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Centre Jean Perrin

Centre de Lutte contre le Cancer d'Auvergne

Clermont-Ferrand - France -

Le Bloc paravertebral

Gayraud Guillaume

Déclaration publique d'intérêts

En tant qu'intervenant dans ce séminaire de formation, je déclare sur l'honneur :

(S.V.P. COMPLETER ET SUPPRIMER LA MENTION INUTILE)

- **Absence de tout conflit d'intérêt**
  avec tout organisme privé, industriel ou commercial

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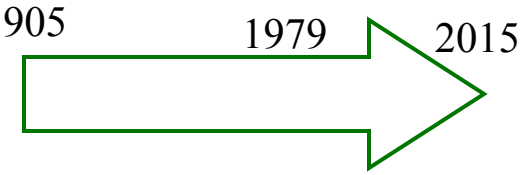
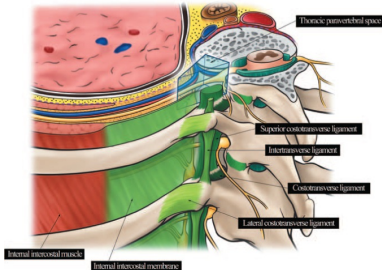
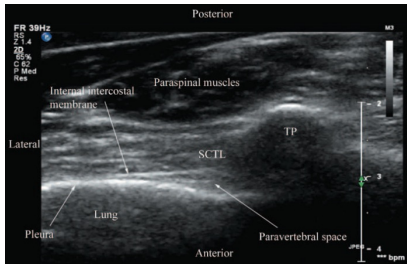


- Bases anatomiques



- Indications du BPV
- Eventail des techniques de ponction



- Le bloc en pratique : volume, ponctions multiples ou unique, anesthésiques locaux, adjuvants, cathétérisme, apprentissage
- Les alternatives au BPV

NCBI Resources
PubMed.gov
US National Library of Medicine
National Institutes of Health

Rappels Historiques et définition

- **Début XXe siècle :**
  - **Dr Hugo Selheim de Leipsig** (1905)
  - **Précis d'anatomie dès 1914** (livre de Pauchet, édition Doin)
- **1979 : Eason et Wyatt**
  - **1ère description de cathétérisme percutané de l'espace paravertébral**
- **1980 à 2000 : Essor du bloc para vertébral en chirurgie thoracique (Richardson, Karmakar, Sabanathan)**
- **À partir de 2000 :**
  - **Apports de l'échographie à la technique percutanée**
  - **A chaque publication sa technique (Shibata, Pusch, Marhofer)**
  - **Utilisation et alternatives en chirurgie du sein (Pecs bloc)**

Rappels historiques et définitions

- **Définition du bloc para vertébral :**
  - **Obtention d'une anesthésie du nerf rachidien par l'injection d'anesthésiques locaux à proximité de son émergence par le foramen intervertébral.**
    - Etage cervical : bloc cervical profond, BIS
    - Etage thoracique : bloc para vertébral thoracique
    - Etage lombaire : bloc du plexus lombaire profond par voie postérieure
- **Particularités :**
  - **Bloc d'espace profond (4 à 6 cm)**
  - **Espace de diffusion par intercommunication des espaces para vertébraux (verticale et controlatérale) : 1 injection couvre plusieurs métamères.**
  - **Cathétérisation possible**

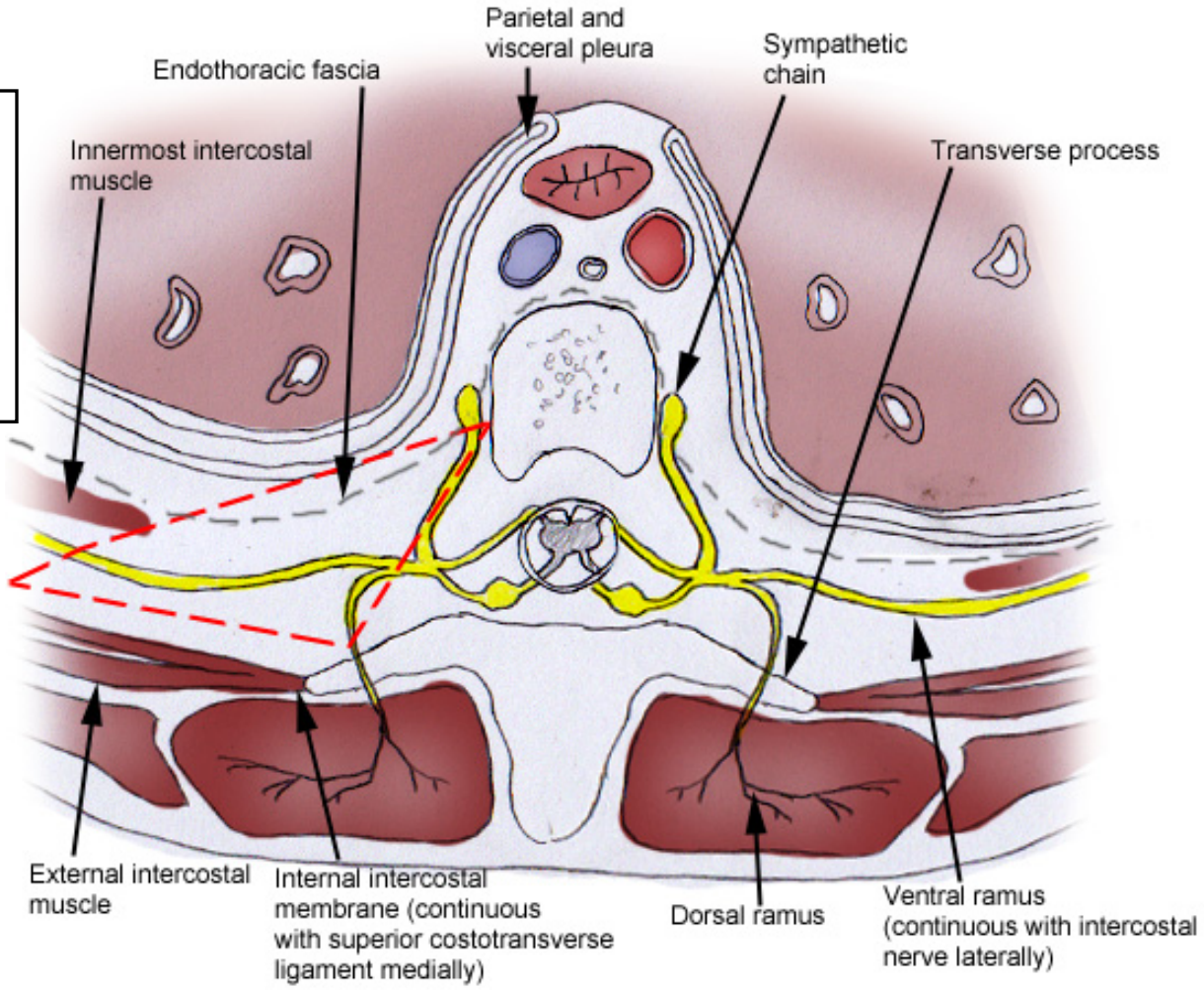
Bases anatomiques

Anatomie de l'espace para vertébral thoracique

Eléments anatomiques principaux:

- Plèvre et facia endothoracique, espace antérieur extra pleural

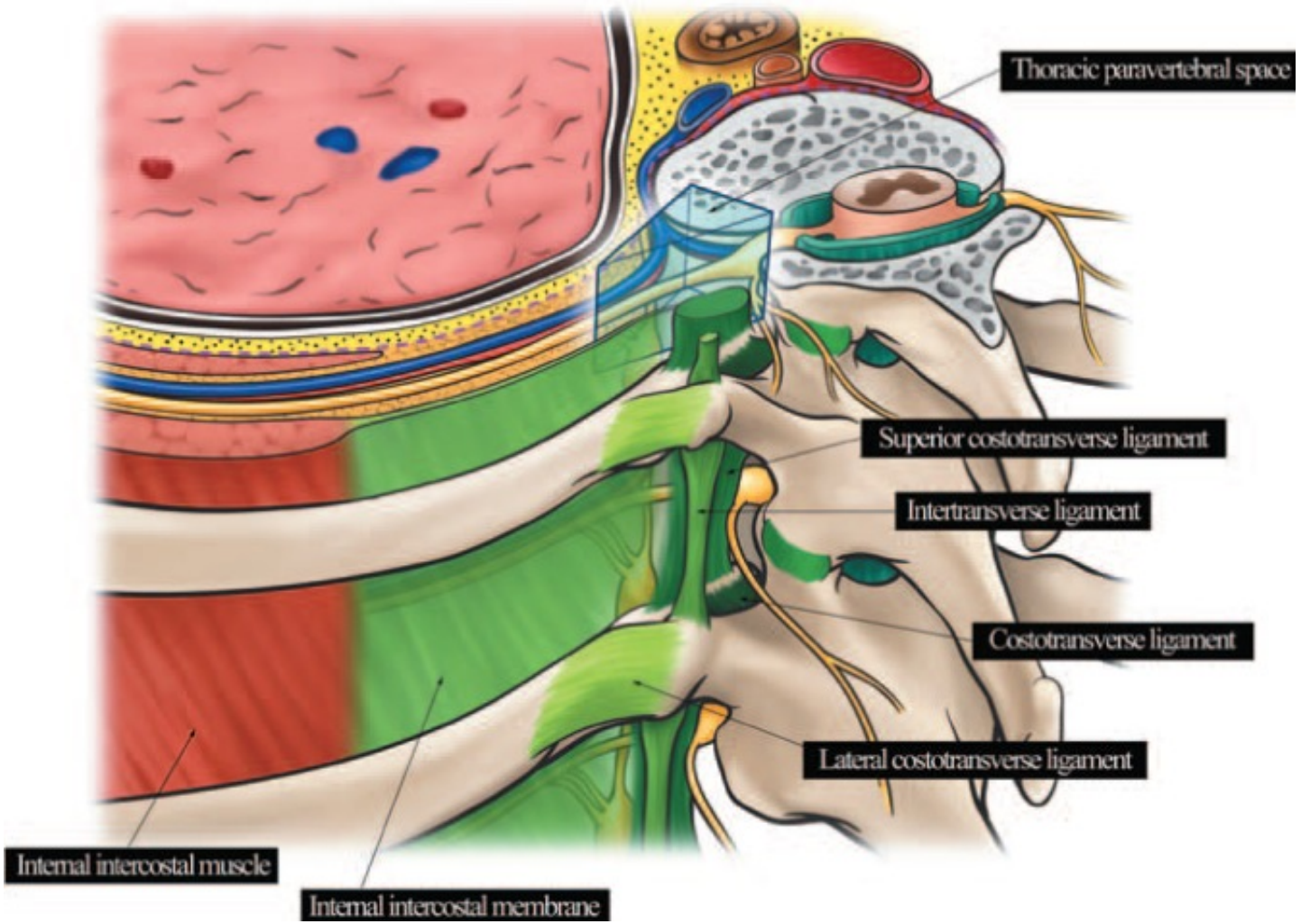
- Processus transverse, ligament costo transverse et membrane intercostale interne



Thoracic paravertebral block Anesthesiology 9 2001, Vol.95, 771-780

Bases anatomiques

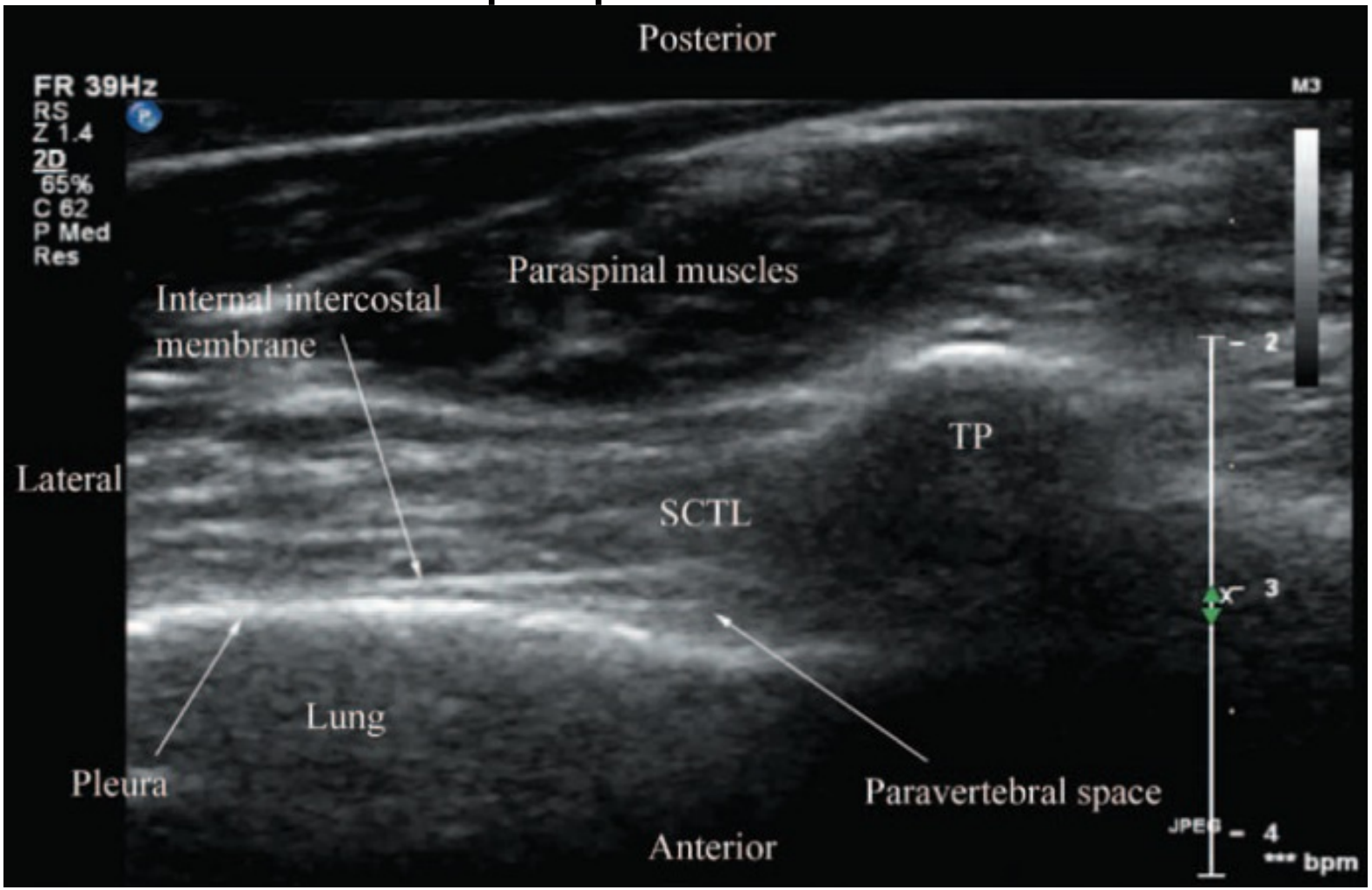
Anatomie de l'espace paravertébral



Volumetric Three-Dimensional Ultrasound Imaging of the Anatomy Relevant for Thoracic Paravertebral Block, Manoj Kumar Karmakar and collegues

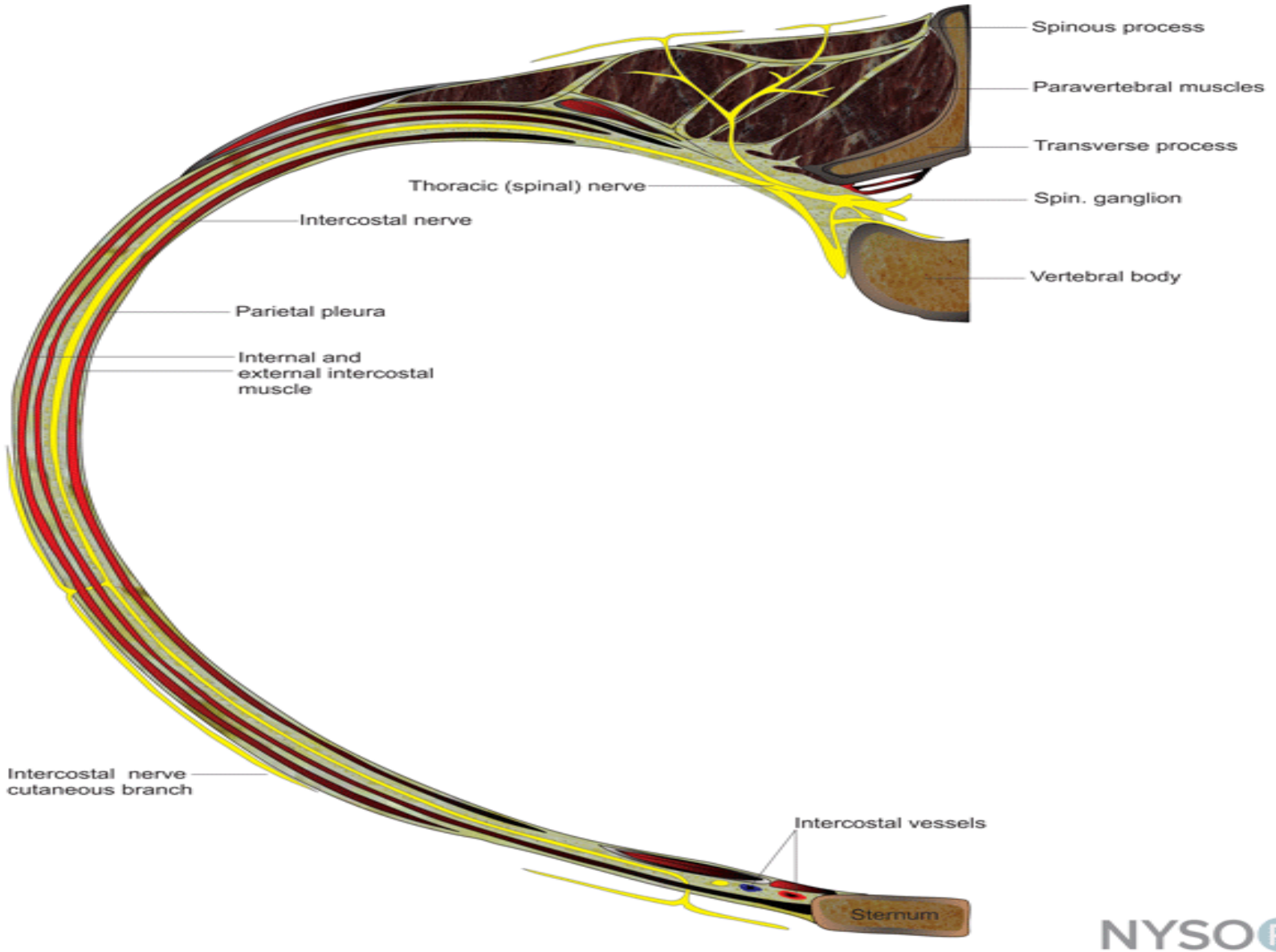
Bases anatomiques

- **Écho anatomie de l'espace para vertébral**

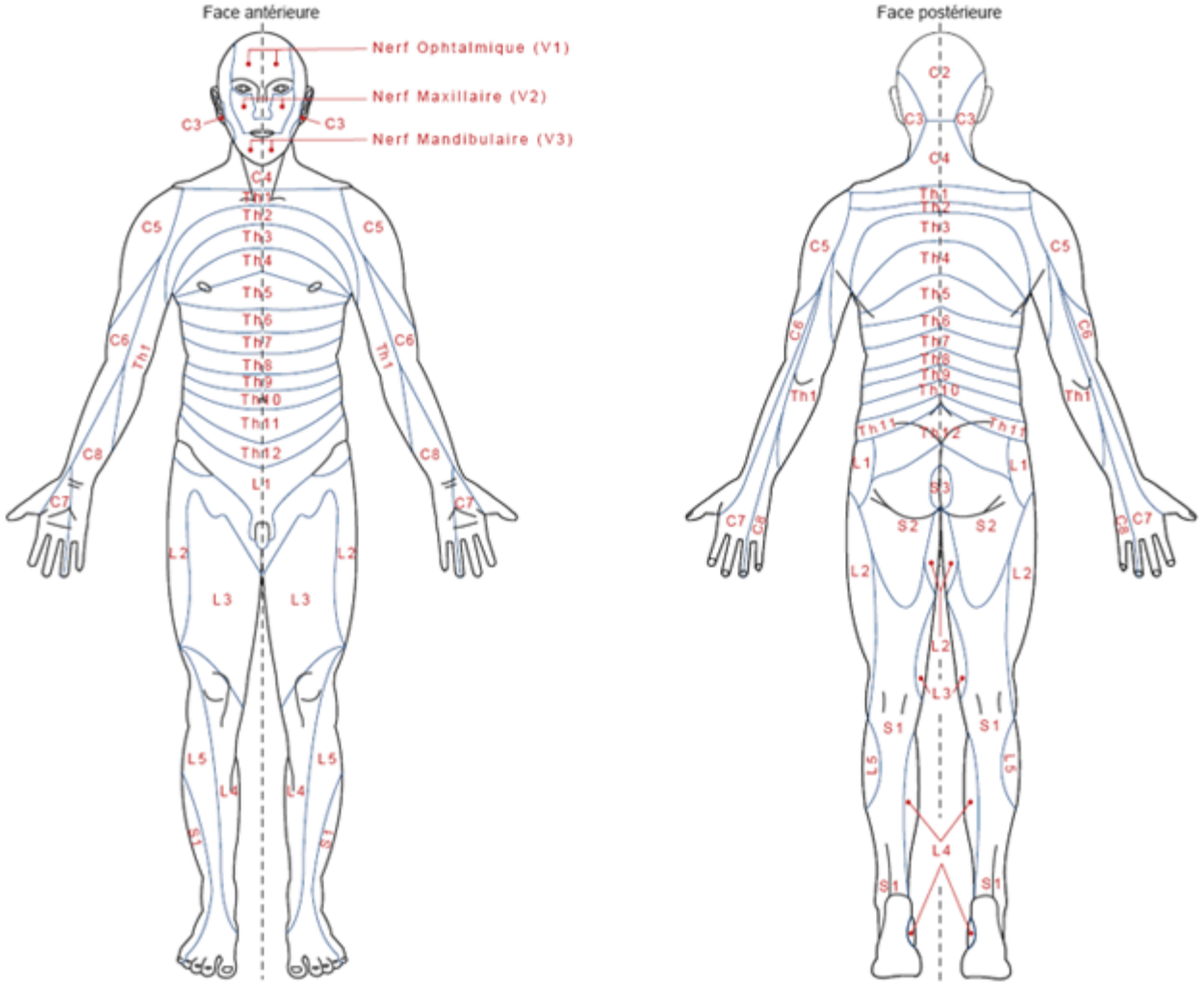


Volumetric Three-Dimensional Ultrasound Imaging of the Anatomy Relevant for Thoracic Paravertebral Block, Manoj Kumar Karmakar and collegues

Bases anatomiques



Bases anatomiques



Bases anatomiques

- **Donc :**
  - 1 bloc d'espace de diffusion
  - 1 nerf spinal et ses branches postérieure, antérieure et latérale
  - Une capacité d'anesthésie ou d'analgésie péri opératoire
  - Communications verticales et controlatérales

Application et Indications du bloc paravertebral

À visée analgésique :	- Thoracotomie latérale pour chirurgie pulmonaire - Vidéothoracoscopie - Mastectomie plus ou moins associée à un curage axillaire - Chirurgie plastique du sein unilatérale, - Reconstruction mammaire avec lambeau musculaire - Chirurgie viscérale avec incision transverse latéralisée - Chirurgie du rein et de l'uretère par lombotomie
À visée anesthésique :	- Chirurgie du sein - Exploration de la paroi thoracique - Autres : . Traumatisme thoracique unilatéral (fracture de côtes) . Douleur chronique après thoracotomie . Névralgie post-zostérienne . Hyperhydrose palmaire . Douleur capsulaire après traumatisme hépatique

Le bloc paravertébral : technique et indications

F. Bonnet, J. Berger, Y. Ynineb, E. Marret

51e Congrès national d'anesthésie et de réanimation. Médecins. Conférences d'actualisation.

Le bloc paravertébral en chirurgie thoracique

- **Pour les thoracotomies**
  - Davies RG, Myles PS, Graham JM. Br J Anaesth 2006
    A comparison of the analgesic efficacy and side-effects of paravertebral vs epidural blockade for thoracotomy- a systemic review and meta-analysis of randomised trials.
  - Joshi GP, Bonnet F, Shah R, Wilkinson RC, Camu F, Fischer, Neugebauer EA, Rawal N, Shug SA, Simanski C, Kehlet H Anesth Analg 2008
    Systematic review of randomized trials evaluating regional techniques for postthoracotomy analgesia.
  - E. S. Powell, D. Cook, A. C. Pearce, P. Davies, G. M. R. Bowler, B. Naidu, F. Gao and UKPOS Investigators Br J Anaesth 2011
    A prospective, multicentre, observational cohort study of analgesia and outcome after pneumonectomy
- **Le bloc paravertébral peu être considéré comme une technique aussi efficace que l'APD, sûre, avec moins de complications hémodynamiques, urinaires MAIS :**
  - **Etudes anciennes**
  - **Recours à la morphine**
  - **Voie chirurgicale préférentielle**

Le bloc paravertébral en chirurgie thoracique

Pour les thoracoscopies :

- Zhang X and Coll J Cardiothorac Vasc Anesth. 2015 Jun 10.
  Comparison Between Intraoperative Two-Space Injection Thoracic Paravertebral Block and Wound Infiltration as a Component of Multimodal Analgesia for Postoperative Pain Management After Video Assisted Thoracoscopic Lobectomy : A Randomized Controlled Trial.

- J. Kaplowitz, P.J. Papadakos
  Acute pain management for video-assisted thoracoscopic surgery : An update J Cardiothorac Vasc Anesth, 26 (2012), pp. 312–321

Consommation péri opératoire, niveaux de douleur et consommation de morphine, supériorité au bloc intercostal

Pour les traumatismes thoraciques :

- Ultrasound-Guided Continuous Thoracic Paravertebral Block for Outpatient Acute Pain Management of Multilevel Unilateral Rib Fractures
  Hiroaki Murata, MD,Emine Aysu Salviz, MD, Stephanie Chen, MD,Catherine Vandepitte, MD, and Admir Hadzic, MD, PhD

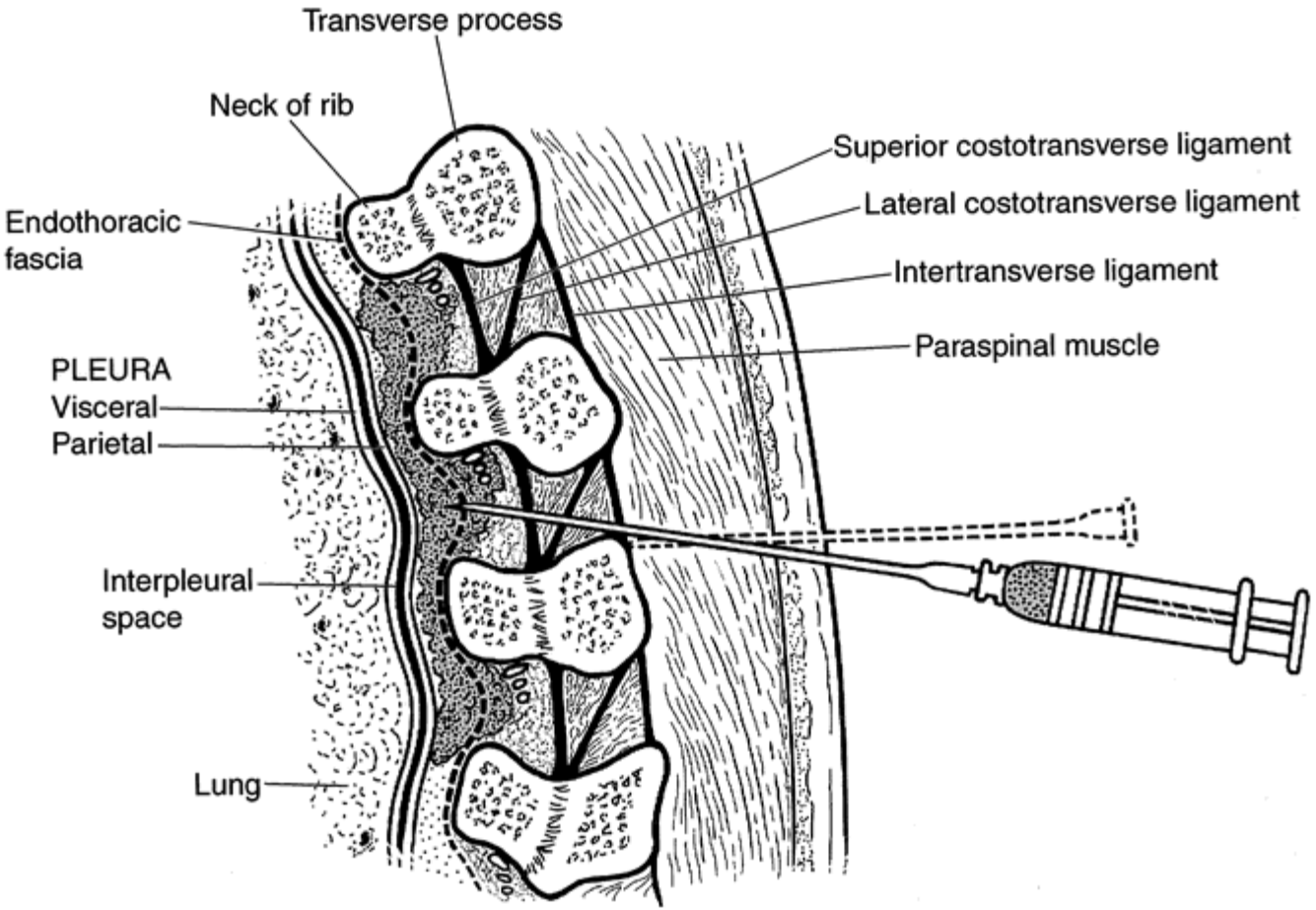
- Case Report : A modified paravertebral block to reduce risk of mortality in a patient with multiple rib fractures. The American Journal of Emergency Medicine 2015
  Hitoshi Yoshida and coll

- Ultrasound-guided thoracic paravertebral block for acute thoracic trauma : continuous analgesia after high speed injury. 2013
  Reisig F, Büttner J

Pas d'étude prospective, case report ou séries de cas

Quelle technique de ponction ?

- **Technique par recherche de perte de résistance**
  - **Eason et Wyatt (1979)**



Eason M., Wyatt R. Paravertebral thoracic block - a reappraisal. 1979;34:638– 642.

Quelle technique de ponction ?

- **La technique chirurgicale (réservée à la chirurgie thoracique) par thoracotomie ou thoracoscopie**

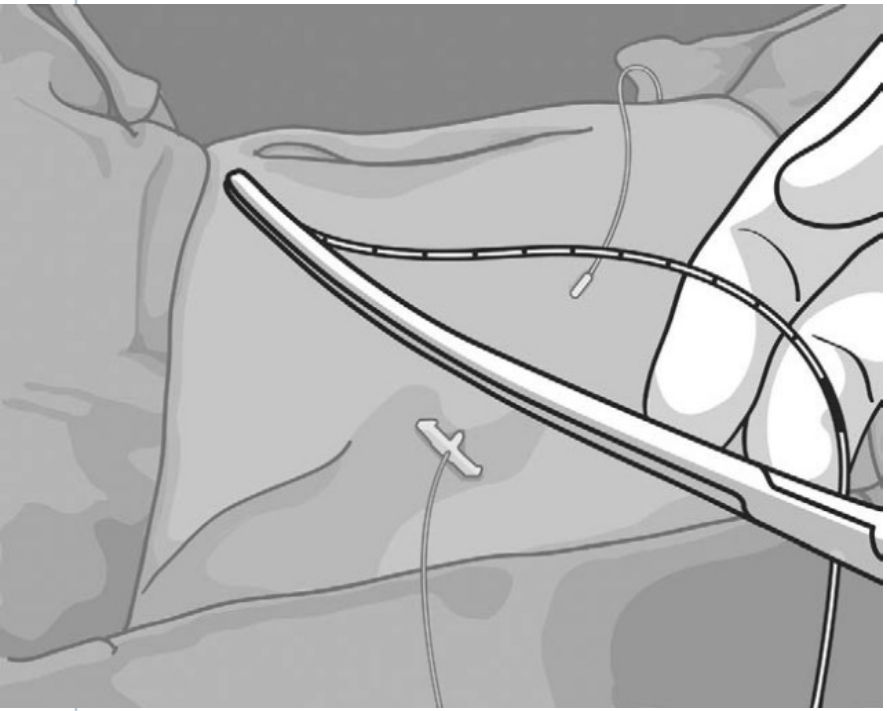
  - Subpleural Catheter Placement for Pain Relief After Thoracoscopic Resection.
    Frank C. Detterbeck, MD

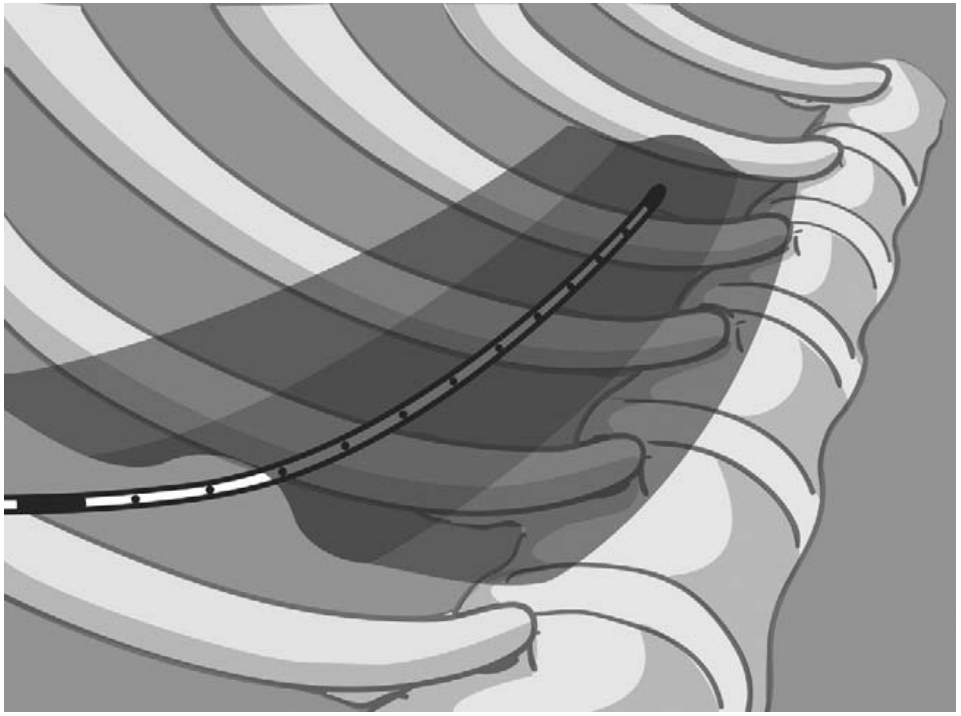
  - Intra-operative paravertebral block for postoperative analgesia in thoracotomy patients: a randomized, double-blind, placebo-controlled study
    Olivier Helms, Juliette Mariano, Jean-Gustave Hentz, Nicola Santelmo, Pierre Emmanuel Falcoz, Gilbert Massard, Annick Steib

  - Comparison between systemic analgesia, continuous wound catheter analgesia and continuous thoracic paravertebral block : a radomised controlled trial of post thoracotmy pain management

Des résultats contradictoires et des études comparatives entre la technique chirurgicale et per cutanée en attente

Quelle technique de ponction ?





Pose chirurgicale du cathéter paravertébral extra pleural au cours d'une thoracoscopie

selon Detterbeck

Subpleural Catheter Placement for Pain Relief After Thoracoscopic Resection
Frank C. Detterbeck, MD 2005

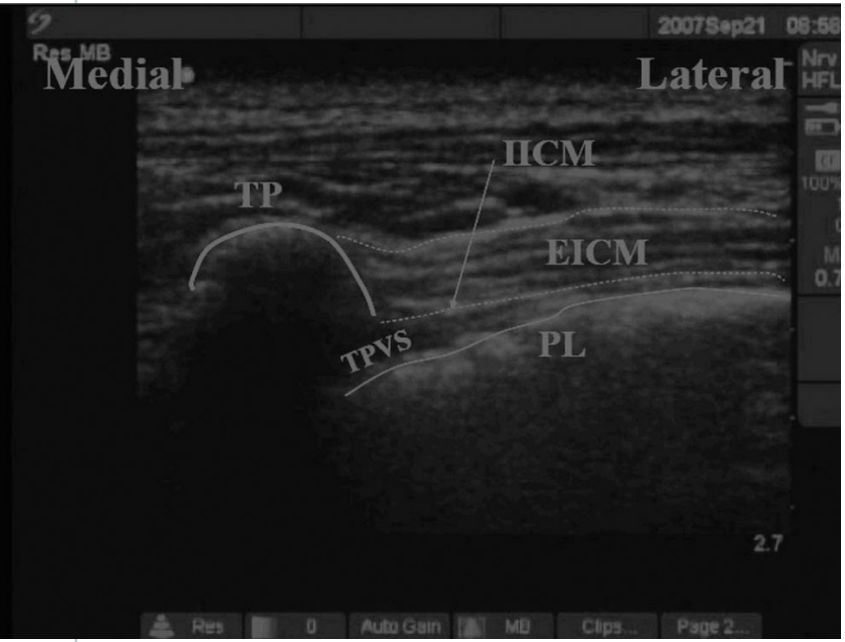
Quelle technique de ponction ?

- **Les techniques per cutanées échoguidées**
  - **Nombreuses : A chaque opérateur sa technique**
  - **In plane – out of plane**
  - **Orientation para sagittale ou horizontale ou oblique**
    - Shibata, *Anesthesia & Analgesia (2009)*
      - Sonde horizontale, aiguille in plane
    - O Riain SC, *Anesth. Analg. 2010 Jan 1;110(1):248–51*.
      - Sonde verticale paramédiane, aiguille in plane
    - Marhofer, *Br. J. Anaesth. (2010) 105 (4): 526-532.*
      - Sonde horizontale, aiguille out of plane
      - Mesure préalable de la distance Peau - MII
    - Bouzinac, Ann Fr Anesth Réanim 2012 Jun; 31(6):571-2.
      - Repérage échographique de la 1ère côte
      - Sonde verticale paramédiane, aiguille in plane

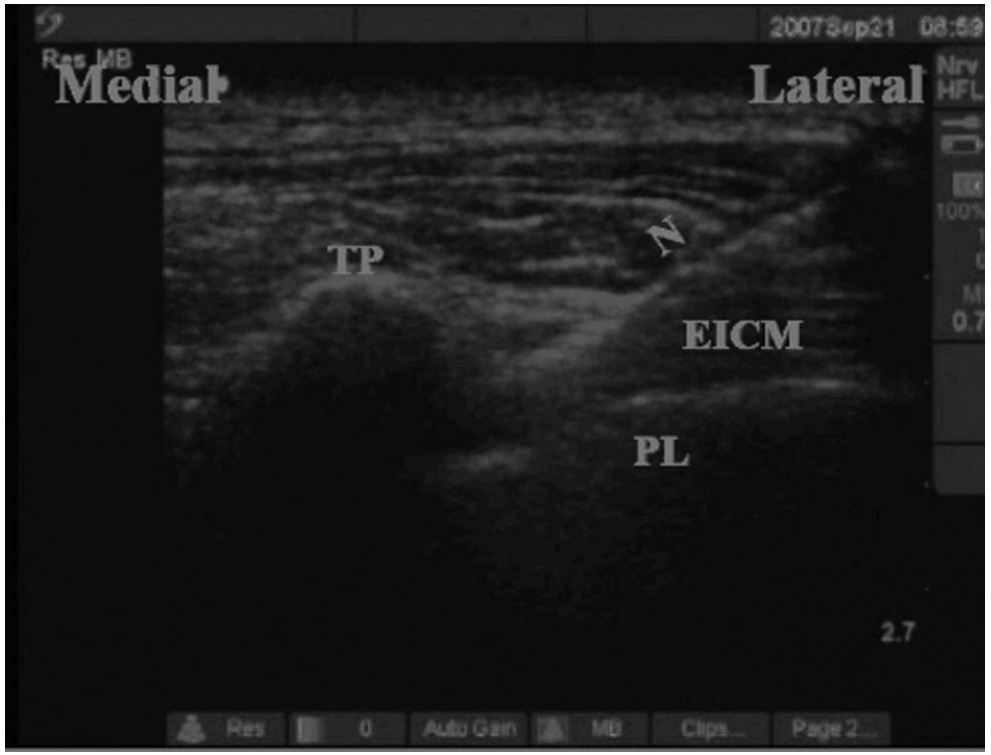
Quelle technique de ponction ?

Ultrasound-Guided Intercostal Approach toThoracic Paravertebral Block

Yasuyuki Shibata, MD; Kimitoshi Nishiwaki, MD, PhD



ANESTHESIA & ANALGESIA®



Anesthesia & Analgesia:
September 2009 - Volume 109 - Issue 3 - pp 996-997
doi: 10.1213/ane.0b013e3181af7e7b
Letters to the Editor: Letters & Announcements

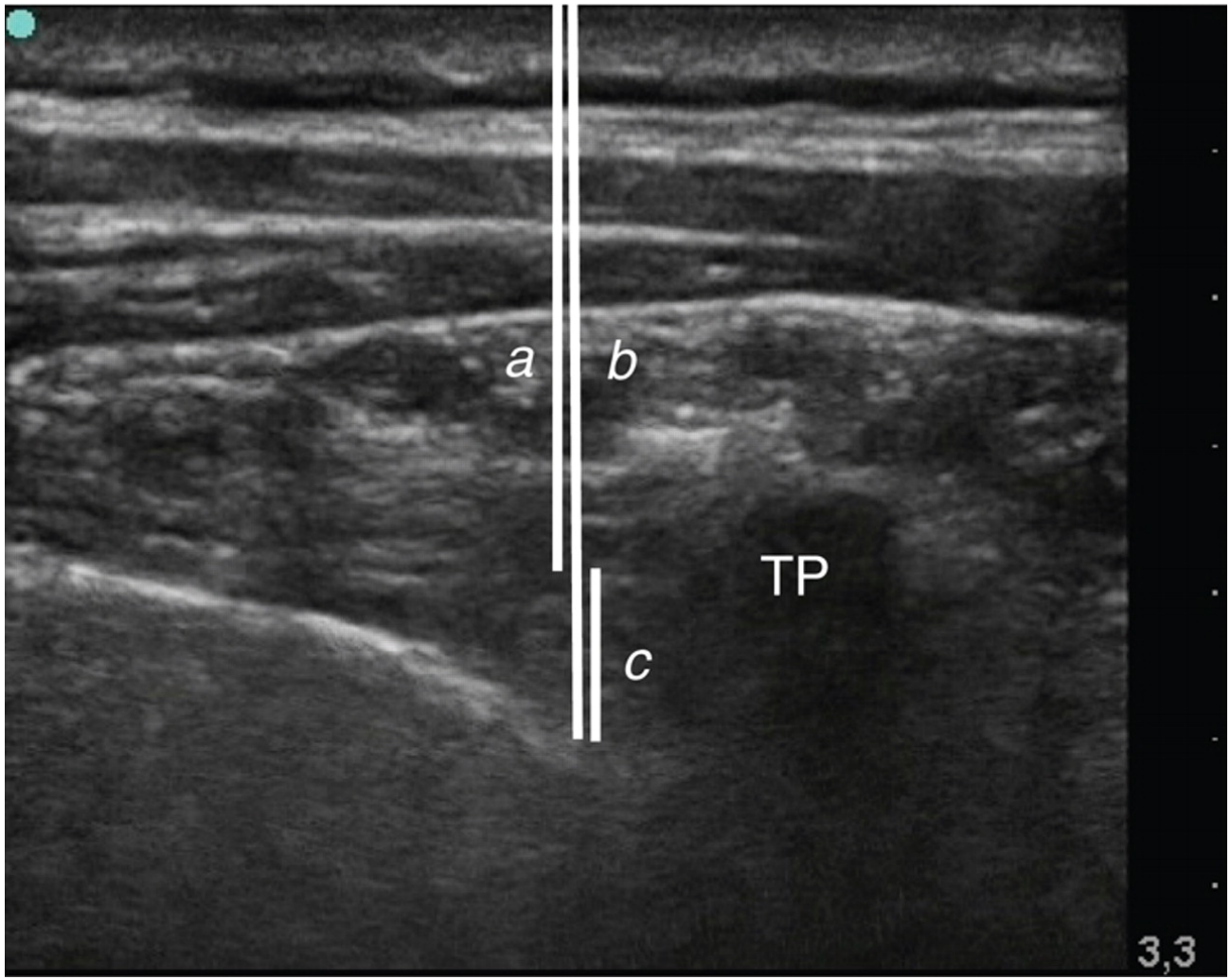
Out-of-plane needle guidance technique for PVB on the right side (simulated image)

P. Marhofer et al. Br. J. Anaesth. 2010;105:526-532

BJA British Journal of Anaesthesia

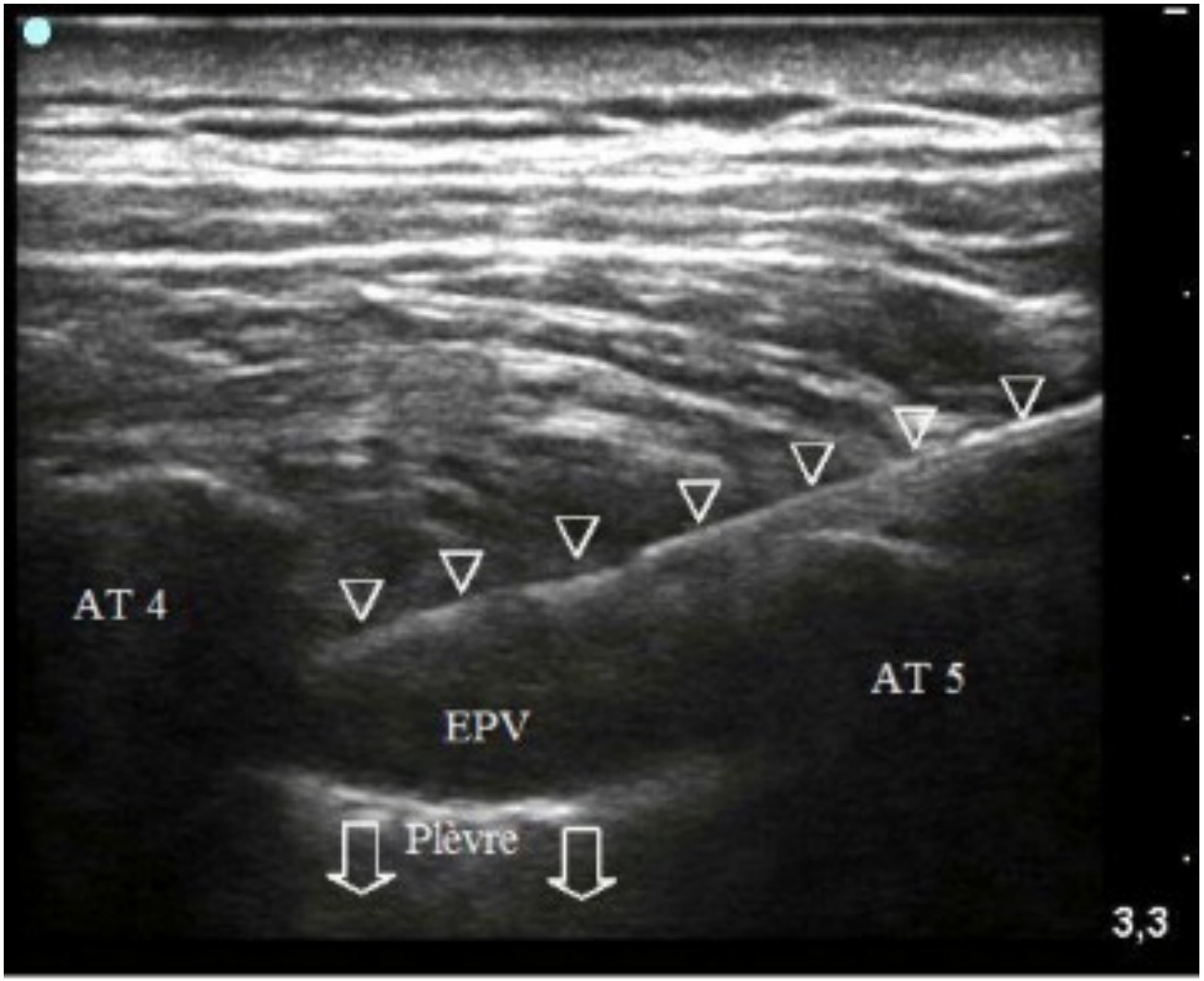
Ultrasound image of the PVS lateral to the TP.

a, distance skin–IIM; b, distance skin–pleura; c, diameter of the PVS.



P. Marhofer et al. Br. J. Anaesth. 2010;105:526-532

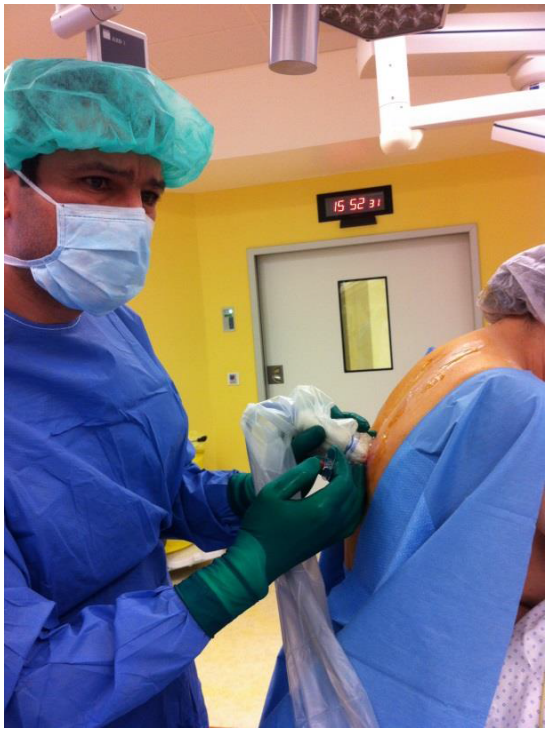
BJA British Journal of Anaesthesia


AT 4
AT 5
EPV
Plèvre
3,3

Le bloc para vertébral en pratique

- **Positionnement du patient : Assis au bord du lit ou DL**

Bouzinac, Ann Fr Anesth Réanim 2012 Jun; 31(6):571-2



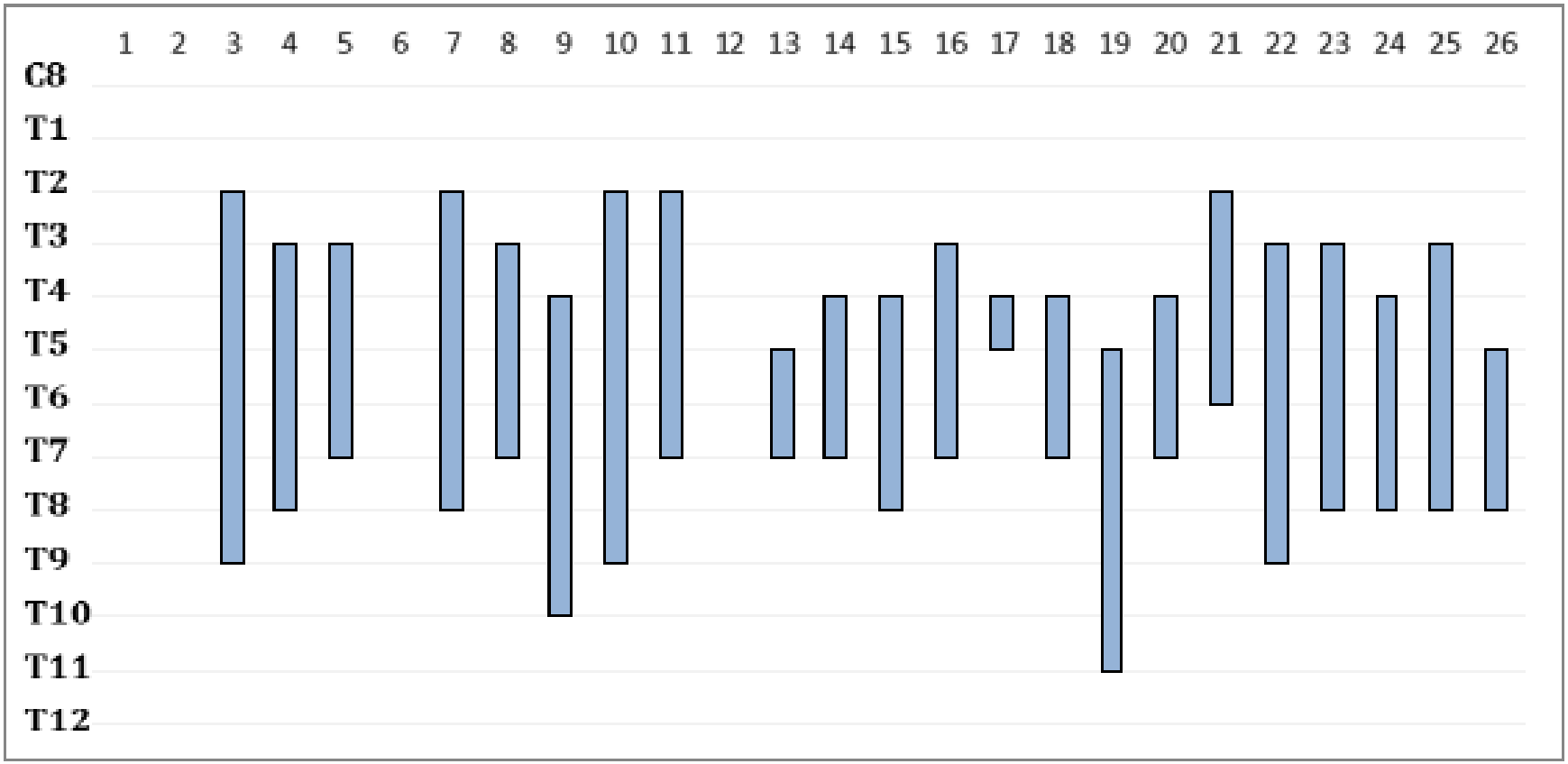
Centre Jean Perrin, Clermont Ferrand

Le bloc para vertébral en pratique

- **Positionnement du patient : Assis au bord du lit ou DL**
- **Patient conscient ou sous AG ?**
  - **Sédation (rémifentanil, hypnovel, propofol)**
  - **Geste douloureux, inconfortable**
  - **Mais perception douloureuse de sensation de décollement profond à l'injection paravertebrale**

Le bloc para vertébral en pratique

- Positionnement du patient : Assis au bord du lit ou DL
- Patient conscient ou sous AG ?
- Quel volume et 1 ou plusieurs injections ?



L'extension du bloc paravertébral pour chaque patient est représentée en bleu. Les correspondances des niveaux anesthésiés sont représentées sur l'axe vertical. Les patients 01, 02, 06 et 12 n'avaient pas de niveau détectable. Le patient 17 présentait une anesthésie intercostale isolée.

Données personnelles : Injection 15 à 20 ml de ropivacaine T4/T5 ou T5/T6

ANESTHESIOLOGY
The Journal of the American Society of Anesthesiologists, Inc.

From: Magnetic Resonance Imaging Analysis of the Spread of Local Anesthetic Solution after Ultrasound-guided Lateral Thoracic Paravertebral Blockade:A Volunteer Study

Anesthesiology. 2013;118(5):1106-1112. doi:10.1097/ALN.0b013e318289465f

Injection au 6ème espace intercostal 20ml mépivacaine 1%

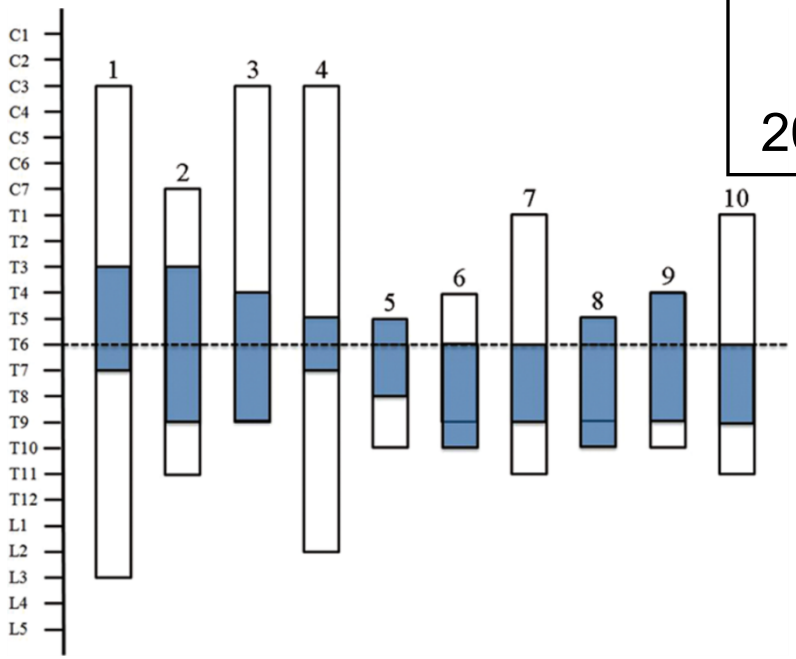


Figure Legend:

Analysis of the spread of local anesthetic solution (full boxes) and sensory evaluation (open boxes) of left thoracic paravertebral blocks. Numbers indicate the consecutive study cases.

ANESTHESIOLOGY
The Journal of the American Society of Anesthesiologists, Inc.

From: Magnetic Resonance Imaging Analysis of the Spread of Local Anesthetic Solution after Ultrasound-guided Lateral Thoracic Paravertebral Blockade:A Volunteer Study

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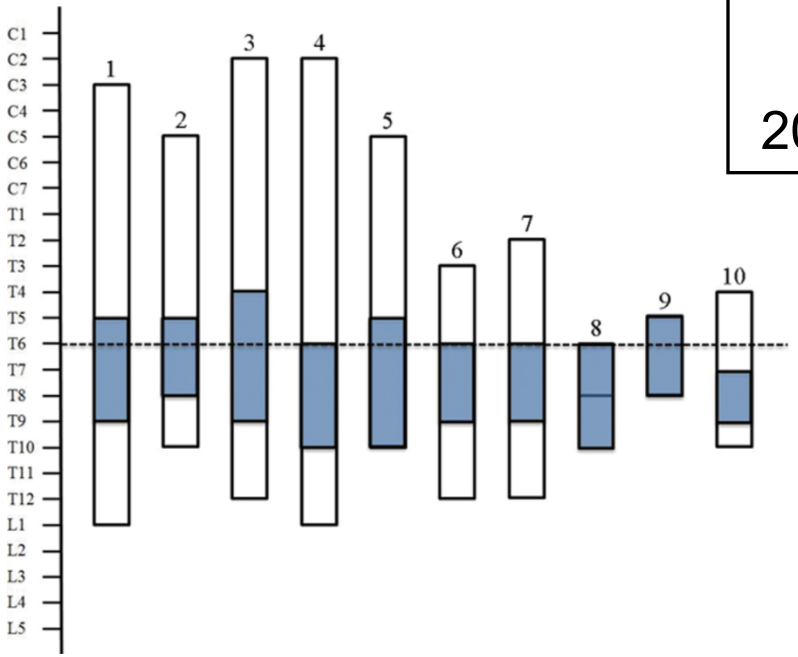


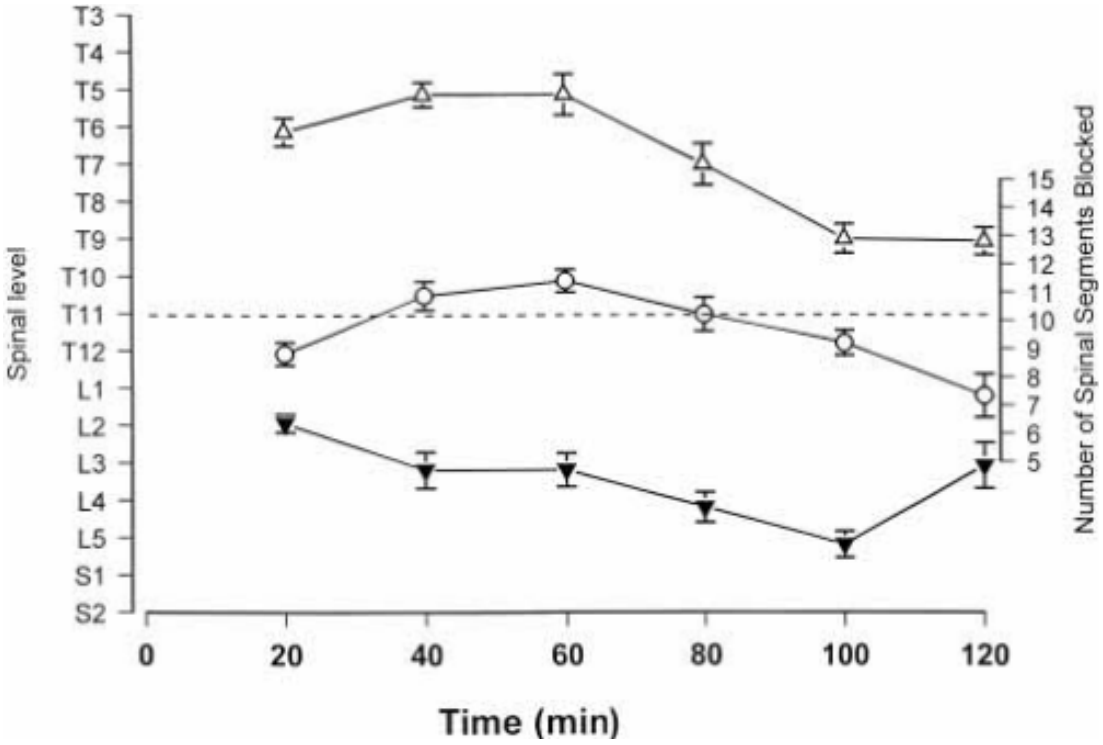
Figure Legend:

Analysis of the spread of local anesthetic solution (full boxes) and sensory evaluation (open boxes) of right thoracic paravertebral blocks. Numbers indicate the consecutive study cases.

11e espace

15ml + 7ml Lidocaine 1%

Volontaire sain



A single-injection, multi-segmental paravertebral block – extension of somatosensory and sympathetic block in volunteers

T. SAITO1, S. DEN1, S. P. S. CHEEMA3, K. TANUMA1, E. CARNEY1, C. CARLSSON2 and J. RICHARDSON3

Departments of Anesthesia, 1The National Cancer Center Hospital, Tokyo, Japan, 2Lund University, Malmo¨, Sweden and 3Bradford Royal Infirmary, Bradford, UK

Thoracic Paravertebral Block: Influence of the Number of Injections

Zoher M. Naja, M.D., Mariam El-Rajab, M.D., Mohamad A. Al-Tannir, M.PH., Fouad M. Ziade, Ph.D., Khalil Tayara, M.D., Fadi Younes, M.D., and Per-Arne Lönnqvist, Ph.D.

Background and Objectives: The purpose of this study was to assess the radiographic and clinical distribution of 1 to 4 paravertebral injections by use of the same total volume of local anesthetic mixture.

Methods: Sixty-nine patients scheduled for surgical interventions suitable for bilateral PVB were included in the study and were randomly assigned to 1 of 3 treatment groups. Group 1 received 4 paravertebral injections on one side versus 1 injection on the contralateral side (23 patients), group 2 received 4 injections versus 2 injections (23 patients), and group 3 received 4 injections versus 3 injections (23 patients).

Results: Sixty-one patients were included in the final analysis, which resulted in 368 thoracic paravertebral injections. Overall, 97% of the patients had adequate loss of sensation within the targeted area at the side of 4 injections, compared with only 11% for the single injections. The average vertical spread of contrast was found to be significantly greater in the set of 4 injections, with mean (SD) 6.5 (2.01) dermatomes, compared with the single injection, with 3.0 (1.19) dermatomes ($P < .05$). The average vertical spread of contrast and complete absence of sensation were significantly greater in the set of 4 injections compared with the set of 2 and 3 injections ($P < .05$).

Conclusion: The main finding of the present study was that multiple paravertebral injections resulted in more reliable radiographic and clinical distribution compared with a single-injection technique. *Reg Anesth Pain Med 2006;31:196-201.*

Table 1. Demographics and Patient Characteristics

Group	Group 1	Group 2	Group 3	*P* Values
Number of patients	18 (29%)	23 (38%)	20 (33%)	
Gender				
Female	13 (72%)	15 (65%)	12 (60%)	.730
Male	5 (28%)	8 (35%)	8 (40%)	
Age (yr)	49.89 (14.5)	49 (14.83)	54.80 (15.52)	.414
	159 [32-81]	48 [19-72]	53 [18-86]	
Height (cm)	161.33 (6.1)	163.17 (6.86)	163.75 (7.28)	.441
	159 [154-175]	162 [156-182]	164.50 [150-175]	
Weight (kg)	65.94 (12.94)	68.17 (11.86)	66.86 (10.56)	.831
	65.50 [48-85]	68 [42-89]	69 [48-84]	
BMI (kg/m^2)	25.24 (4.24)	25.32 (3.82)	25.03 (4.50)	.973
	25.28 [17.85-33.62]	26.12 [17.26-33.69]	24.59 [18.99-35.42]	
Type of surgery/(targeted area)				
Mastectomy (T1-T4)	11 (61%)	5 (22%)	5 (25%)	
Lap cholecystectomy (T6-T9)	6 (33%)	12 (52%)	8 (40%)	
Open cholecystectomy (T6-T9)	0 (0%)	0 (0%)	2 (10%)	
Ventral hernia (T8-T11)	1 (6%)	3 (13%)	4 (20%)	
Thoracotomy (T3-T6)	0 (0%)	2 (9%)	0 (0%)	
Thoracoabdominal pain (T8-T11)	0 (0%)	0 (0%)	1 (5%)	

NOTE. Data presented as mean (SD), median [Min-Max], or number of patients (%) as appropriate. Group 1: 1 injection versus 4. Group 2: 2 injections versus 4. Group 3: 3 injections versus 4.

- 1 injection : 11% de bloc effectif atteint
- 4 injection : 95% de bloc effectif atteint

Table 2. Radiographic Spread and Sensory Distribution Assessed in Group 1

No. of Covered Dermatomes*	1 Injection			4 Injections		
	X-ray	++	+	X-ray	++	+
1	1 (6%)	4 (22%)				
2	6 (33%)	5 (28%)	2 (11%)			
3	6 (33%)	7 (39%)	6 (33%)			
4	2 (11%)	2 (11%)	6 (33%)	3 (17%)	10 (56%)	
5	3 (17%)		3 (17%)	3 (17%)	6 (33%)	2 (11%)
6			1 (6%)	4 (22%)	2 (11%)	7 (39%)
7				4 (22%)		2 (11%)
8				1 (6%)		3 (17%)
9				1 (6%)		1 (6%)
10				1 (6%)		3 (17%)
11				1 (6%)		
Total	18	18	18	18	18	18
Targeted area covered†	5 (28%)	2 (11%)	8 (44%)	18 (100%)	18 (100%)	18 (100%)
Spread above target area	1 (6%)	0 (0%)	2 (11%)	4 (22%)	2 (11%)	5 (28%)
Spread below target area	2 (11%)	0 (0%)	3 (17%)	13 (72%)	7 (39%)	16 (89%)
Intercostal spread	5 (28%)			7 (39%)		

NOTE. Data presented as number of patients (%). Complete absence of sensation is indicated by ++; partial sensation is indicated by +.

*Paired *t*-test for comparison between 1 injection and 4 injections within group 1 for X-ray, complete loss of sensation, and partial sensation (*P* value = .0001, *P* value = .0001, and *P* value = .0001, respectively).

†Wilcoxon signed-ranks test for comparison of covered targeted area between 1 injection and 4 injections within group 1 for X-ray, complete loss of sensation, and partial sensation (*P* value = .0001, *P* value = .0001, and *P* value = .002, respectively).

Le bloc para vertébral en pratique

- Positionnement du patient : Assis au bord du lit ou DL
- Patient conscient ou sous AG ?
- Quel volume et 1 ou plusieurs injections ?
- Anesthésiques locaux et adjuvants ?

Le bloc para vertébral en pratique

- **Positionnement du patient : Assis au bord du lit ou DL**
- **Patient conscient ou sous AG ?**
- **Quel volume et 1 ou plusieurs injections ?**
- **Anesthésiques locaux et adjuvants ?**
  - Sahar Abd-Elbaky Mohamed, MD, Khaled M. Fares, MD, Ashraf Amin Mohamed, MD, and Nelly H Alieldin, MD.

    Dexmedetomidine as an Adjunctive Analgesic with Bupivacaine in Paravertebral Analgesia for Breast Cancer Surgery *Randomized Trial 2014*

Le bloc para vertébral en pratique

- Positionnement du patient : Assis au bord du lit ou DL
- Patient conscient ou sous AG ?
- Quel volume et 1 ou plusieurs injections ?
- Anesthésiques locaux et adjuvants ?
- Quel cathéter paravertébral ?

British Journal of Anaesthesia **106** (2): 246–54 (2011)
Advance Access publication 25 November 2010 · doi:10.1093/bja/aeq309

BJA

REGIONAL ANAESTHESIA

Ultrasound-guided thoracic paravertebral puncture and placement of catheters in human cadavers: where do catheters go?†

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Le bloc para vertébral en pratique

- Positionnement du patient : Assis au bord du lit ou DL
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- Anesthésiques locaux et adjuvants ?
- Quel cathéter paravertébral ? Queue de cochon

Anaesthesia 2012, 67, 250–255 doi:10.1111/j.1365-2044.2011.06988.x

Original Article

Placement of coiled catheters into the paravertebral space*

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2 Medical Student, University of Bern, Bern, Switzerland
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Complication et Echec du bloc paravertebral

P.A. Lonnqvist Anaesthesia, 1995, Volume 50, pages 8 13-8 15

Paravertebral blockade Failure rate and complications

Technique per cutanée,
369 patients (319 adultes),
Echec : 10,7 %
Hypotension artérielle : 5,0%
Ponction vasculaire : 3,2%
Ponction pleurale :
0,9 % dont 1/3 de pneumothorax

Table 1. Physical characteristics and details of the paravertebral blocks performed in the groups shown.

	Adults ($n = 319$)	Children ($n = 48$)
Male/female	166/153	29/19
Age: median (range); years	61 (16–93)	3.0 (0.1–15.0)
Nature of block		
Thoracic block	259	46
Lumbar block	60	2
Catheter inserted	65	40
Failed block	34	3
Complications		
Pleural puncture	3	1
Pneumothorax	1	0
Bloodstained aspirate	12	2
Hypotension	16	0

Complication et Echec du bloc paravertebral

En 2001 :

620 adultes 42 enfants

Echec : 6,1% adulte uniquement

Injection intrathécale ou épidurale : 1%

Ponction vasculaire : 6%

Ponction pleurale 0,8% et Pneumothorax 0,5%

Bloc bilatéral

Echec 6,1 à 10%

ÎÎ Ponction pleural et pneumothorax

General anaesthesia versus thoracic paravertebral block for breast surgery: A meta-analysis

Youssef Tahiri [a,*], De Q.H. Tran [b], Jeanne Bouteaud [c], Liqin Xu [c], Don Lalonde [d], Mario Luc [a], Andreas Nikolis [e]

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[b] Department of Anesthesia, McGill University Health Center, Montreal General Hospital, 1650 Cedar Avenue, Montreal, Quebec H3G 1A4, Canada
[c] Faculty of Medicine, McGill University, 3655 Promenade Sir William Osler, Montreal, Quebec H3G 1Y6, Canada
[d] Plastic Surgery, Dalhousie University, Hilyard Place, 600 Main Street, Suite 204, Saint John, New Brunswick E2K 1J5, Canada
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Received 4 January 2011; accepted 14 March 2011

10 à 13% d'échec
Complications : 0 à 12 %
Hypotension/Bradycardie
Franchissement péridural
Pneumothorax
Anesthésiste dépendant
(minimum15 procédures)

Magnetic Resonance Imaging Analysis of the Spread of Local Anesthetic Solution after Ultrasound-guided Lateral Thoracic Paravertebral Blockade

A Volunteer Study

Daniela Marhofer, M.D.,* Peter Marhofer, M.D.,† Stephan C. Kettner, M.D.,‡ Edith Fleischmann, M.D.,§ Daniela Prayer, M.D.,|| Melanie Schernthaner, M.D.,# Edith Lackner,** Harald Willschke, M.D.,†† Pascal Schwetz,‡‡ Markus Zeitlinger, M.D.§§

25% de passage épidural

LA was detected in six cases outside the TPVS: prevertebral for both sides in volunteer no. 3; posterior to the internal intercostal membrane in volunteers no. 4 and no. 5 on the left side, and in volunteer no. 8 on the right side; a contralateral distribution in volunteer no. 5 for the right-sided TPVB. An epidural distribution of LA was detected in five cases (=25%; in volunteers no. 4, no. 9, and no. 10 on the left side and in volunteers no. 1 and no. 9 on the right side). Thus, a spread of LA outside the TPVS was detected in eight of 20 cases (40%), whereas a detection of LA posterior to the internal intercostal membrane (3/20 cases = 15%) could be puncture related.

Volunteer no. 4 required hemodynamic therapy after blockade on the left side, and volunteer no. 2 required hemodynamic therapy after blockade on the right side. Both volunteers returned to initial hemodynamic values after 0.8 mg glycorpyrrolate and 4 mg etilefrine. No case of pneumothorax (detected clinically and *via* MRI), infection, or hematoma was detected.

Les techniques alternatives

- **En chirurgie mammaire :**
  - **Bloc pectoraux Pec1 et Pec 2**
  - **Infiltration chirurgicale ou cathéter chirurgical : Oui ou Non**

Anesth Analg. 2008 Mar;106(3):997-1001, table of contents. doi: 10.1213/ane.0b013e31816152da.

A prospective comparison of continuous wound infiltration with ropivacaine versus single-injection paravertebral block after modified radical mastectomy.

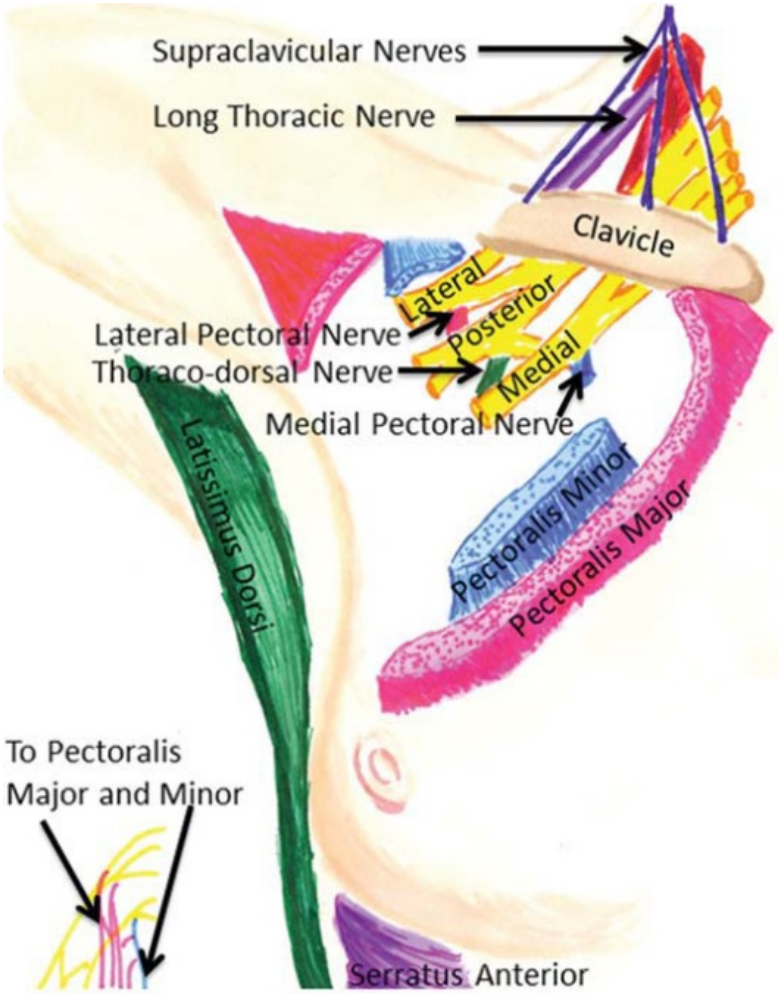
Sidiropoulou T[1], Buonomo O, Fabbi E, Silvi MB, Kostopanagiotou G, Sabato AF, Dauri M.

Springerplus. 2014 Sep 11;3:517. doi: 10.1186/2193-1801-3-517. eCollection 2014.

Continuous paravertebral block for postoperative pain compared to general anaesthesia and wound infiltration for major oncological breast surgery.

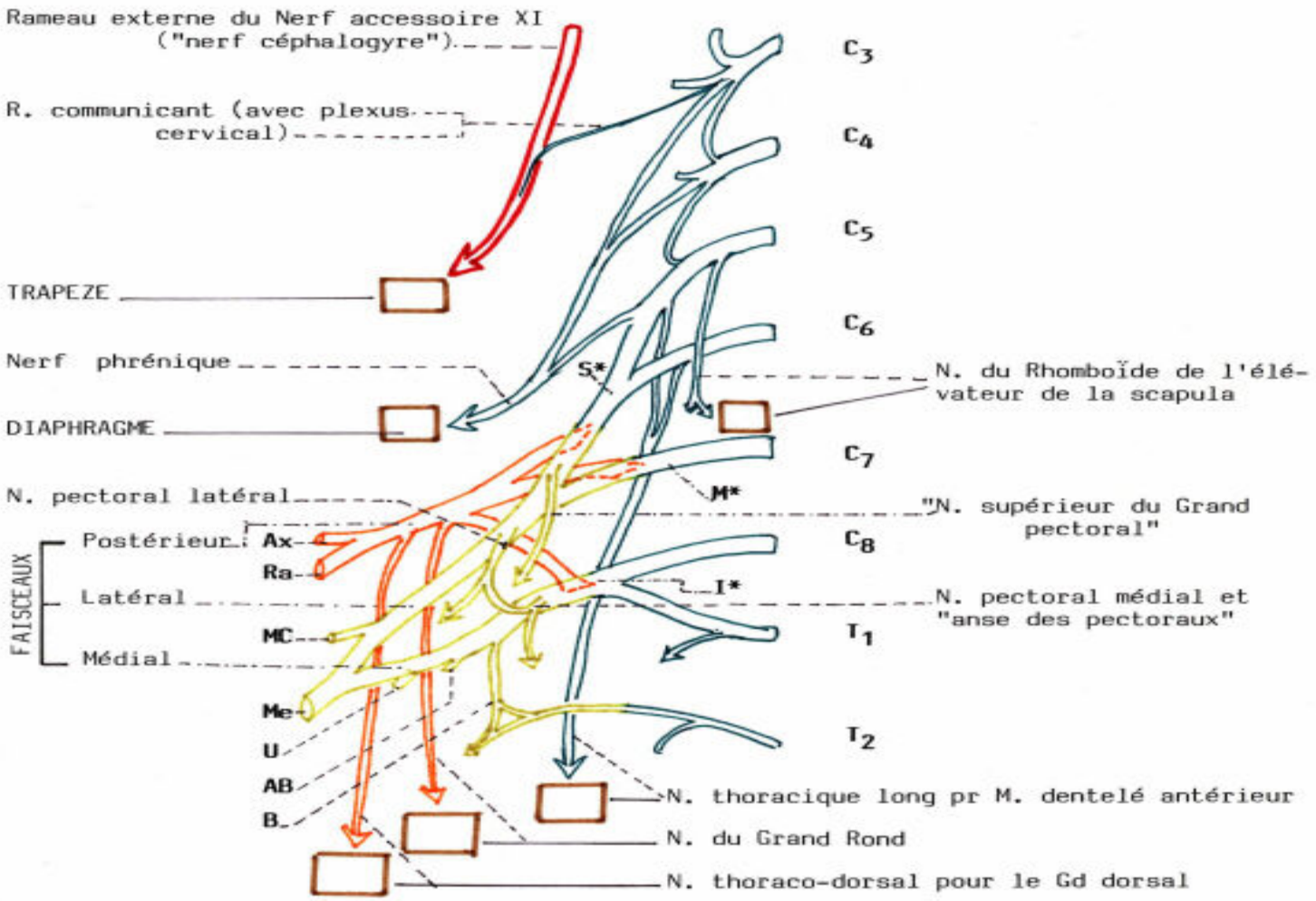
Bouman EA[1], Theunissen M[1], Kessels AG[2], Keymeulen KB[3], Joosten EA[1], Marcus MA[4], Buhre WF[1], Gramke HF[1].

Les techniques alternatives



Clinical Anatomy 24:202–208 (2011)

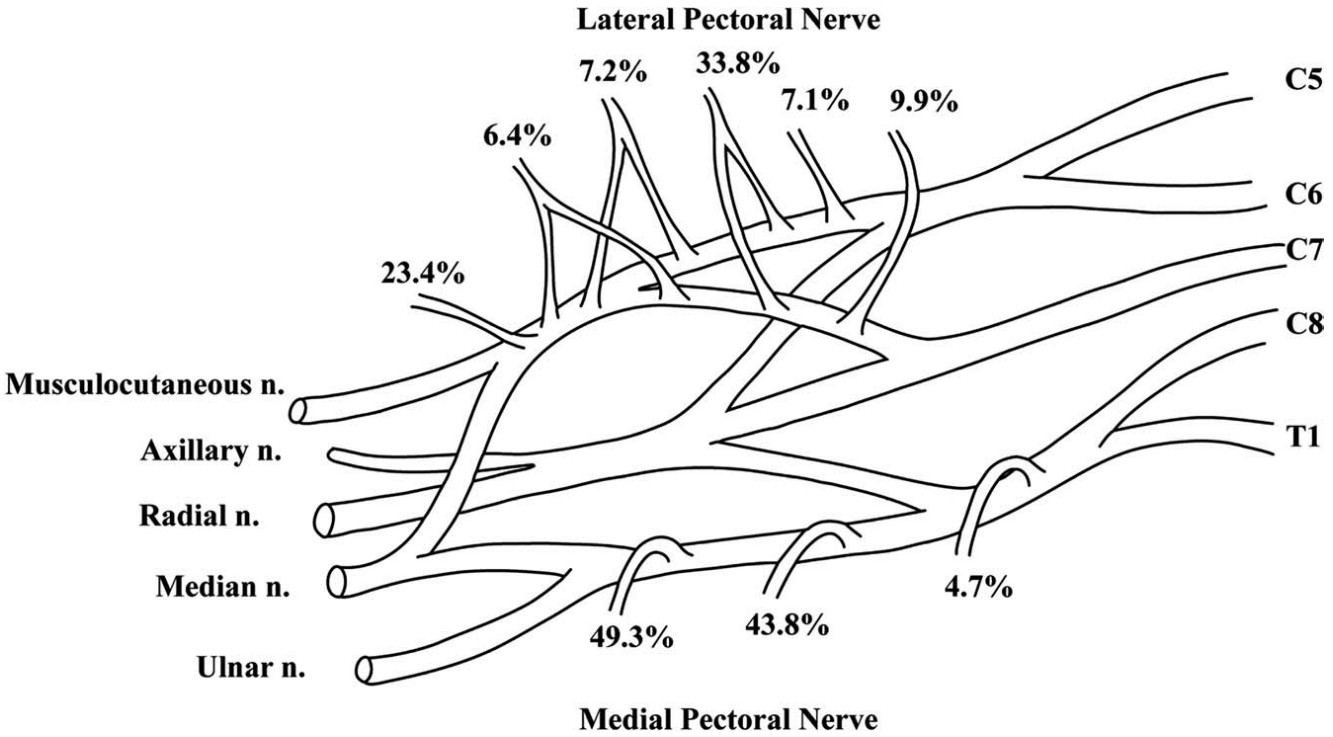
Les techniques alternatives



** Plexus brachial Branches terminales : les Rameaux Axillaire Ax, Radial Ra, Musculo cutané MC, Médian Me, Ulnaire U, Cutané Médial de l'Avant-bras AB, et Cutané Médial du bras B.

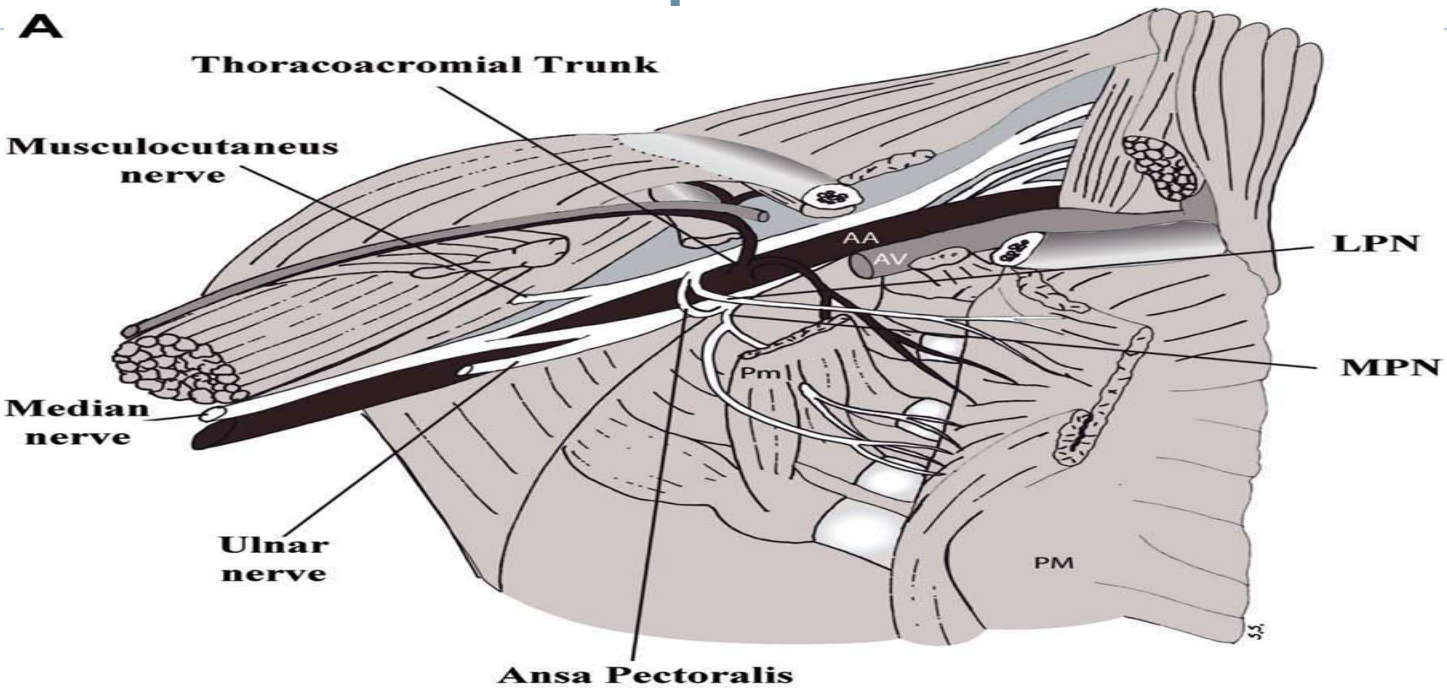
Les techniques alternatives

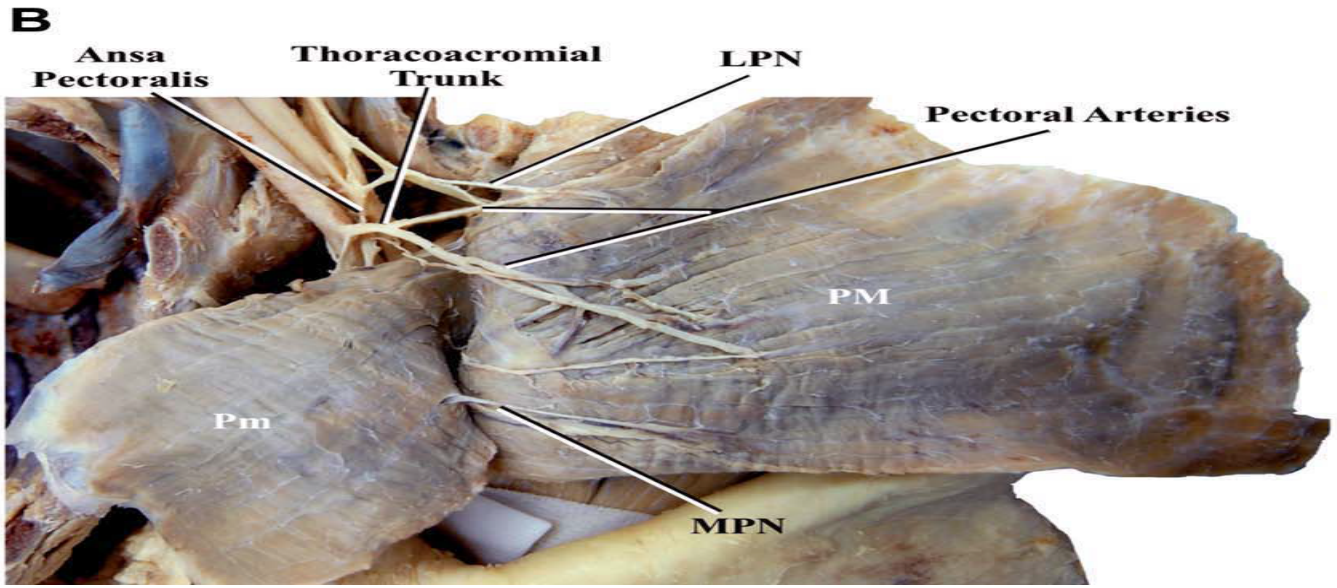
Surgical Anatomy of the Pectoral Nerves and the Pectoral Musculature
ANDREA PORZIONATO, VERONICA MACCHI, CARLA STECCO,MARIOS LOUKAS, R. SHANE TUBBS,AND RAFFAELE DE CARO1
Clinical Anatomy 25 (2012)

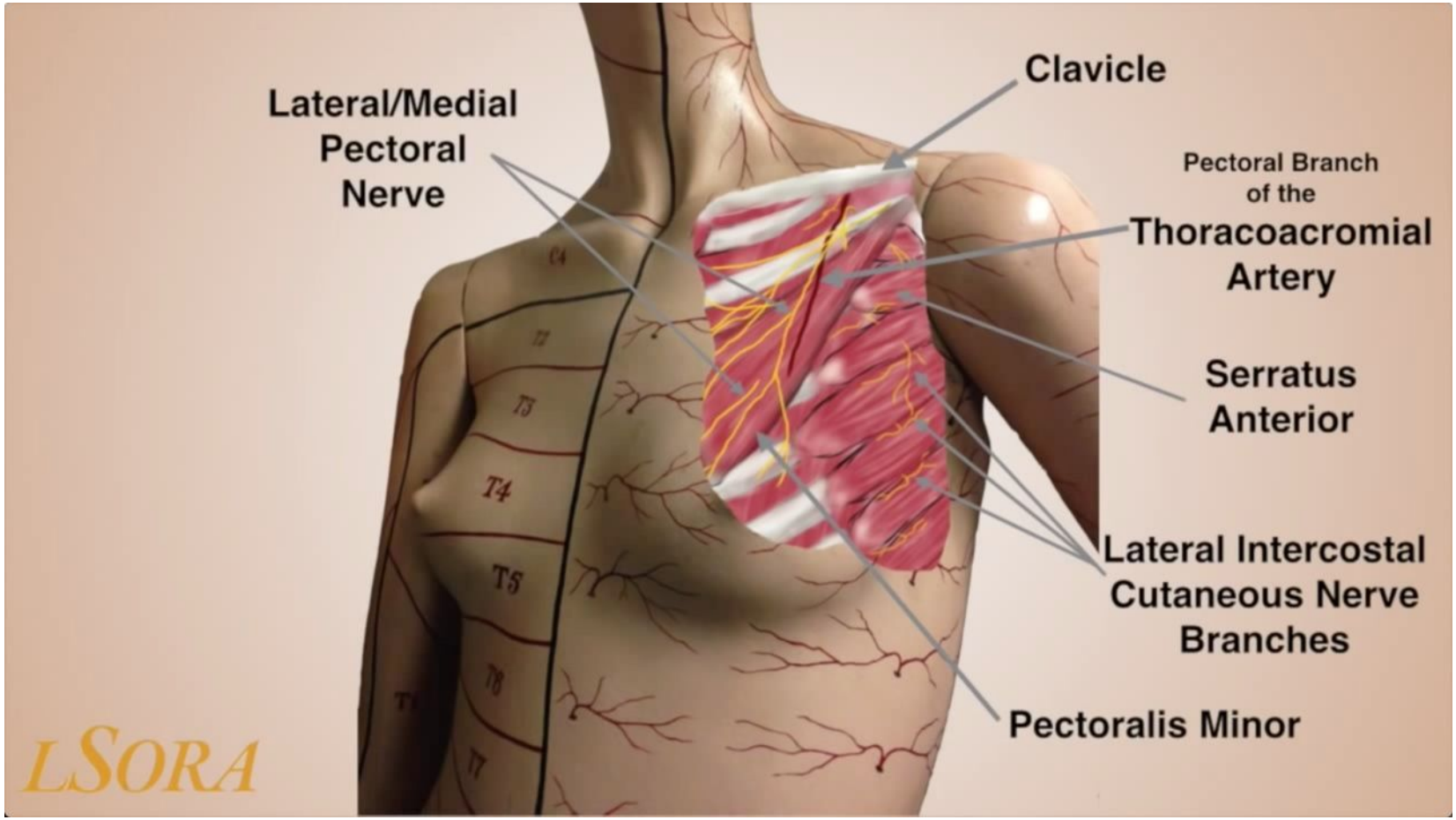


Origine et émergence tronculaire des nerfs pectoraux

Les techniques alternatives

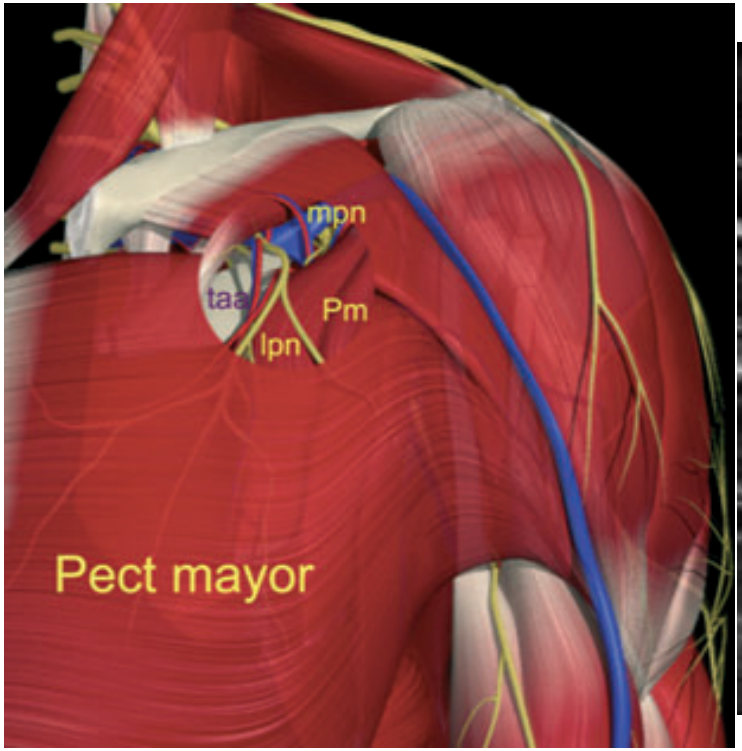


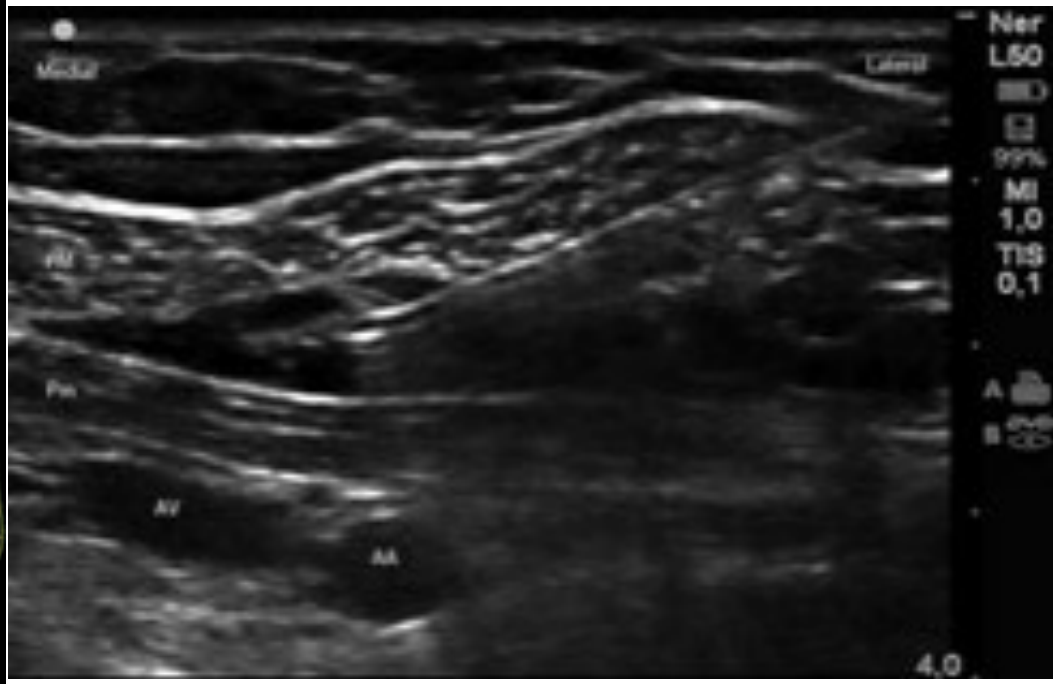



Clavicle
Lateral/Medial
Pectoral
Nerve
Pectoral Branch
of the
Thoracoacromial
Artery
Serratus
Anterior
Lateral Intercostal
Cutaneous Nerve
Branches
Pectoralis Minor
C4
T3
T4
T5
T6
T7
LSORA

Les techniques alternatives

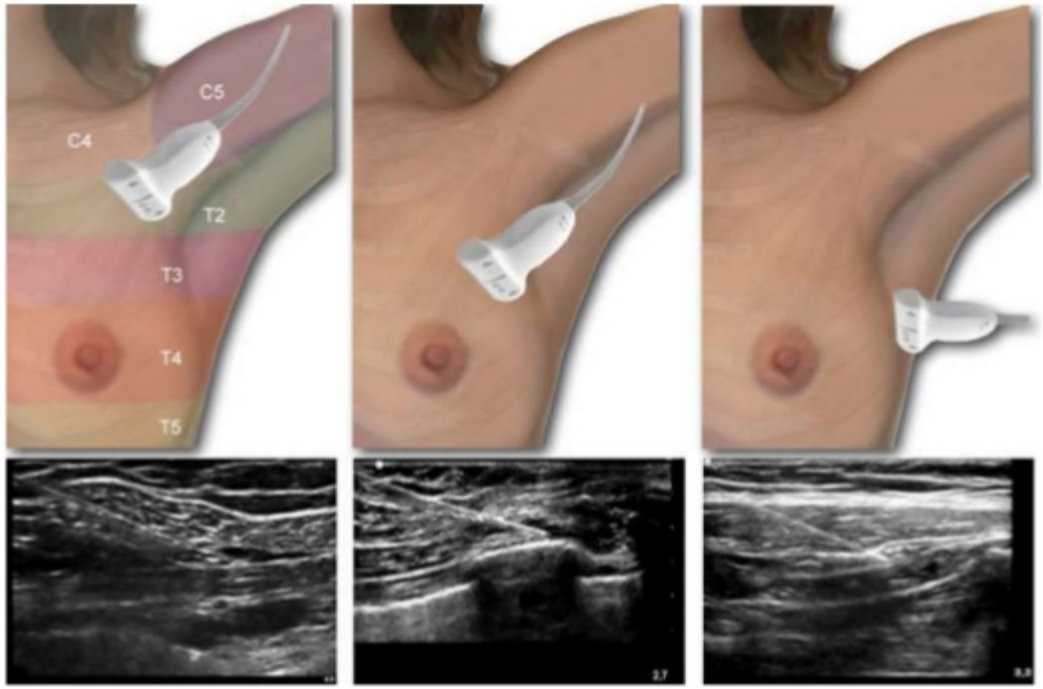
PEC 1





The ‘pecs block’: a novel technique for providing analgesia after breast surgery

Anaesthesia 2011 The Association of Anaesthetists of Great Britain and Ireland


C5
C4
T2
T3
T4
T5

Merci de votre attention

CONCLUSION : Echange d'expérience

- 200 à 300 thoracoscopies : BPV unique
  - Réduction des doses de morphiniques per opératoire
  - Douleur mixte en post opératoire : Drain, douleur projetée
- 150 thoracotomies : APD ou cathéter paravertébral
- Chirurgie du sein :
  - Chirurgie majeure ± reconstruction : BPV
  - Chirurgie mineure : 2 expériences sous ALR pure
- Problématique :
  - Convaincre ses collègues anesthésistes et chirurgiens
  - Apprentissage des techniques