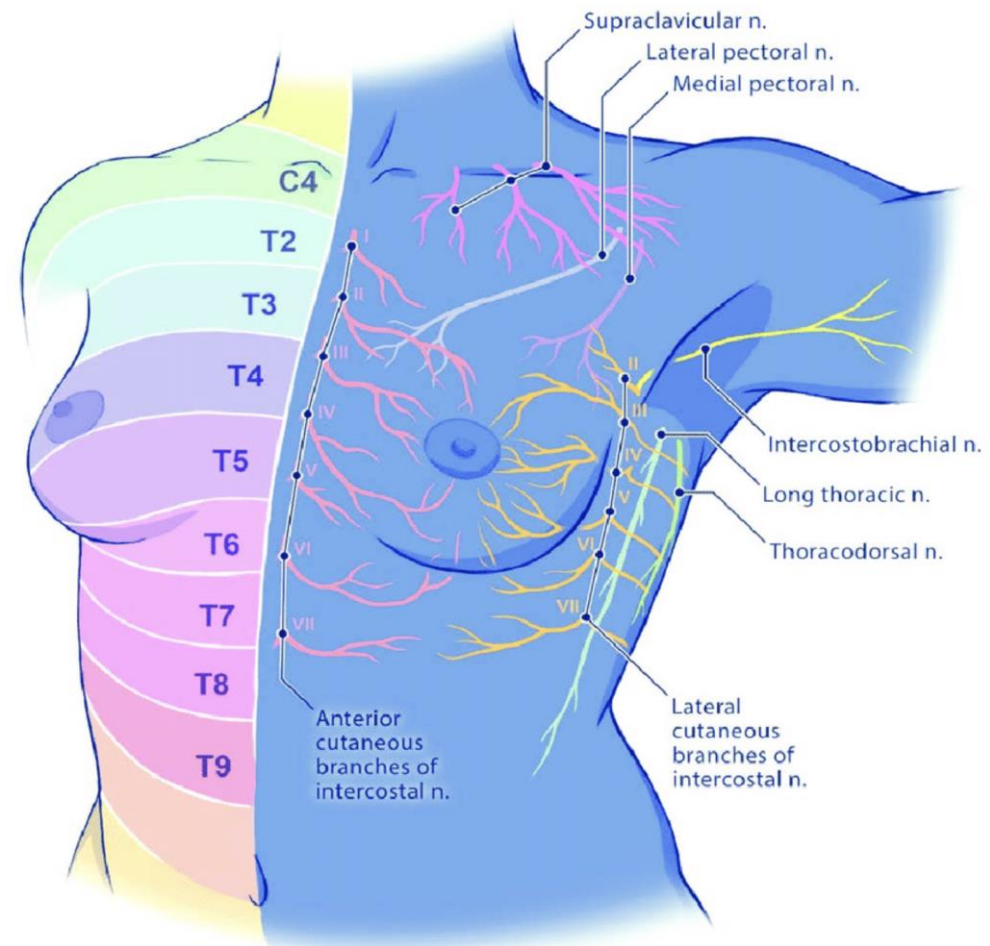
- PECS 2 (incl pecs 1) wordt pre inductie geprikt, idealiter in kinderrecovery.
- Sedatie aan te bieden

Algemene anesthesie

- TCI propofol – ultiva
- Sufenta 5 microgram bij inductie
- Linisol 1mg/kg bij inductie
- Dexamethasone 0,2 mg/kg bij inductie
- Vessiera 0,15 mg/kg
- Paracetamol 1g

geen contra indicaties
ij uitleiding
tiënt met neo adjuvante chemotherapie
hv contralaterale zijde
vochttoediening
ik maken van bair hugger

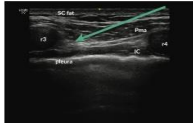
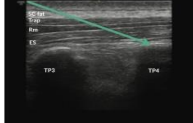
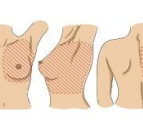
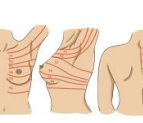
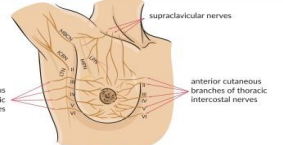
e operatiekant armsteun
ijde langs het lichaam



THORACIC WALL BLOCKS

FOR BREAST CANCER SURGERY

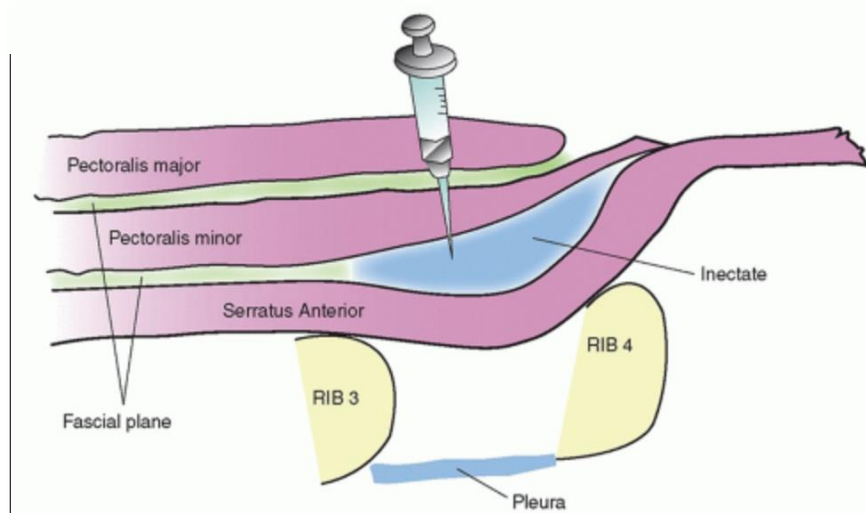
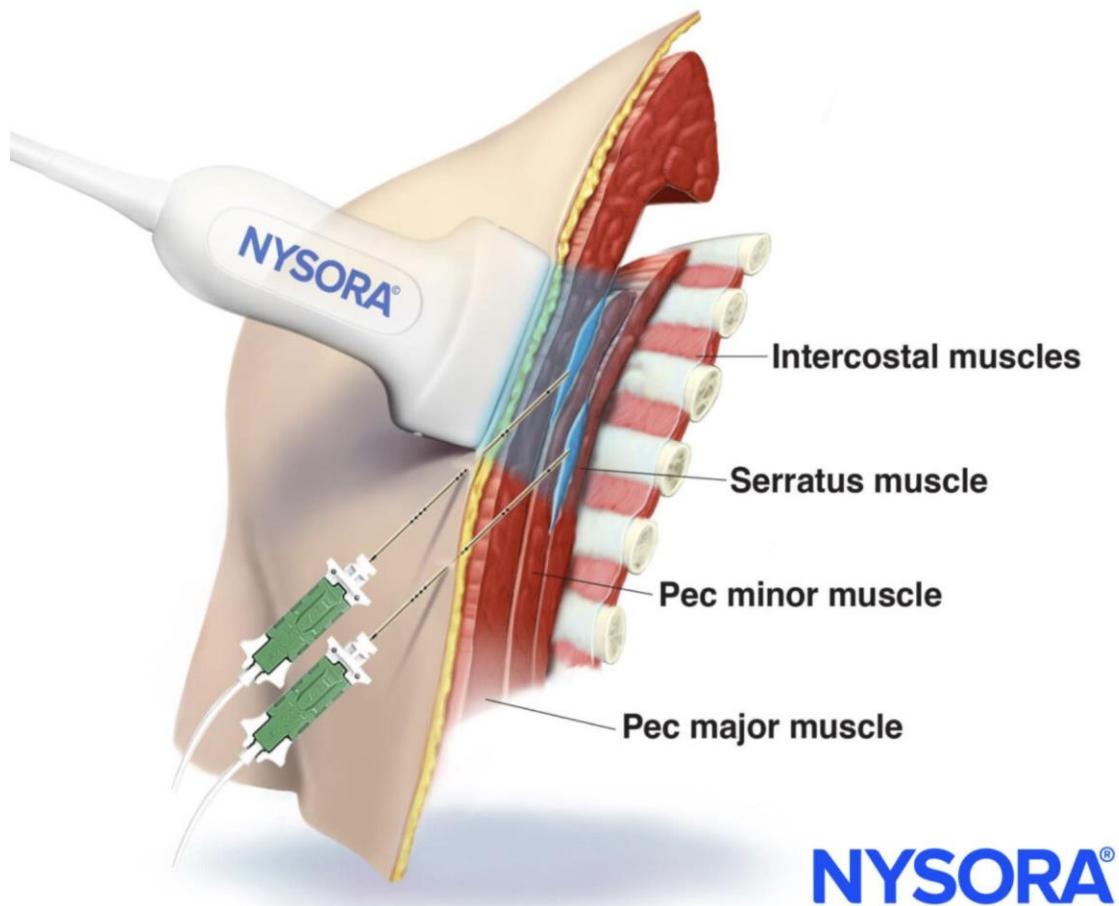
Barbara Versyck, Kris Vermeulen, Renee van den Broek, Sari Casaer, Geert-Jan van Geffen

	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 Pftaa Pectoral branch of thoraco acromial artery	 Transducer position: Place transducer under lateral third of clavicle, 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 Pftaa and SA. Technique: needle insertion towards r4 along medial of Pftaa. 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. Tip: 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. Tip: 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 clavicle 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 Rhomboid ES Erector spinae TP transverse process SC fat subcutaneous fat tissue	 Transducer position: place transducer parasagittal at level of fourth spinous process, then move 3-5cm lateral, visualising the transverse process. Needle approach: in plane, cephalad to caudal.	 Required view: TP3 and TP4 in combination with Trap, Rh 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 top of the TP. Avoid globular spread, which indicates intramuscular injection.	 Indications: analgesia of unilateral thoracic wall T2-T6. Tip: 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 parasagittal view, then move 3-5cm lateral, visualising the transverse process. Needle approach: in plane, cephalad to caudal until.	 Spread of LA: lateral spread underneath superior costotransverse ligament, pooling 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. Tip: 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 MBChN Medial brachial cutaneous nerve ICBN Intercostobrachial nerve LTN Long thoracic nerve MPN Medial pectoral nerve LPN Lateral pectoral nerve	 supraclavicular nerves lateral cutaneous branches of thoracic intercostal nerves anterior cutaneous branches of thoracic intercostal nerves		

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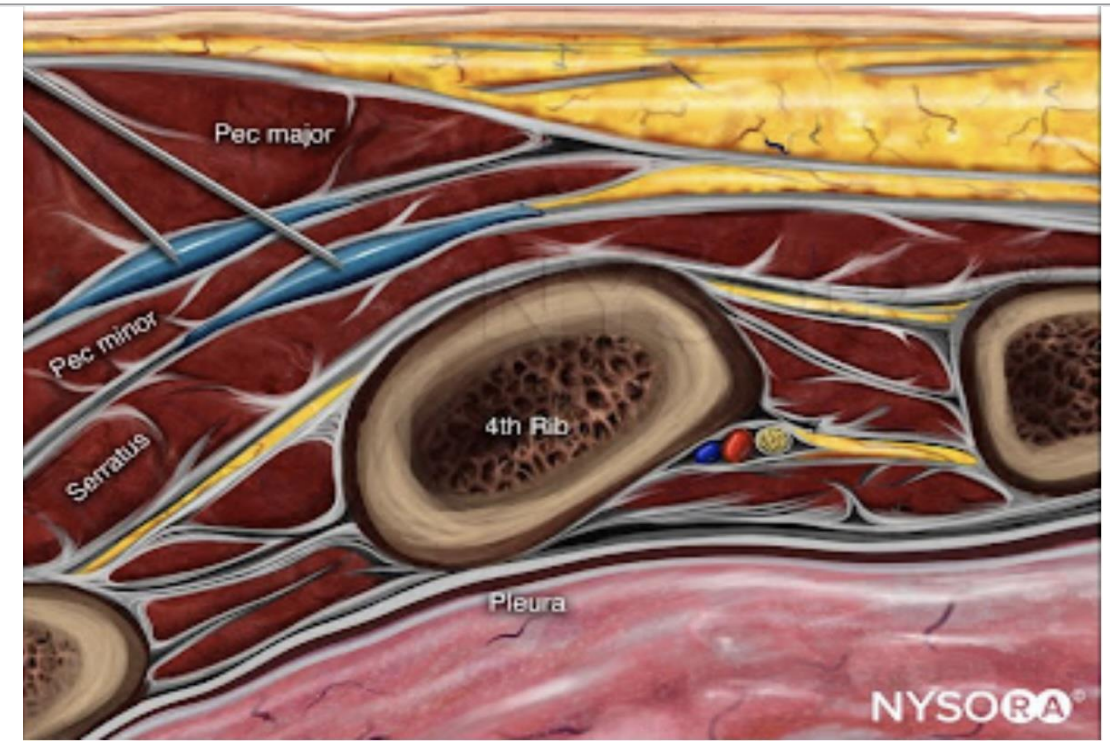
FASCIA PLANE BLOCKS
 = REGIONALE ANESTHESIETECHNIEK WAARBIJ LOKAAL
 ANESTHETICUM WORDT INGEBRACHT IN EEN
 POTENTIELE ANATOMISCHE RUIMTE TUSSEN TWEE
 FASCIALAGEN

DOEL = SENSORISCHE VEZELS DIE DOORHEEN DEZE
 FASCIA LOPEN TE BLOKKEREN WAARDOOR ER
 PIJNVERLICHTING ONTSTAAT



ne nerve block—PECS II is simply a PEC I block with additional injection of local anesthetic between the deep fascia or the superficial serratus anterior muscle to block the lateral branches of the T2-T4 intercostal nerves and occasionally the long thoracic nerve.

- Borstsparende ingreep + sentinel/okselklievidement
- Mastectomie +/- sentinel/okselklievidement
- Okselklievidement





- 45jarige dame
 - **VG:** hypertensie, hypothyroidie, 8maanden geleden rechtszijdige mastectomie met okselklierevidement ikv invasief ductaalcel carcinoom
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 - Af en toe tintelingen richting de rechter hand zonder motorische
- Huidige medicatie: ibuprofen 600mg 3/d en oxycodone 7,5mg tot 4/d

Treatment	Evidence	Treatment	Evidence
Intercostobrachial nerve blocks	A case series of ultrasound-guided modified radical mastectomy pain relief at 4 weeks follow-up. ⁴⁰	Neuroma excision	• Neuromas are most commonly identified at sites of transection of intercostal brachial nerves along the lateral chest wall. The clinical diagnosis is made by palpation of the site of pain leading to radiating pain impulses. Subsequent confirmation can be made with ultrasound or a nerve block with improvement of symptoms. • When the neuroma is excised, the proximal portion is relocated into intercostal muscles where the neuroma recurrence risk is lower. • Three case series, representing a total of 14 patients, followed patients for an average of 24 months following neuroma excision; 80% experienced partial or complete pain relief.^{48,50,51}
Serratus plane blocks: superficial serratus plane, deep serratus anterior plane ⁴¹	A case series of serratus plane blocks showed pain relief and duration of pain relief. ⁴²		
Paravertebral block	A single-center retrospective study showed paravertebral block may be considered for postoperative pain management. ⁴³	Axillary scar release	• Axillary scar release can be performed with or without fat grafting. • Z-plasty lengthens the initial wound or scar, for release of flexion contractures (usually due to burns) occurring in the axilla, neck, antecubital fossa, or popliteal fossa.⁵²
Pectoralis (PECS) nerve block	The PEC I block targets the medial pectoral nerve between the pectoralis major and minor muscles. It includes an additional injection point of injection, to target the lateral pectoral nerve. An observational study of 140 patients showed decreased post-mastectomy pain at 9, and 12 months after surgery. The PEC I block may be appropriate for patients with axillary scars, while PEC II block may be appropriate for patients without axillary scars. ⁴⁴		
Stellate ganglion block	A single-center retrospective study showed stellate ganglion block may be considered for postoperative pain management with complex regional pain syndrome. ⁴⁵	Autologous fat grafting	• The mechanism of autologous fat grafting is not well elucidated, but potential benefits include: ◦ Improved vascularization ◦ Secretion of anti-inflammatory molecules that improve tissue differentiation and scar softness ◦ Creation of a cushion around a transected nerve stump that leads to reduction of nerve compression and stimulation ◦ Liberation from nerve entrapment. • Comparative studies and small trials have demonstrated that fat grafting is associated with reduced postoperative pain and/or reduction in use of analgesic medication after mastectomy;⁵³⁻⁵⁶ however, larger trials are needed to evaluate the efficacy of autologous fat grafting.
Intercostal nerve block	A systematic review demonstrated that intercostal nerve blocks may be considered for postoperative pain management; most of these cases lead to reduced pain. ⁴⁶		
Botulinum toxin	Botulinum toxin can be used for postoperative pain management in the upper limb. This strategy has been used for postoperative pain management in outlet syndrome. ⁴⁷		• SCS or PNS may be considered as last-line options according to an interventional pain management algorithm for treatment of post-mastectomy pain.⁴³

Treatment	Evidence
Cryoneurolysis	Cryoneurolysis has shown promise as an effective technique for postoperative pain management in mastectomy patients. ⁵⁷ By utilizing preoperative ultrasound guidance, percutaneous cryoneurolysis selectively targets the intercostal nerves associated with the surgical site. This innovative approach offers a nonpharmacological means of achieving prolonged analgesia, potentially reducing the need for opioids and enhancing patient recovery. The study underscores cryoneurolysis as a viable adjunctive strategy for optimizing pain relief and improving the overall perioperative experience in mastectomy patients. Furthermore, ongoing clinical trials are investigating the efficacy and safety of cryoneurolysis, contributing to the evolving understanding of its role in postoperative pain management for mastectomy patients. ⁵⁸

Post-mastectomy pain are unlikely to be approved by insurance providers; if you have another condition such as complex regional pain syndrome (e.g., of which you may not receive insurance approval for coverage of neuromodulatory devices after mastectomy).

Wat betekent dit voor jullie?

- CPSP = frequent, tot 60% incidentie
- Ook na een relatieve mineure ingreep
- CPSP = moeilijk te voorspellen
- Opiaten = geen goede therapie
- **Non - medicamenteuze interventies**
- Gabapentine = 1e keuze
- **Maar laagdrempelige doorverwijzing naar pijnkliniek is aangewezen**



