

# Blocs de la paroi abdominale

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5 octobre 2015



# Introduction

- Bloc anesthésique et analgésique
- Analgésie en chirurgie pédiatrique
- Echographie : nouveaux blocs
- Chirurgie lourde: intérêt discuté vs APD ?

# 1 : la paroi

- plans musculaires
- vascularisation
- innervation

# Le contenant

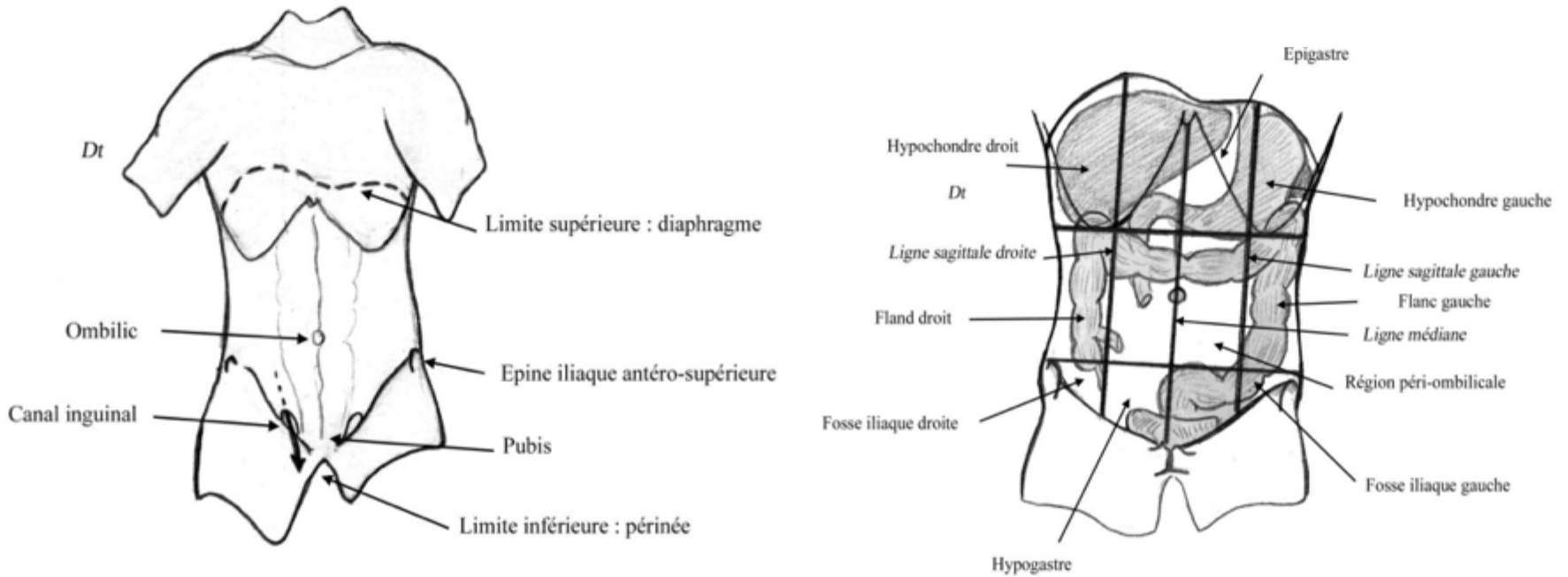
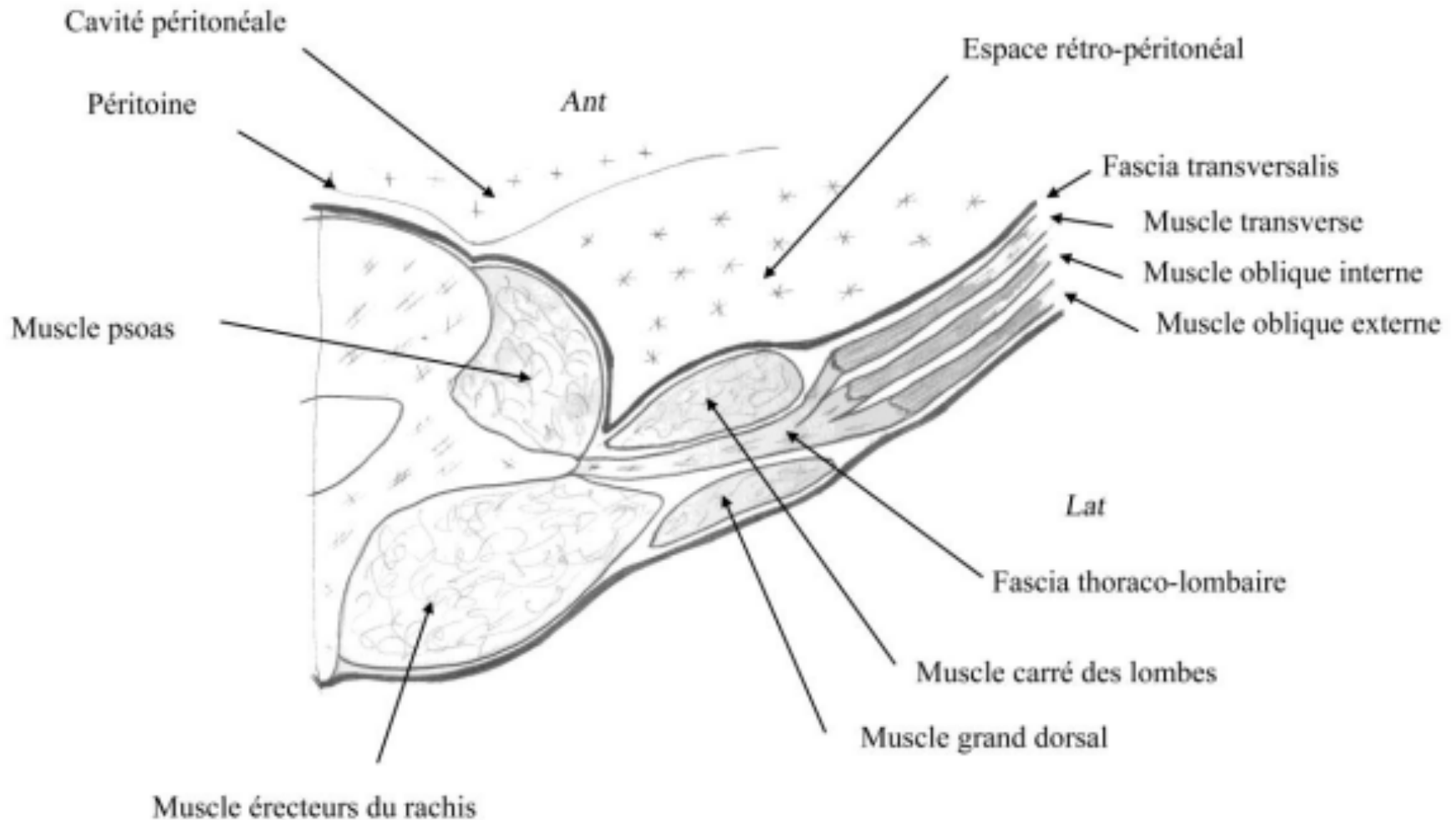
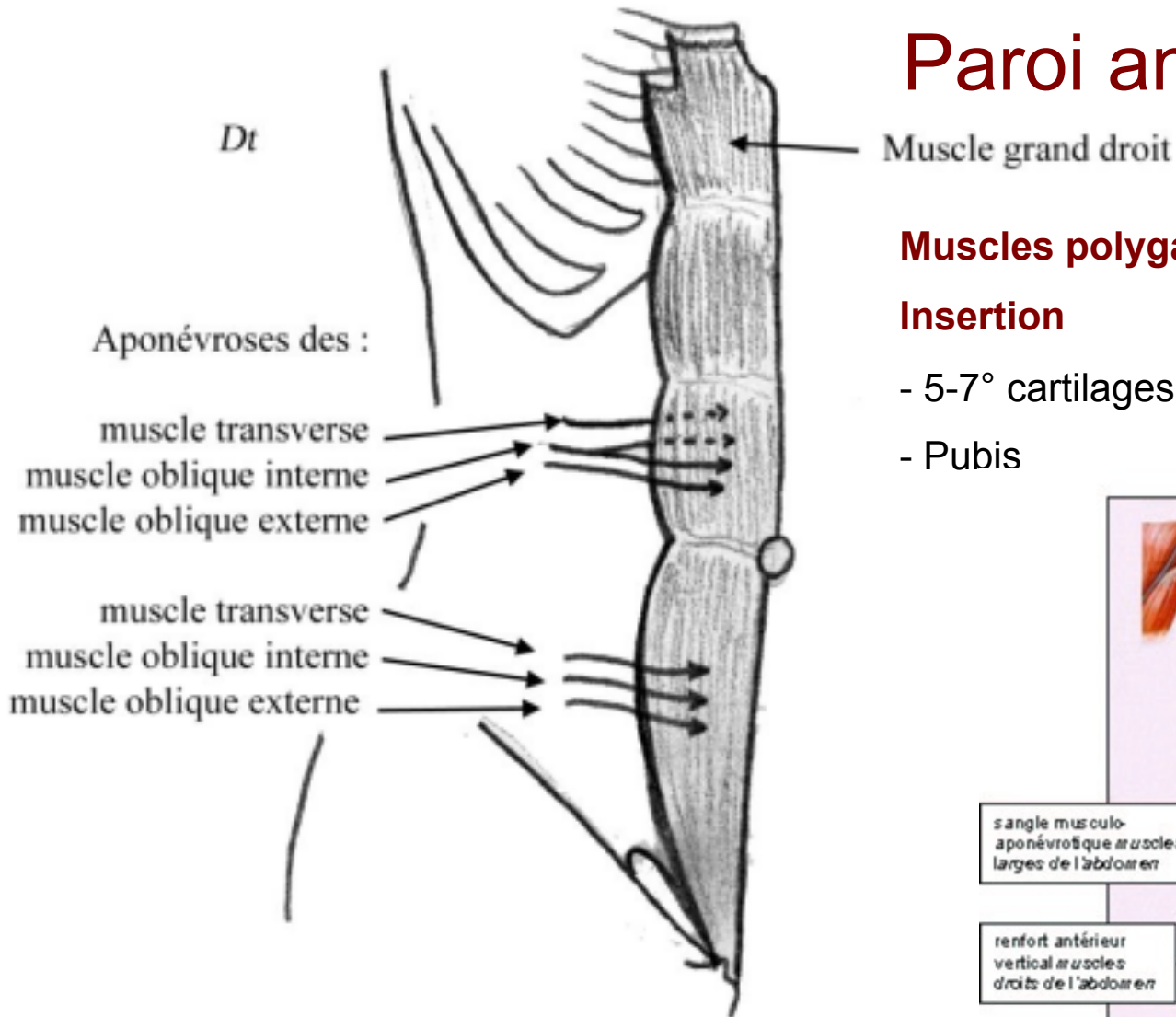


Figure 1 : Vue antérieure des parois antéro-latérales

# Paroi postérieure : un passage



# Paroi antérieure



**Muscles polygastrique** (3-4 tendons)

## Insertion

- 5-7° cartilages chondrocostaux => xiphoïde
- Pubis

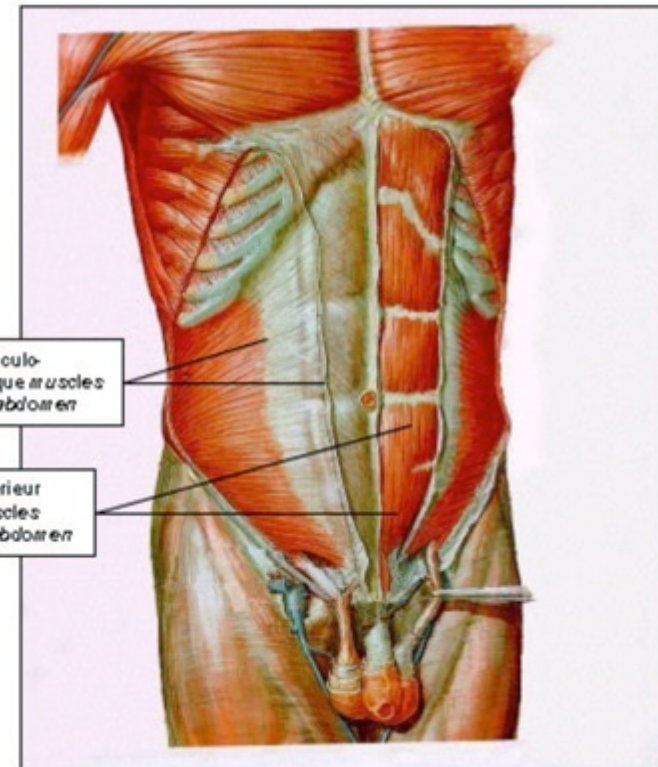


Figure 7 : Vue antérieure du muscle droit droit.

# Paroi antérieure

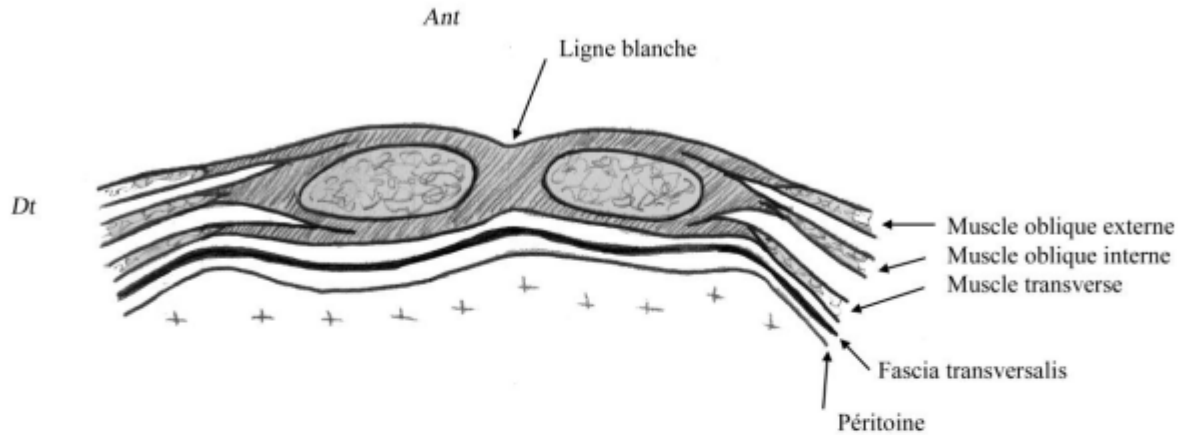


Figure 8 : Coupe horizontale de la gaine des muscles droits dans les 2/3 supérieurs

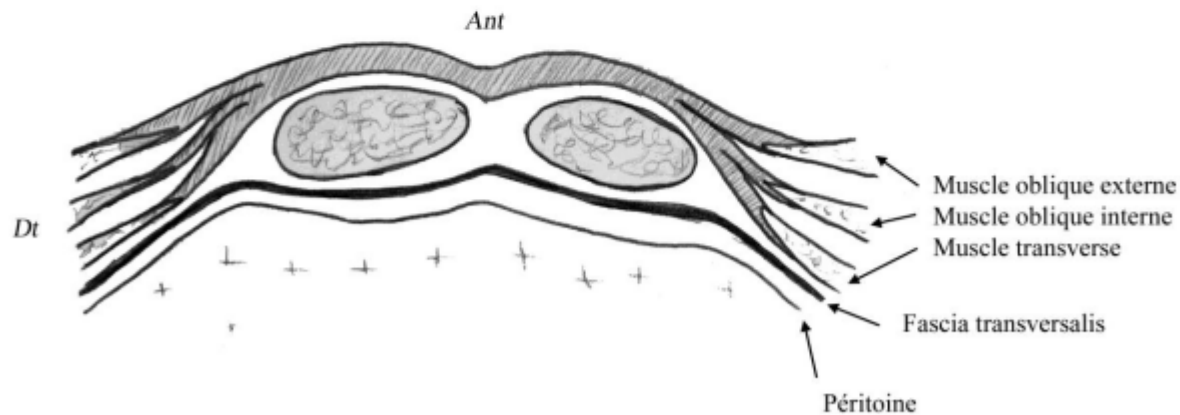
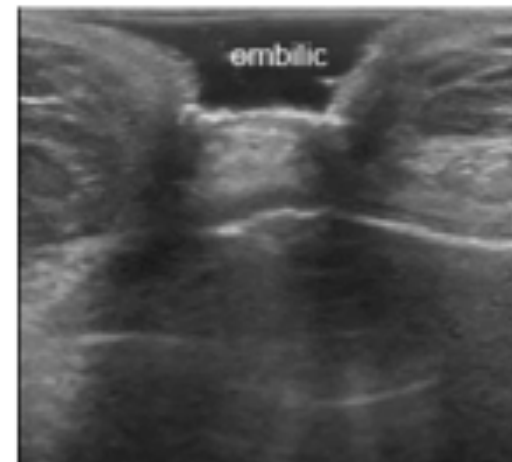
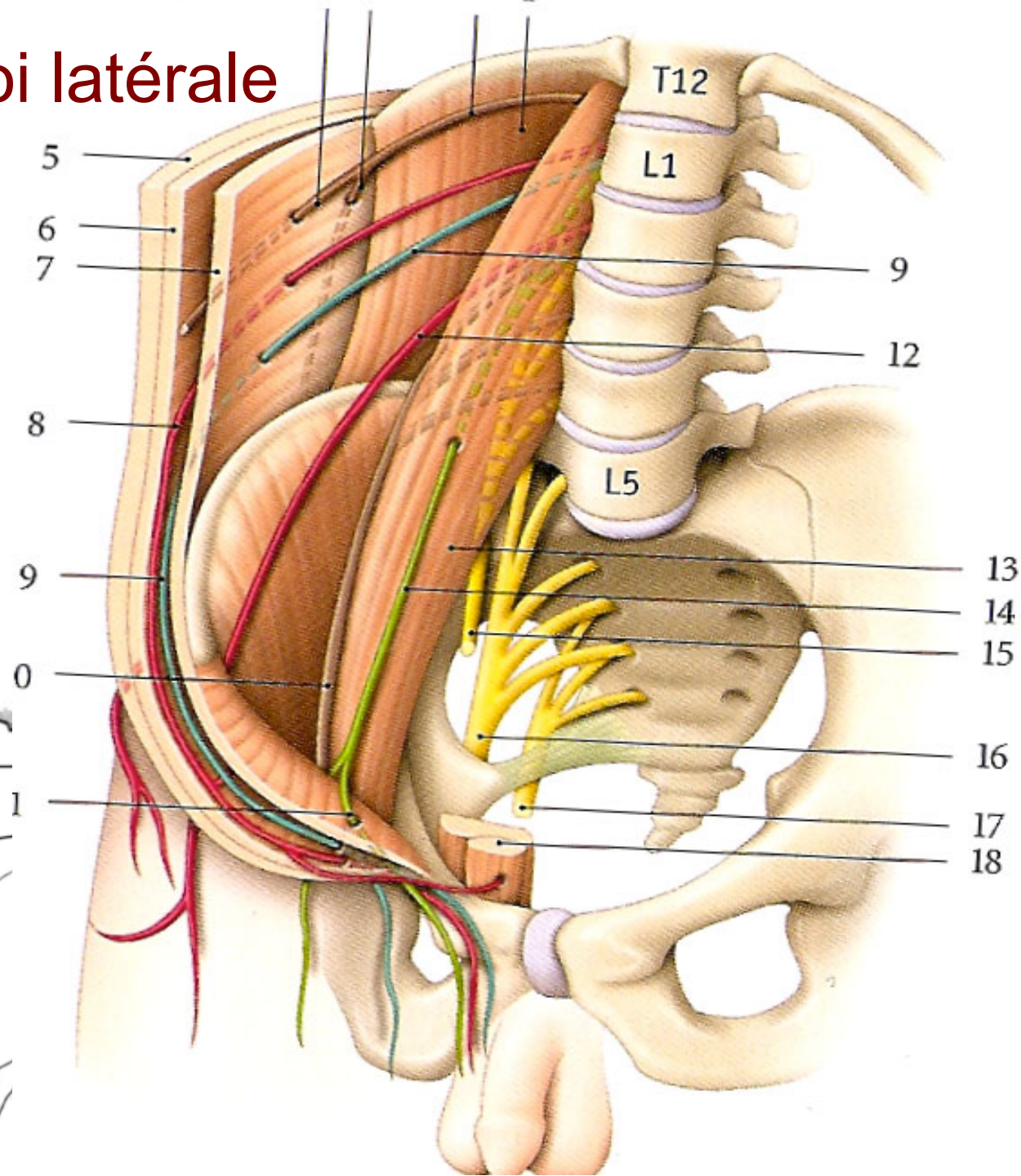


Figure 9 : Coupe horizontale de la gaine des muscles droits dans le 1/3 inférieur



# Paroi latérale

- 1 : carré des lombes
- 2 : n. subcostal (T12)
- 3 et 4: n. lat et ant subcostal
- 5,6, 7 : m oblique ext, int, trans
- 8 : n; Ilio-inguinal
- 9 : n.Ilio-hypogastrique
- 10 : n.femoral
- 11 : anneau inguinal
- 12 : n. cutan lat
- 13 : m psoas
- 14 : n.génito-fémoral



*Dt*

Muscle carré des lombes

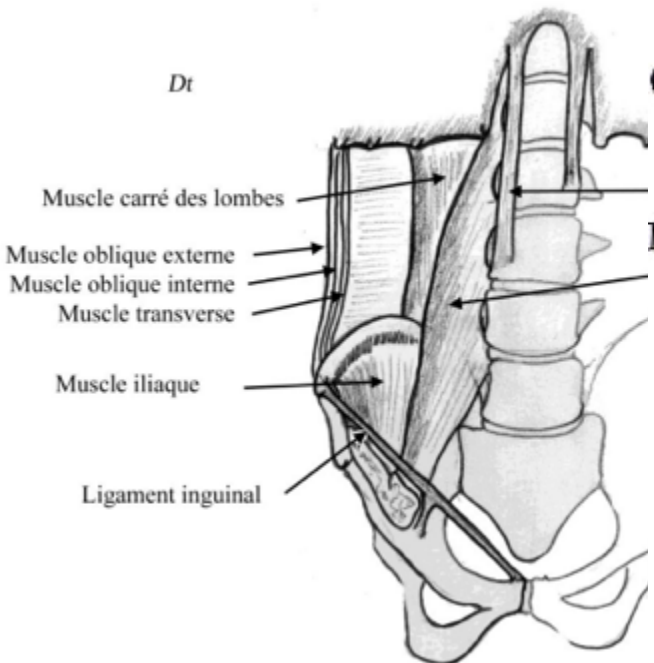
Muscle oblique externe

Muscle oblique interne

Muscle transverse

Muscle iliaque

Ligament inguinal







# Paroi latérale

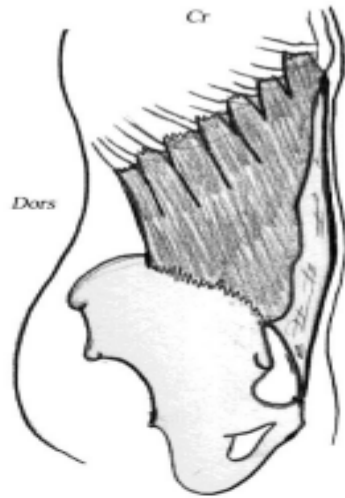


Figure 10 : Vue latérale du muscle oblique externe

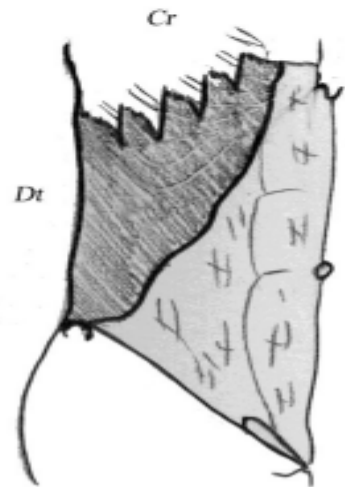


Figure 11 : Vue antérieure du muscle oblique externe



Figure 13 : Vue latérale du muscle oblique interne

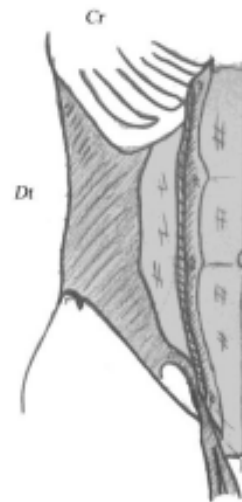


Figure 14 : Vue antérieure du muscle oblique interne

# Vascularisation

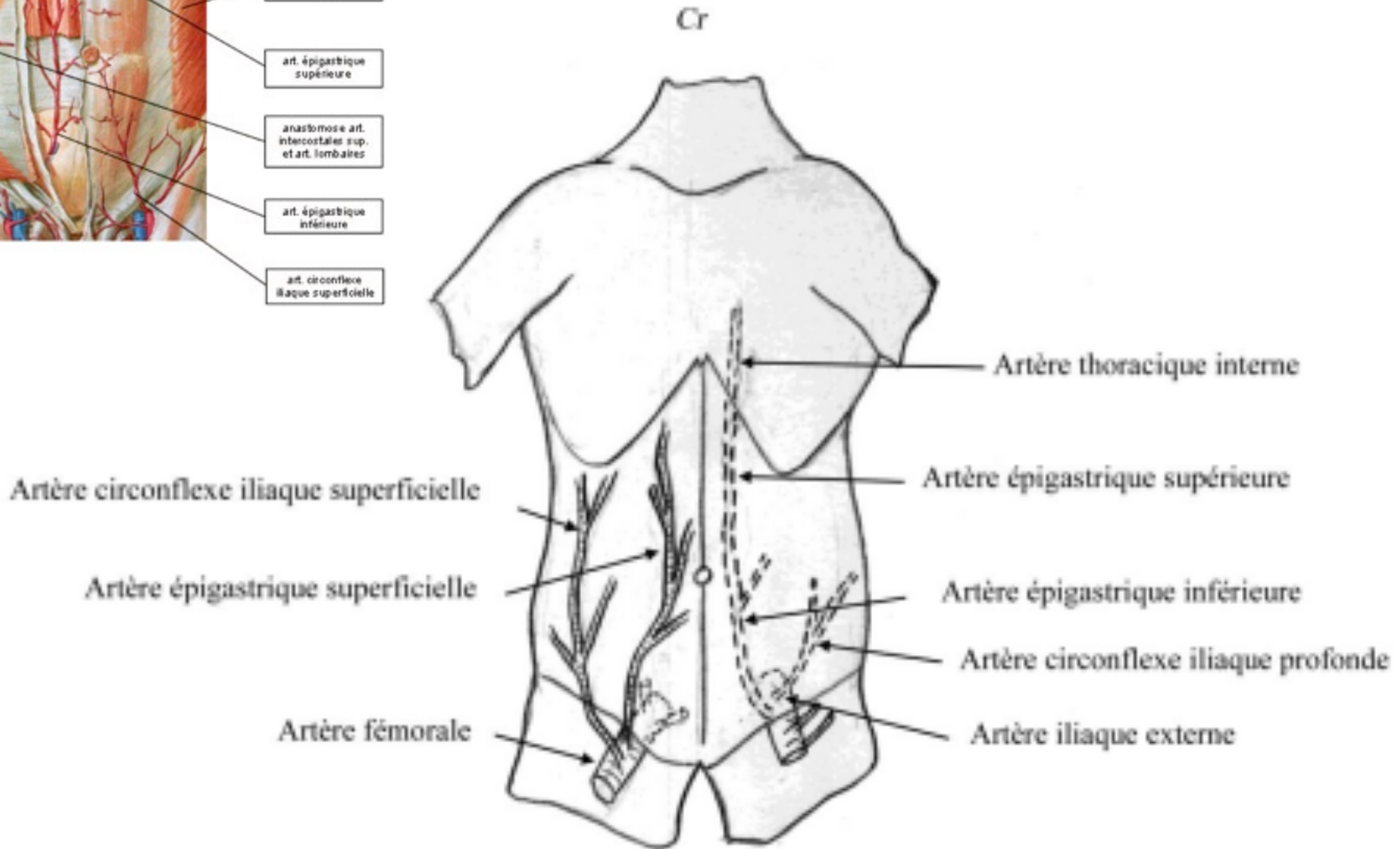
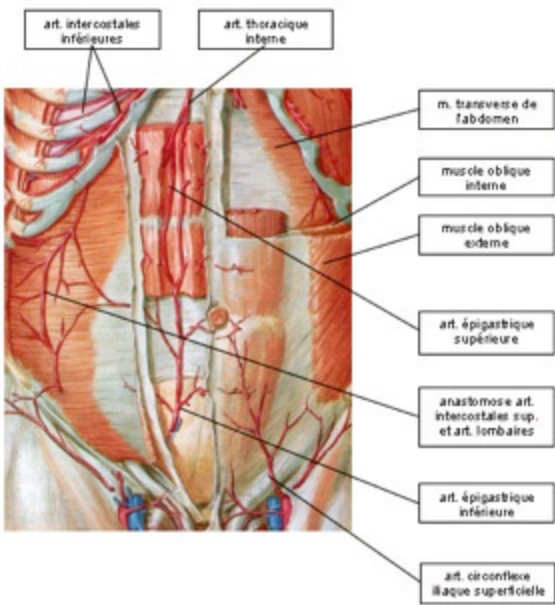
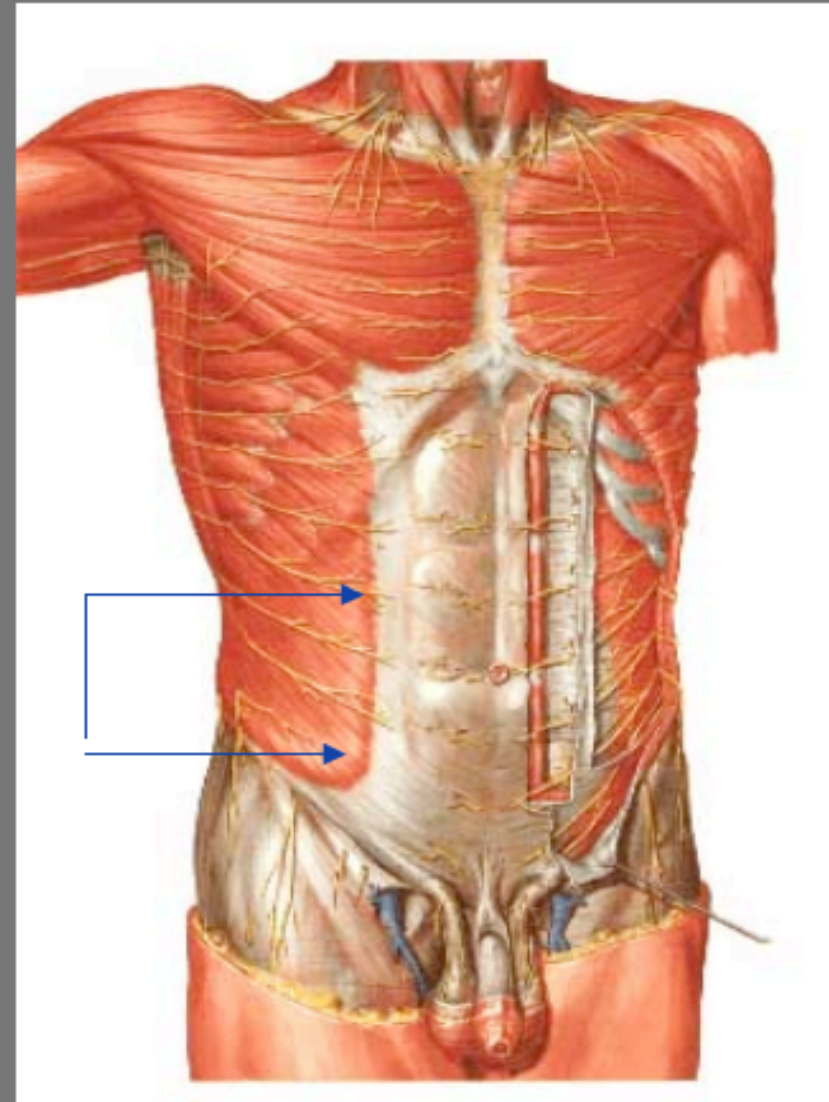
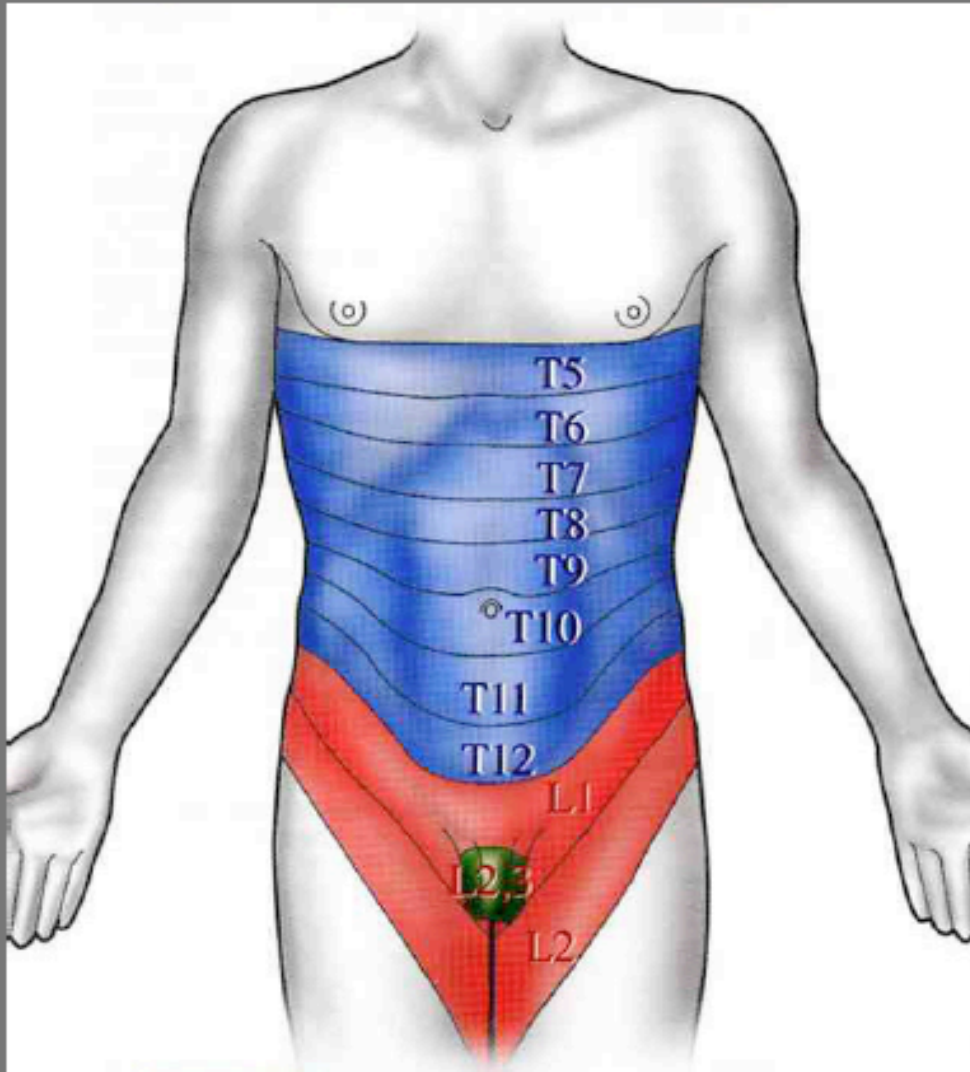


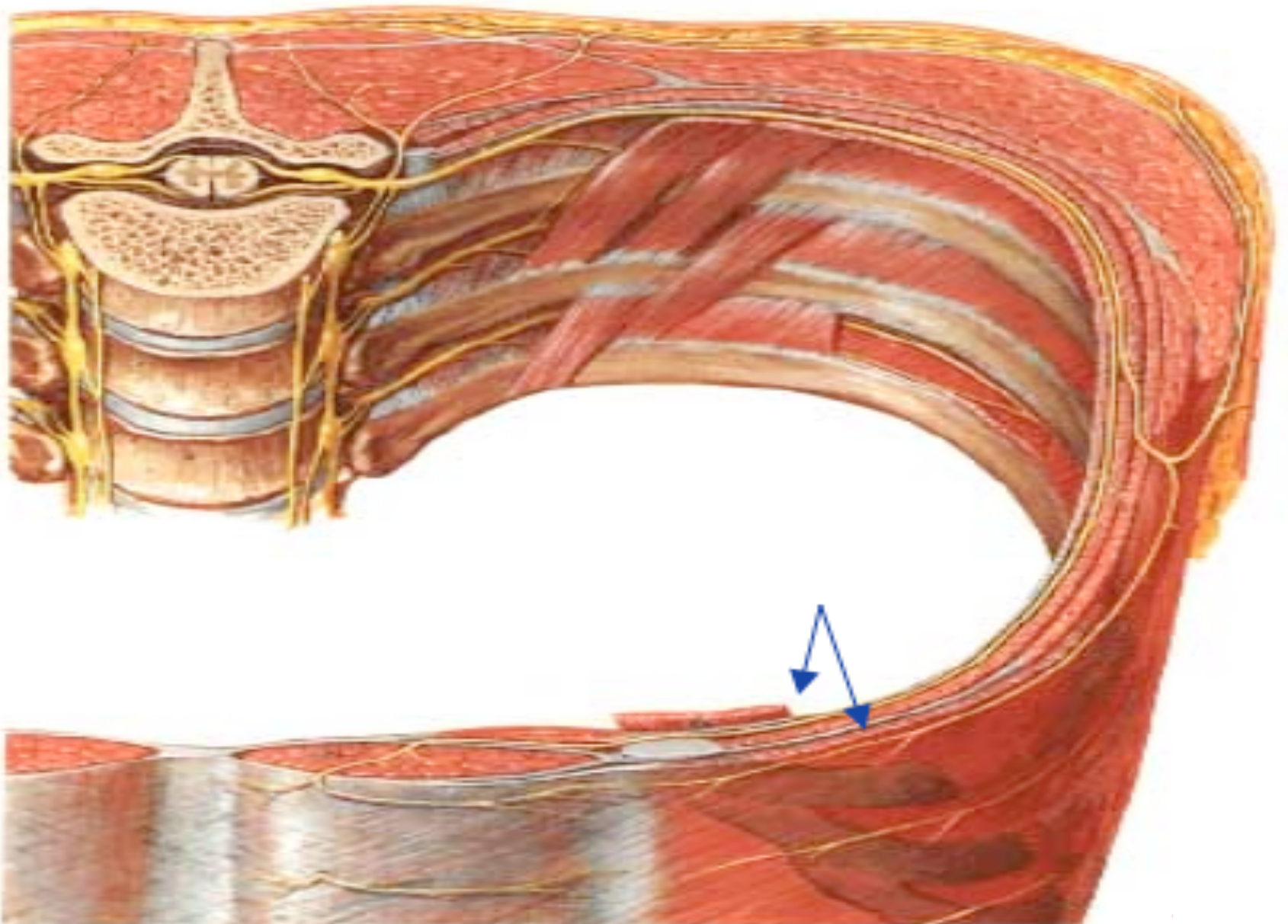
Figure 17 : Schéma de la vascularisation artérielle de la paroi antéro-latérale

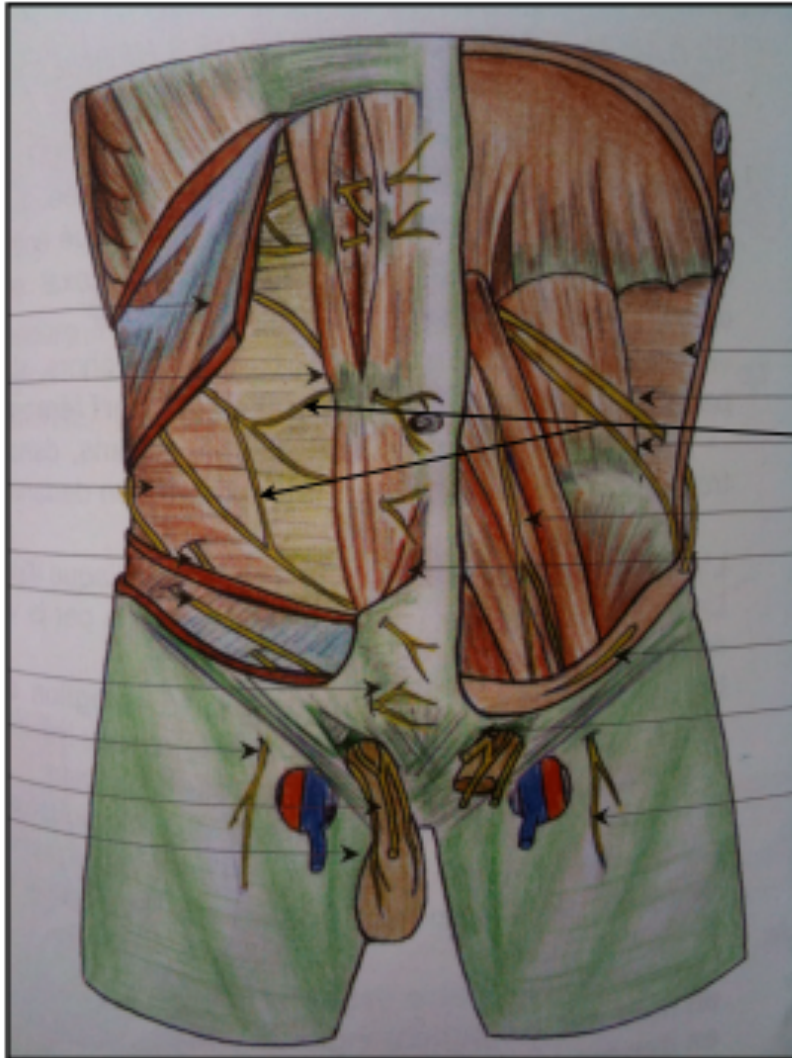
# Rappels anatomiques : innervation paroi abdominale (T6 à L1)

*Davies F, Gladstone RJ, Stibbe EP. The anatomy of the intercostal nerves. J Anat 1931; 66: 323-33.*



# Trajets nerveux de T6 à T12, et L1





**Fig.5:** *Innervation de la paroi abdominale antérieure d'après BAQUÉ P et MAES B [5].*

Anastomoses des nerfs intercostaux T10, T11 et T12 au niveau du TAP

Sakamoto H, Akita K, Sato T. An anatomical analysis of the relationships between the intercostal nerves and the thoracic and abdominal muscles in man. I. Ramification of the intercostal nerves. Acta Anat (Basel) 1996; 156: 132–42.

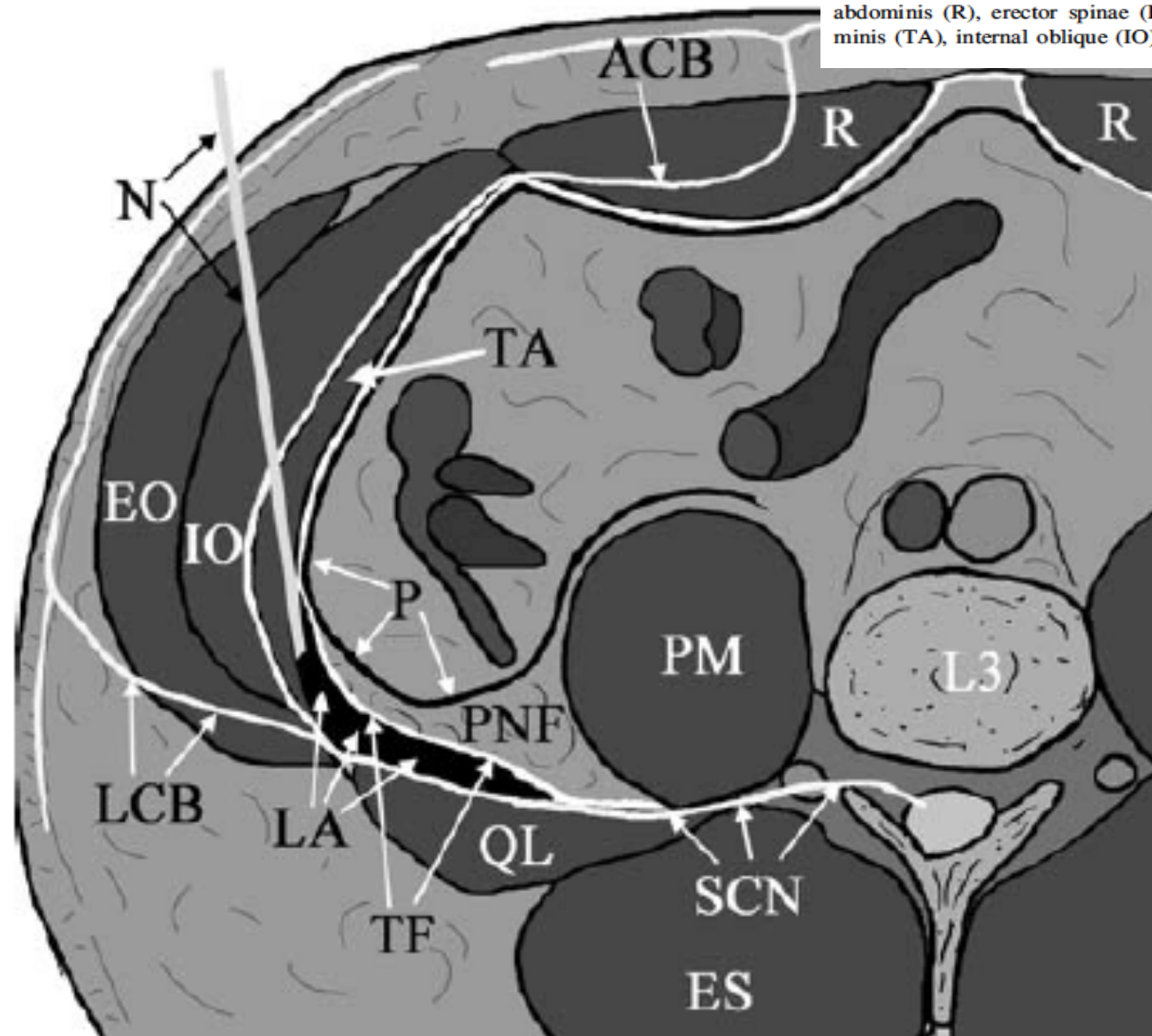


Fig. 2 Transverse diagram through the abdomen above the iliac crest. The course of the subcostal nerve (SCN) is indicated, including the lateral cutaneous branch (LCB) and the anterior cutaneous branch (ACB). The nerve does not actually pass along this transverse plane as it inclines downwards. The location of the local anesthetic (LA) across the anterior surface of the quadratus lumborum (QL) and behind the transversalis fascia (TF) is shown, and the needle position (N), perinephric fat (PNF), peritoneum (P), and transversalis fascia (TF) are indicated. The following muscles are involved: rectus abdominis (R), erector spinae (ES), psoas (PM), transversus abdominis (TA), internal oblique (IO), and external oblique (EO)

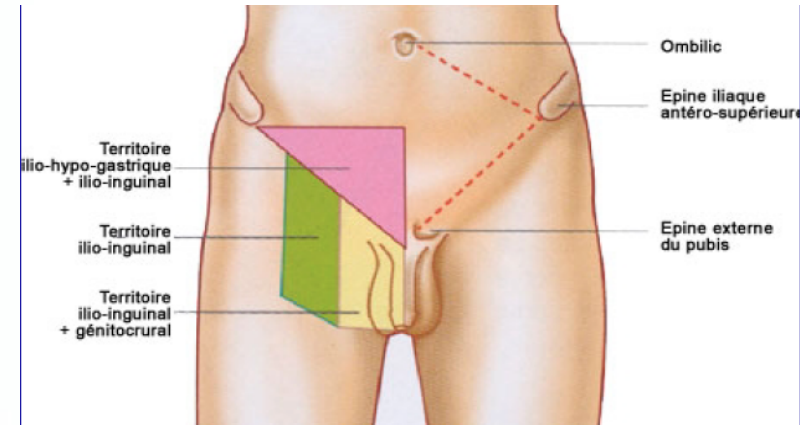
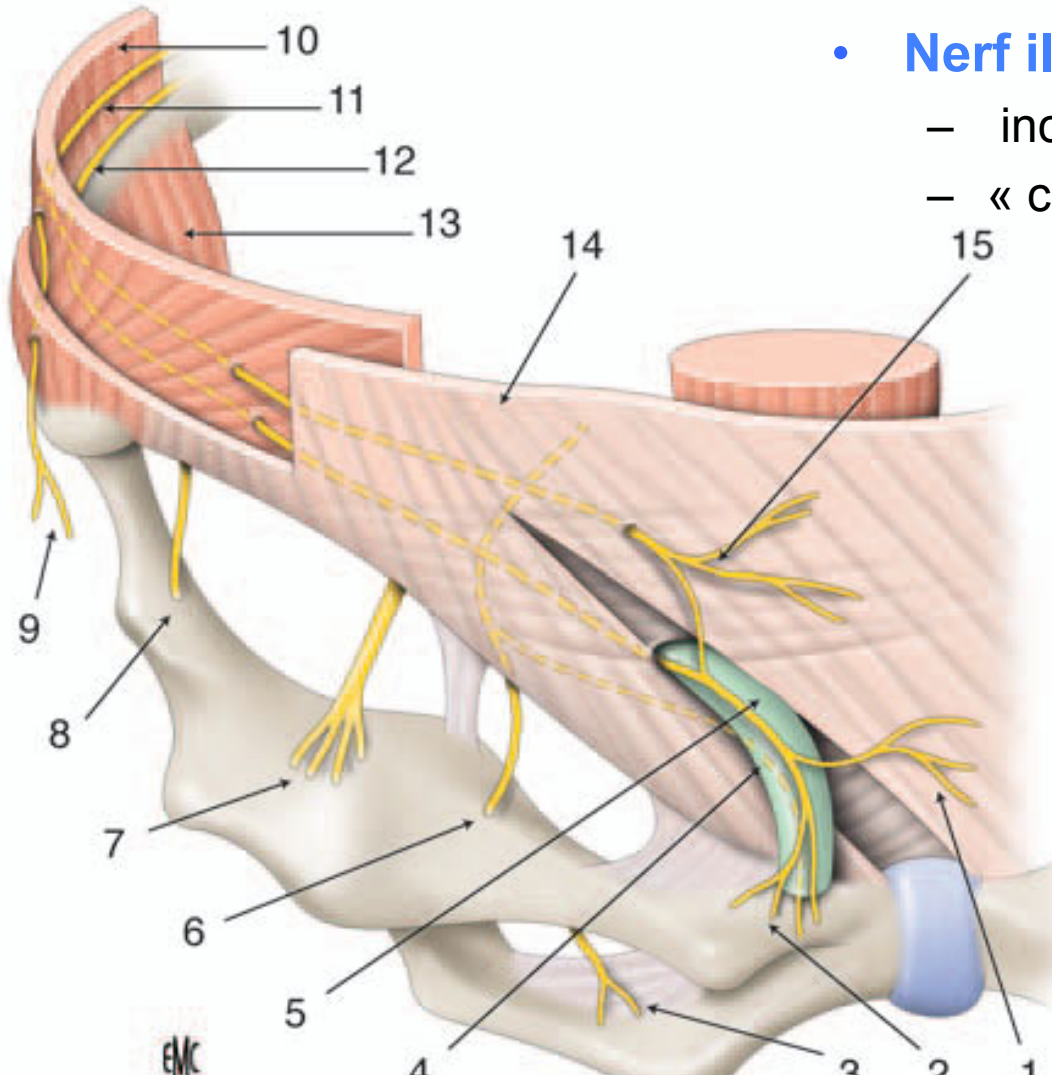
**Racine L1:** contourne le m.carré de lombes, traverse le m transverse, chemine entre OE et OI et traversent le muscle OE apres l'EIAS

- **Nerf ilio-hypogastrique**

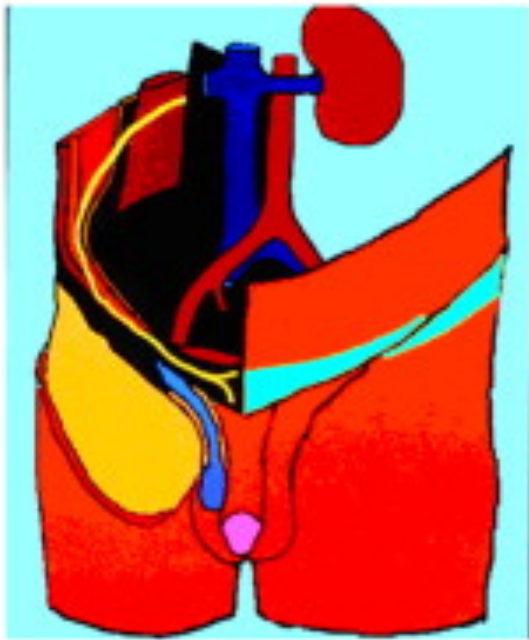
- Sensitive scrotum, grande lèvre
- Moteur : grand droit, transverse

- **Nerf ilio inguinal**

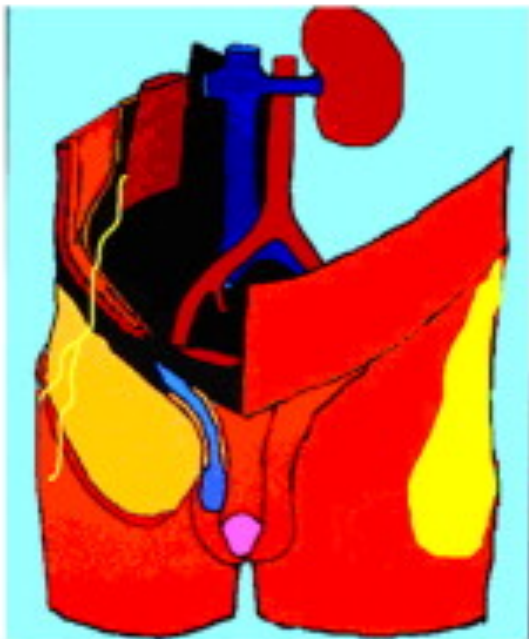
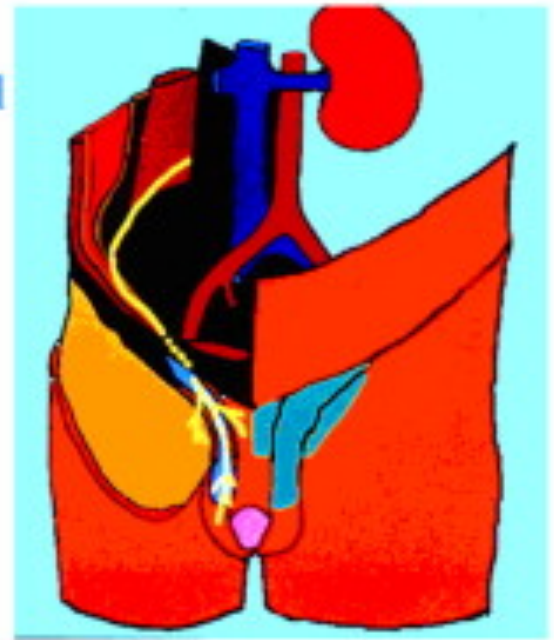
- inconstant dans 20 % des cas
- « colique néphrétique : douleur « genitale »







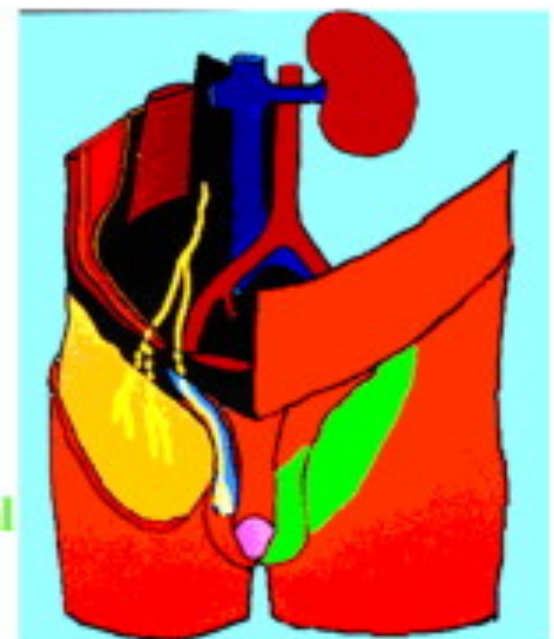
Ilio-hypogastrique Ilio-inguinal



Cutané latéral  
de la cuisse



Génito-fémoral



# 1 : la paroi

- plans musculaires
- vascularisation
- innervation

# 2 : bloc des droits

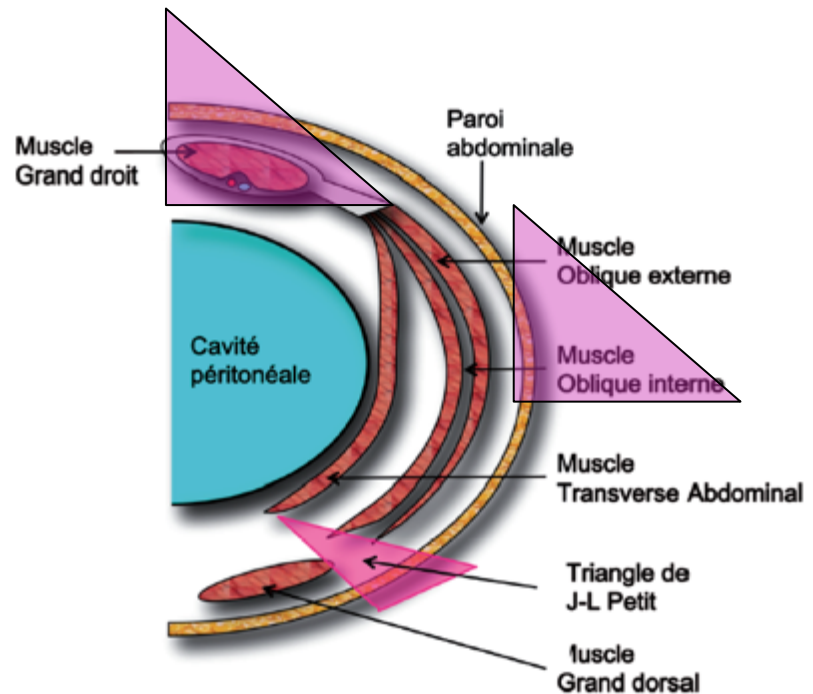


Figure 1

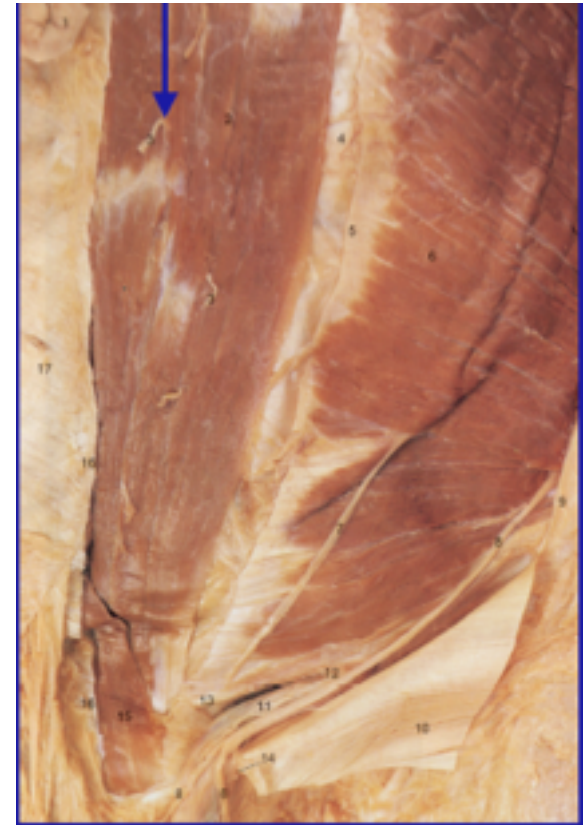
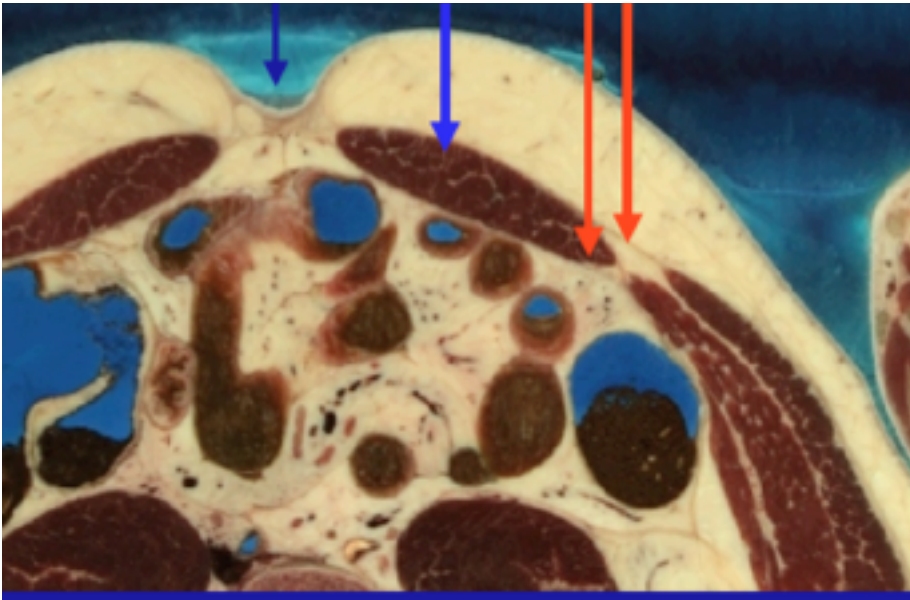
Bloc des «droits»

ou

« rectus sheath block »

# Bloc des «droits»

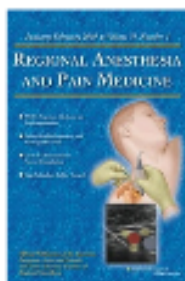
## Technique de ponction



# Bloc des «droits»

## Technique de ponction « à l'aveugle »





## The Rectus Sheath Block

### Accuracy of Local Anesthetic Placement by Trainee Anesthesiologists Using Loss of Resistance or Ultrasound Guidance

John Dolan, BSc, MSc, PhD, MBChB, FFARCSI,\* Philip Lucie, MBChB,† Timothy Geary, MBChB,† Malcolm Smith, MBChB, FRCA,† and Gavin N.C. Kenry, MD, FRCA\*

Reg Anesth Pain Med 2009;34: 247-250

Localisation AL	Echo, nb ponction (%)	Ressaut, nb ponction (%)
superficiel	18 (11,5)	58 (34,5)
Gaine Grd Dt	138 (88,5)	75 (44,6)
Intrapéritoine	0	35 (20,9)

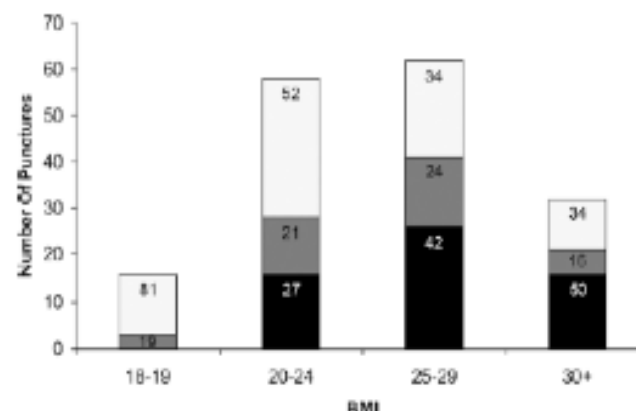
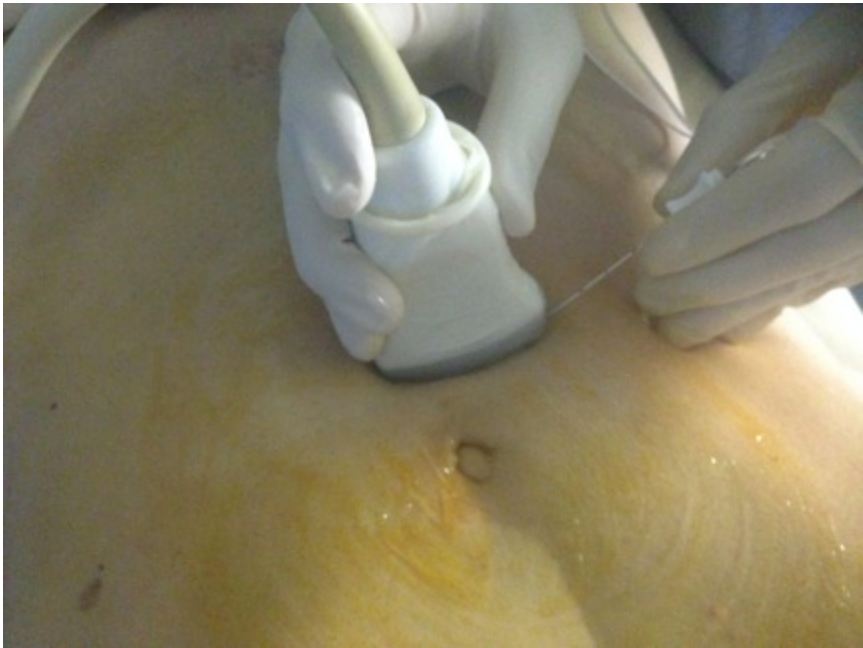


FIGURE 2. Accuracy of needle placement in the rectus sheath block by LOR: The relationship to BMI. The numbers within each column are percentage number of abdominal punctures in each BMI category. Within rectus sheath, white; superficial to the rectus sheath, black; deep to the rectus sheath, gray.

« ultrasound guidance improved the success rate of rectus sheath blocks as compared with an LOR technique when performed by trainees. »







Manassero A et al

*J Anaesthesiol Clin Pharmacol* 2015 ; 31: 349–353

Spread patterns and effectiveness for surgery after ultrasound-guided rectus sheath block in adult day-case patients scheduled for umbilical hernia repair

T-10 level, 20 mL of levobupivacaine 0.375% each side

Block was effective for surgical anesthesia in 53% of the patients



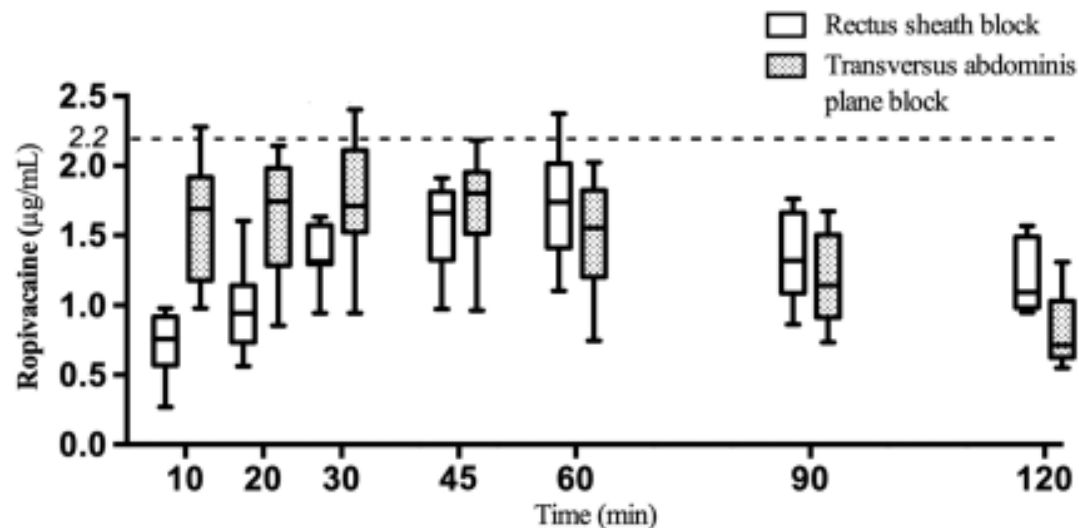
# Chronological Changes in Ropivacaine Concentration and Analgesic Effects Between Transversus Abdominis Plane Block and Rectus Sheath Block

Takeshi Murouchi, MD, Soshi Iwasaki, MD, PhD, and Michiaki Yamakage, MD, PhD

Ropivacaine 0.5 % (15 mL x 2) = 150 mg

Murouchi et al

Regional Anesthesia and Pain Medicine • Volume 40, Number 5, September-October 2015



**FIGURE 1.** Chronological changes in ropivacaine concentrations. The arterial ropivacaine concentrations peaked significantly earlier with TAPB than RSB [Tmax: 35 (12) vs 53 (16) minutes], whereas both resulted in comparable peak ropivacaine concentrations [Cmax: 1.83 (0.41) vs 1.79 (0.33)µg/mL].

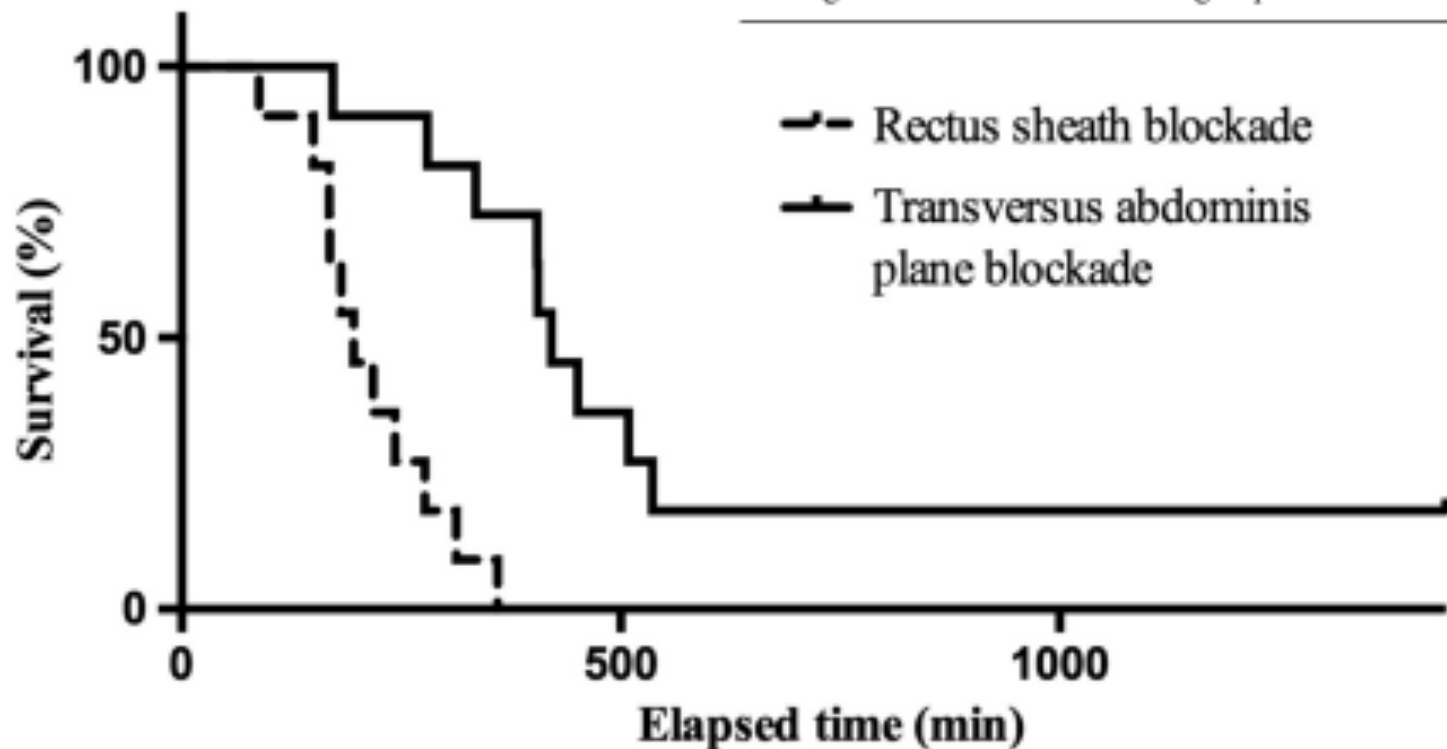
## Durée du bloc

TABLE 2. Outcome Measures

Variable	RSB (n = 11)	TAPB (n = 11)	P
Outcome measures			
Dose of ropivacaine, mg/kg	2.66 (0.36)	3.00 (0.34)	0.07
Tmax, min	53 (16)	35 (11)	0.02*
Cmax, µg/mL	1.79 (0.33)	1.83 (0.41)	0.54
Duration of analgesia, min	421 [335–536]	196 [168–277]	0.01*

Data are expressed as means (SD) or median [interquartile range].

\*Significant difference between groups.

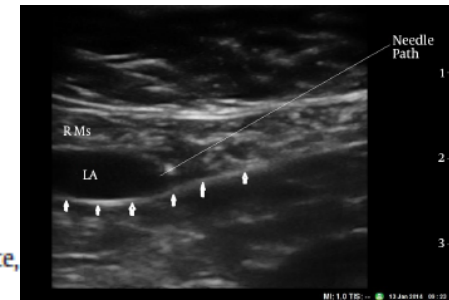


# Reducing Postoperative Opioid Consumption by Adding an Ultrasound-Guided Rectus Sheath Block to Multimodal Analgesia for Abdominal Cancer Surgery With Midline Incision

Ghada Mohammad Nabih Bashandy<sup>1,\*</sup>; Abeer Hassan Hamed Elkholy<sup>1</sup>

<sup>1</sup>Department of Anesthesiology and Pain Management, National Cancer Institute, Cairo University, Cairo, Egypt

\*Corresponding author: Ghada Mohammad Nabih Bashandy, Department of Anesthesiology and Pain Management, National Cancer Institute, Cairo, Egypt. Tel: +20-20112523337, E-mail: ghada\_pashandy@yahoo.com



Received: February 16, 2014; Revised: March 5, 2014; Accepted: March 21, 2014 20 mL bupivacaine 0.25% (face postr)

**Table 2.** VAS Scores in the PACU and Postoperative Opioid Consumption<sup>a</sup>

	RSB Group, (n = 29)	GA Group, (n = 27)	P value
VAS1 (0 min)	3 (3,5.5)	7 (6,9)	0.001 <sup>b</sup>
VAS2 (15 min)	3 (2,3)	5 (3,6)	0.001 <sup>b</sup>
VAS3 (30min)	2 (2,3)	3 (3,4)	0.01 <sup>b</sup>
VAS4 (45 min)	2 (1.5,2)	3 (2,3)	0.015 <sup>b</sup>
VAS5 (60 min)	2 (1,2)	3 (2,3)	0.02 <sup>b</sup>
PACU <sup>c</sup> Morphine consumption, mg	2.1 ± 2.2	5.5 ± 2.1	0.001 <sup>b</sup>
POD0 <sup>c</sup> Morphine consumption, mg	0.7 ± 1.3	6.4 ± 2	0.001 <sup>b</sup>
POD1 Morphine consumption, mg	0	8.4 ± 3	0.001 <sup>b</sup>

<sup>a</sup> Data are presented as median (Q1, Q3) or mean ± SD.

<sup>b</sup> statistically significant.

<sup>c</sup> Abbreviations: PACU, post anesthesia care unit; POD, post anesthesia day.

# Indication

## Bonne indication

Cure éventration

Cure hernie ombilicale

## Alternative au TAP

Chirurgie laparoscopique

Appendicectomie (laparotomie)

Chirurgie sous- mésocolique (laparoscopie)

Chirurgie abdominale par laparotomie

1 : la paroi

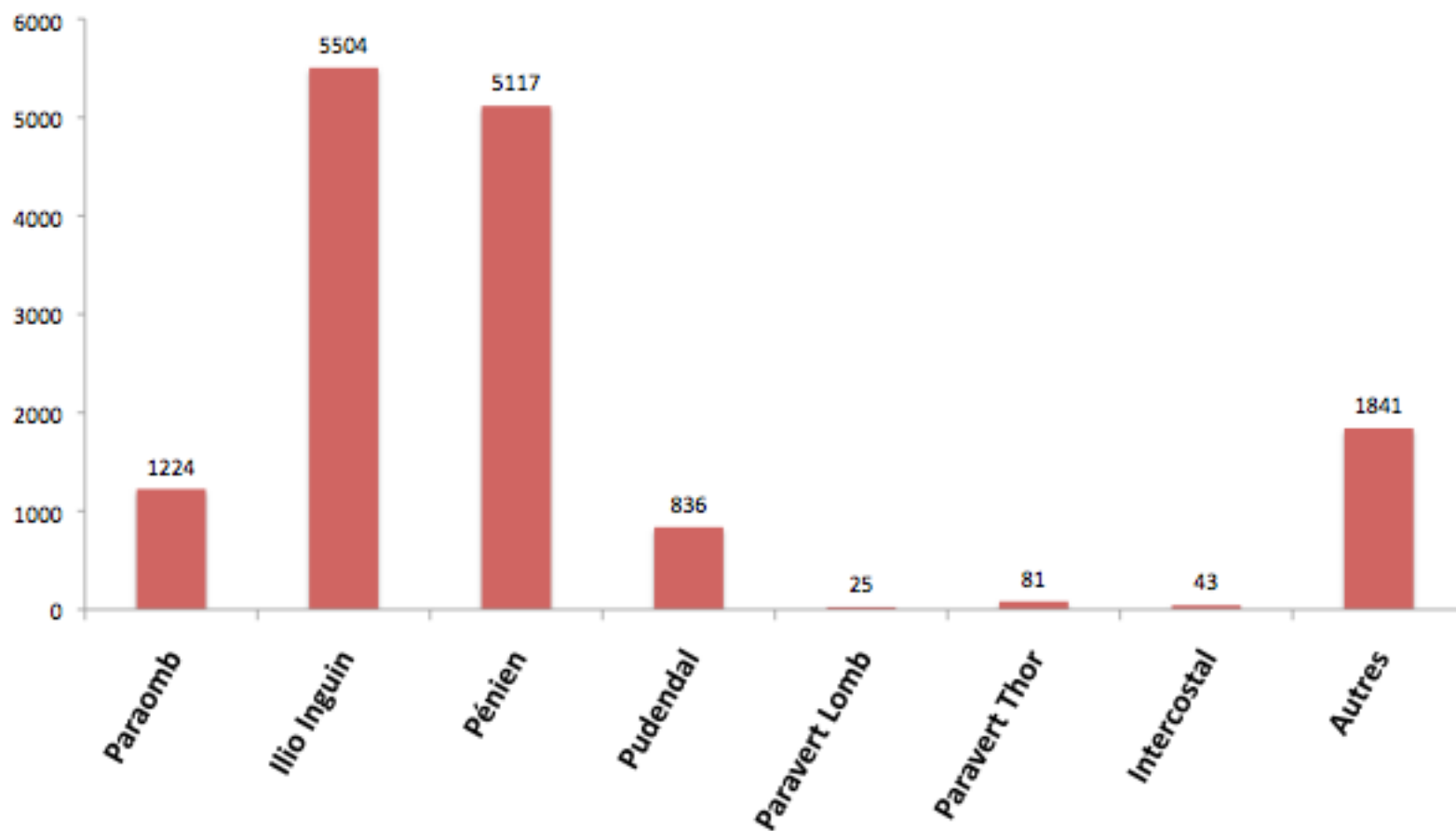
- plans musculaires
- vascularisation
- innervation

2 : bloc des droits

**3 : Bloc ilio inguinal, hypogastrique**

# BLOC DU TRONC

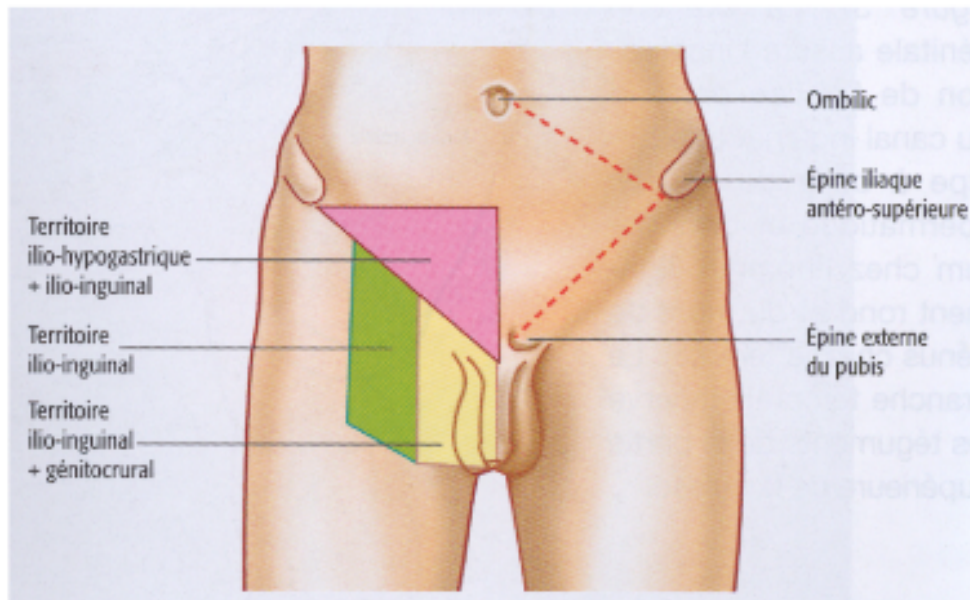
Blocs du Tronc



Ecoffey C et al, *Pediatr Anaesth* 2010

# Bloc Ilioinguinal Iliohypogastrique

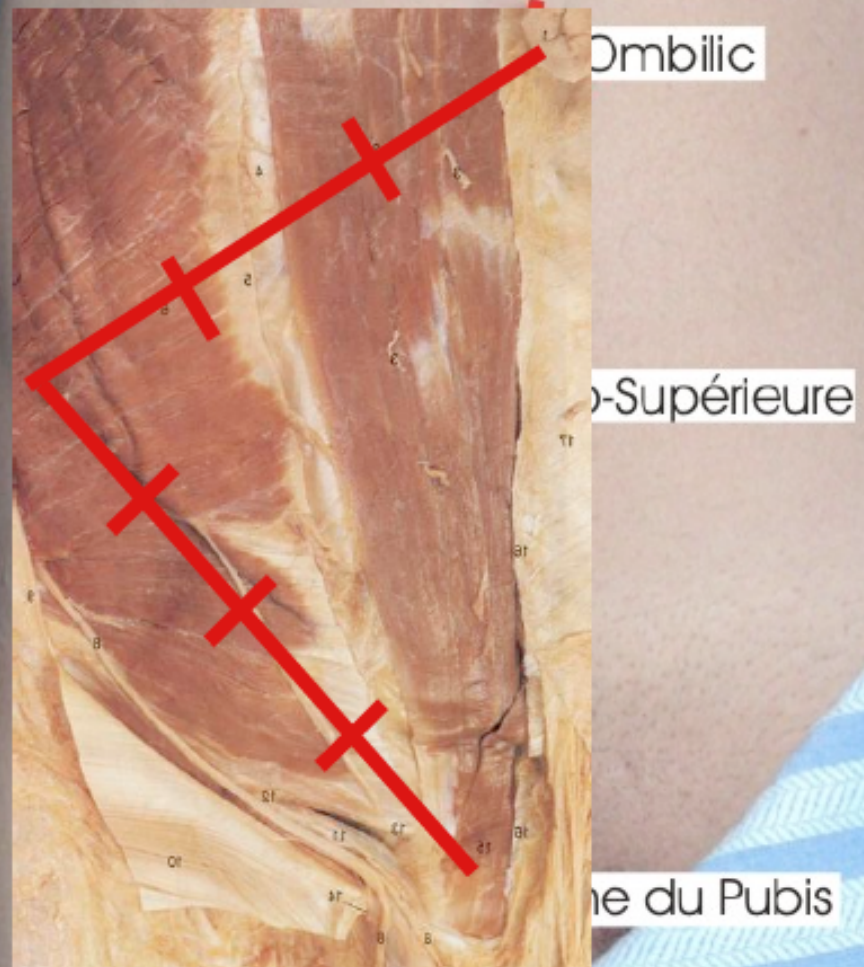
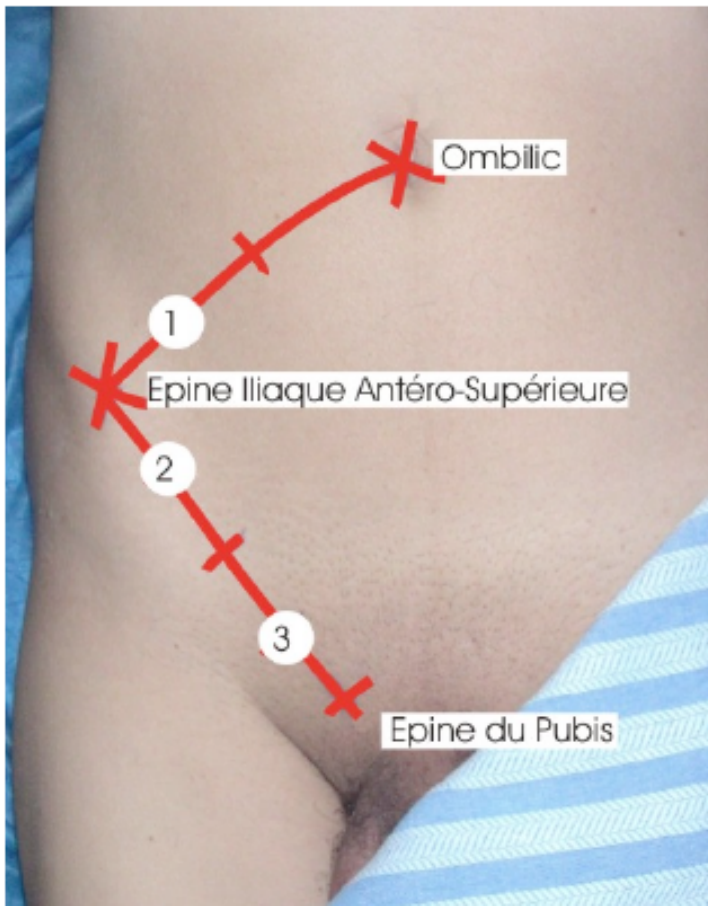
- « franchissement »  
(fascia de l'oblique externe)



- **Indication:**  
Chirurgie du canal inguinal

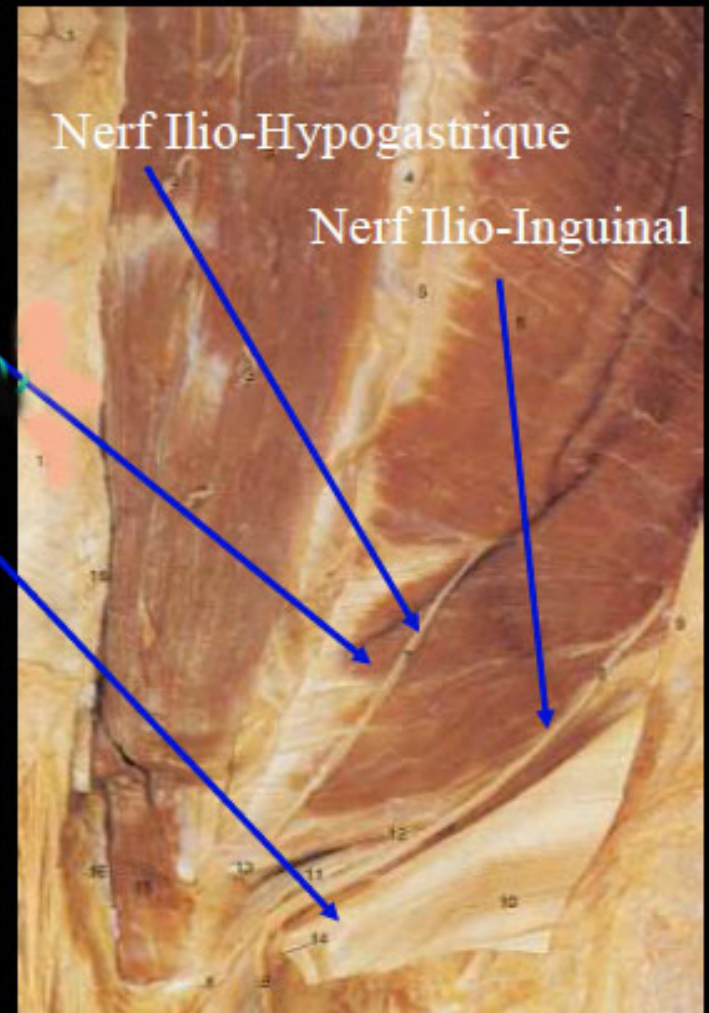
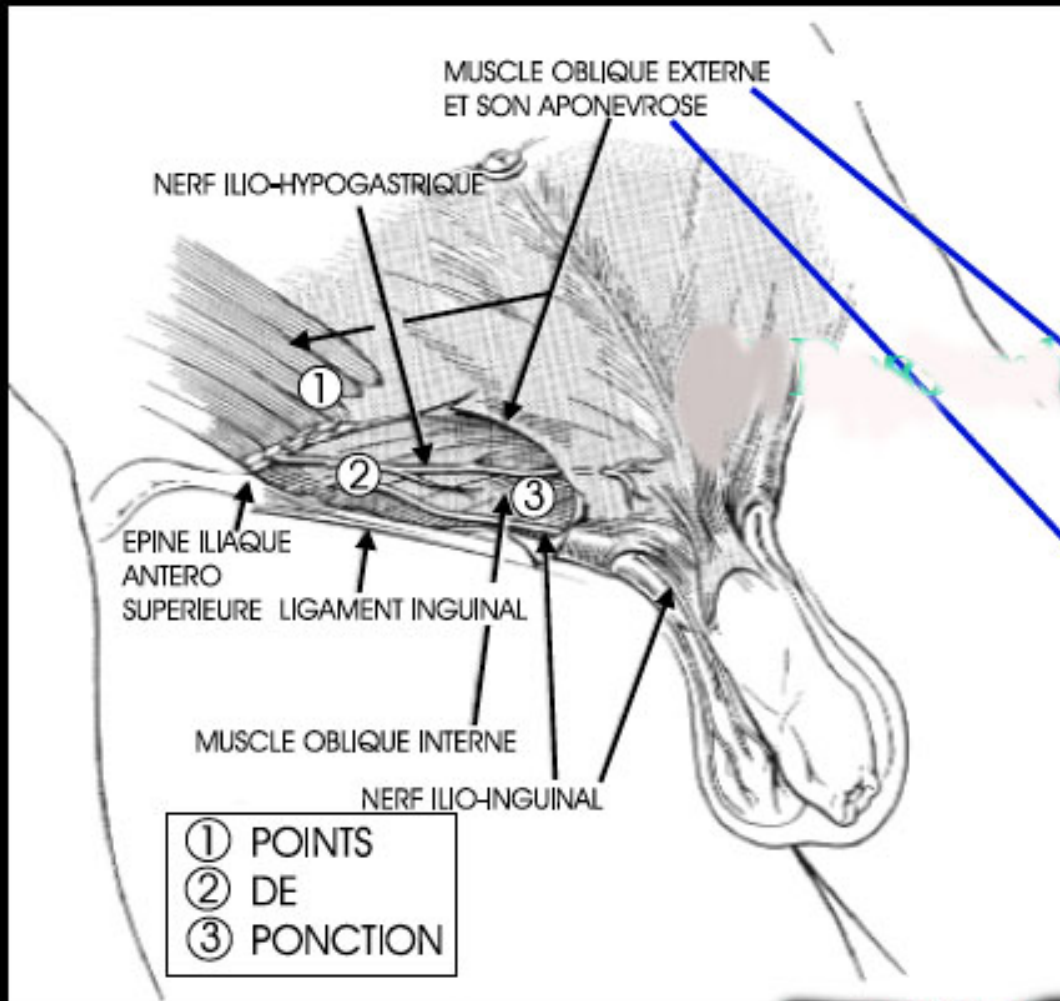
- Hernie inguinale
- Cure d'hydrocèle
- Kyste du cordon
- Hernie de l'ovaire
- Cryptorchidie





**Blocs Ilio-Inguinaux-  
Ilio-Hypogastriques  
Aspects anatomiques**

# Blocs Ilio-Inguinaux-Ilio-Hypogastriques: Aspects anatomiques



# TECHNIQUES D 'INFILTRATION

- Bloc combiné ilio-inguinal / ilio-hypogastrique:
  - technique en **2 injections**:
    - => 1° injection: au 1/4 externe de la ligne joignant l 'ombilic à l 'EIAS,
      - injection de 5 ml d 'AL après le franchissement de la 1° aponévrose
      - puis de 5 ml après la 2° aponévrose,
    - => 2° injection: au 1/4 externe de la ligne joignant l 'EIAS à l 'épine du pubis,
      - après le franchissement de l ' aponévrose du muscle oblique externe: injection de 20 ml d 'AL en éventail.

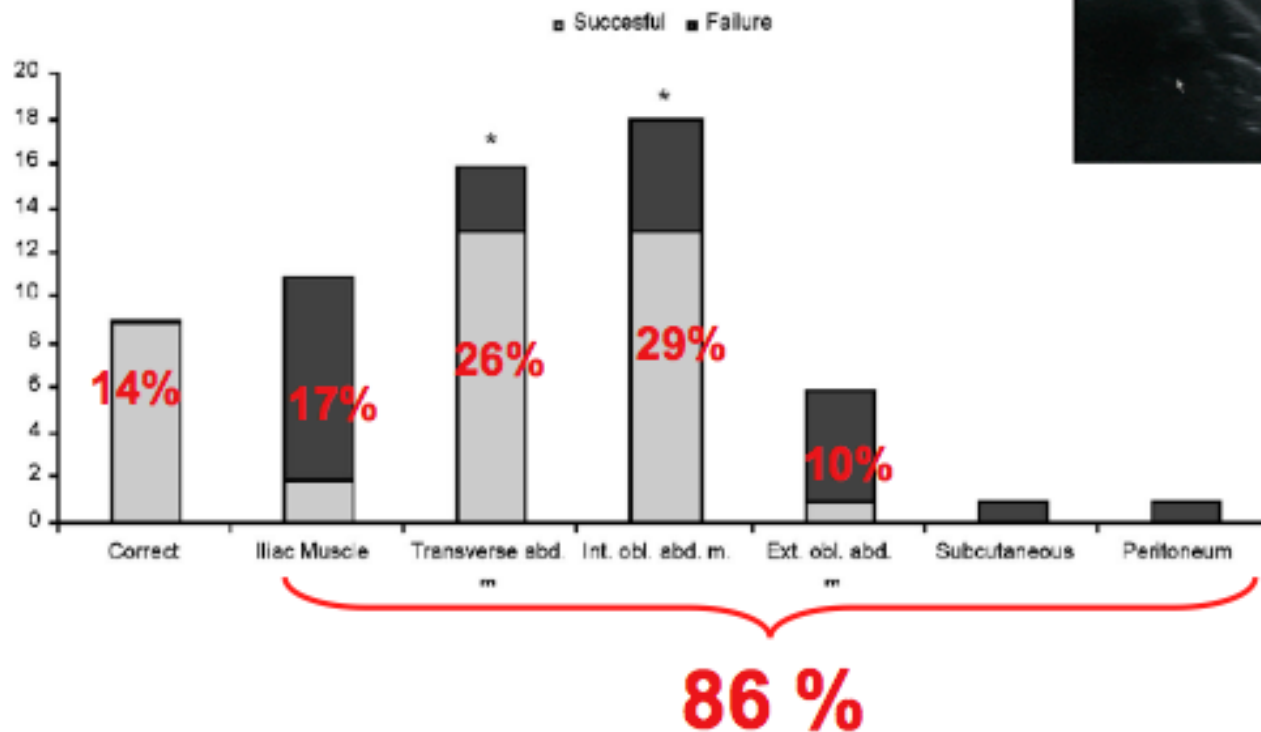
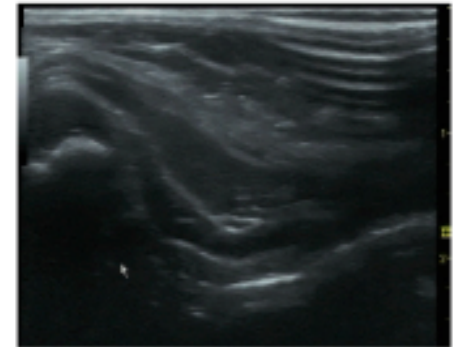


# Ilioinguinal/Iliohypogastric Blocks in Children: Where Do We Administer the Local Anesthetic Without Direct Visualization?

Weintraud M et al, Anesth Analg 2008;106:89-93

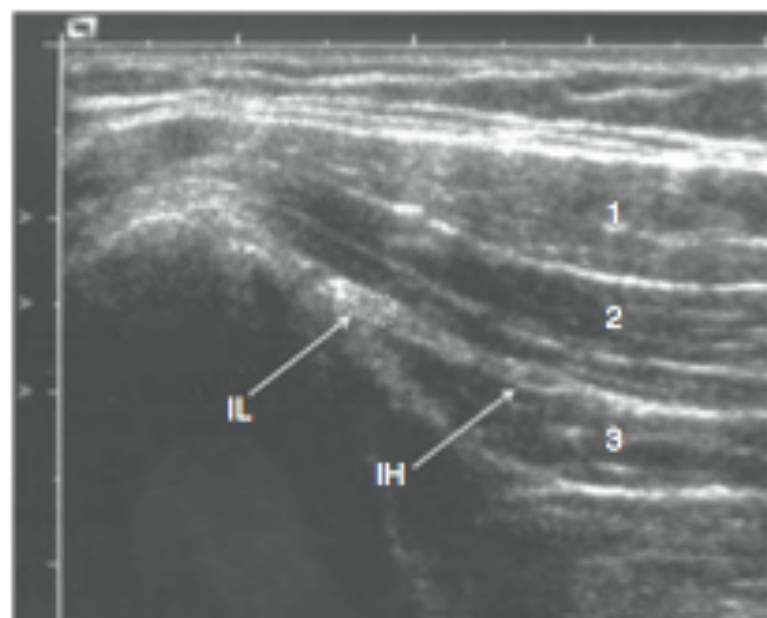
n = 62 enfants

Taux de succès= 61%

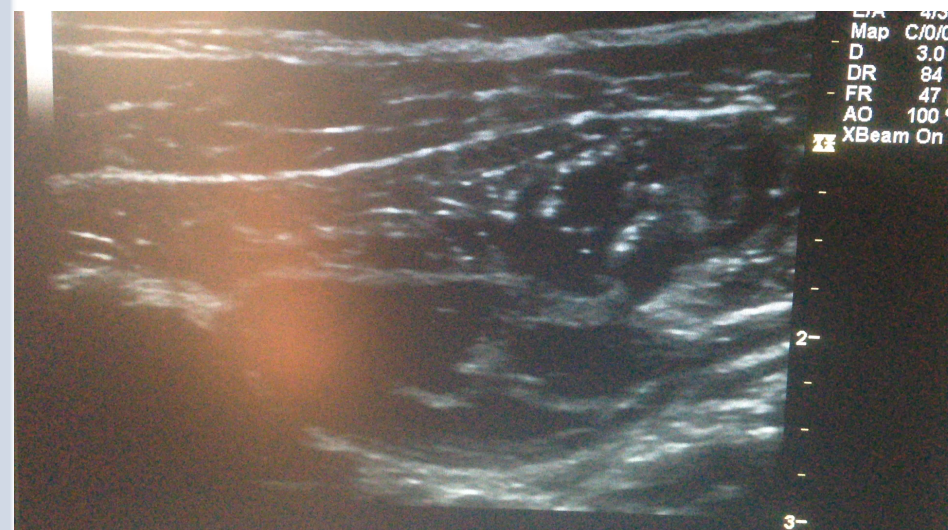


## Ilioinguinal and iliohypogastric nerves cannot be selectively blocked by using ultrasound guidance: a volunteer study

M. Schmutz<sup>1</sup>, P. M. Schumacher<sup>1</sup>, C. Luyet<sup>1</sup>, M. Curatolo<sup>1</sup> and U. Eichenberger<sup>1,2\*</sup>



**Fig 1** Ultrasound image of the IL and IH nerves between the internal oblique and transverse abdominal muscles, 5 cm cranial and slightly lateral to the anterior superior iliac spine. The IL nerve is encircled by dots to define the circumferential border of the nerve and to allow the ultrasound machine to calculate the cross-sectional area of the nerve. 1, external oblique muscle; 2, internal oblique muscle; 3, transverse abdominal muscle.



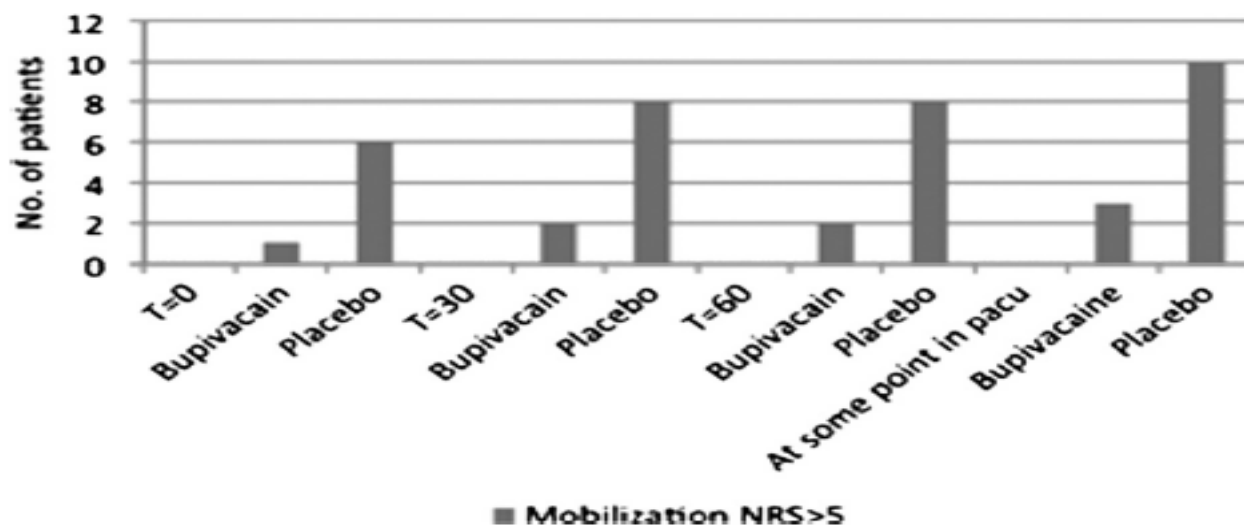
# Ultrasound-Guided Nerve Block for Inguinal Hernia Repair

## *A Randomized, Controlled, Double-Blind Study*

*Finn Bærentzen, MD,\* Christian Maschmann, MD,\* Kenneth Jensen, MD, BBA,\*  
Bo Belhage, MD, DMSc,\* Margaret Hensler, MD,† and Jens Børglum, MD, PhD, MBA\**



74 patients, > 18 years, ASA I or II, and scheduled for unilateral primary hernia repair ad modum Lichtenstein (open surgery with insertion of mesh) under general anesthesia  
Bloc 20 mL bupi 0,5 % vs placebo



**FIGURE 2.** NRS score >5 at mobilization in the PACU; *t* = time (in minutes).

**TABLE 4.** Secondary Outcome Measures

Parameter	Bupivacaine	Saline	<i>P</i>
<b>Opioid consumption</b>			
Demanding opioids, day 0 (n/N)	41%	61%	0.12*
Demanding opioids, day 1 (n/N)	55%	71%	0.20*
Demanding opioids, day 2 (n/N)	31%	16%	0.17*
Opioid demands, day 0 (morphine eq)	11.4 (17.0) mg	18.6 (15.4)	0.14*
Demanding antiemetics, day 0 (n/N)	5/28	7/31	0.43
<b>Time</b>			
PACU length of stay	62 (30) min	74 (35) min	0.15
Time to home discharge after surgery	546 (455) min	539 (445) min	0.96
<b>Performed daily activities</b>			
Modified Barthel 100 Index, day 1 (0–100)†	87 (8)	89 (8)	0.46
Modified Barthel 100 Index, day 2 (0–100)	94 (6)	96 (9)	0.38

## Vers le TAP block

- cure hernie inguinale 3 ans, 0.3 mL/kg





REGIONAL ANAESTHESIA

## Comparison between ultrasound-guided transversus abdominis plane and conventional ilioinguinal/iliohypogastric nerve blocks for day-case open inguinal hernia repair

C. Aveline<sup>1\*</sup>, H. Le Hetet<sup>1</sup>, A. Le Roux<sup>1</sup>, P. Vautier<sup>1</sup>, F. Cognet<sup>1</sup>, E. Vinet<sup>2</sup>, C. Tison<sup>2</sup> and F. Bonnet<sup>3</sup>

<sup>1</sup> Department of Anaesthetics and <sup>2</sup> Department of Surgery, Polyclinique Sévigné, 35510 Cesson-Sevigne, France

<sup>3</sup> Hôpital Tenon, Department of Anesthesiology, Université Pierre and Marie Curie Paris VI, Assistance Publique-Hôpitaux de Paris, 75020 Paris, France

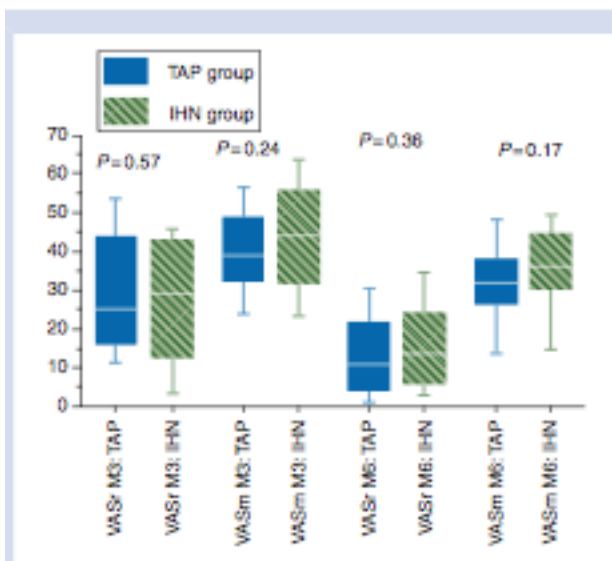
\* Corresponding author. E-mail: caveline@club-internet.fr

Parameter	TAP group	INH group
PONV (POD0–POD1) (%)	8.2 (4.6–14.1)	10.1 (5.8–16.6)
Oral morphine requirement (POD0–POD2)	3 (1–4)	4 (2–7) <sup>†</sup>
Sleep quality POD1	7 (3)	5 (3)
Sleep quality M3*	8 (5)	7 (3)
Sleep quality M6*	9 (2)	8 (2)

### Bloc IIHclassique (sans echo)vs Tap échoguidé

**Table 1** Patients' characteristics and clinical features. Values are reported as mean (sd; range), median (25th–75th percentiles), or number of subjects, as indicated. BMI, body mass index. There were no significant differences between the groups

	TAP group (n=134)	INH group (n=139)
Age (yr)	58 (13; 31–84)	60 (12; 41–83)
BMI (kg m <sup>-2</sup> )	26 (4; 22–37)	27 (3; 18–38)
ASA scores (I/II/III)	82/33/19	74/51/14
Apfel scores	1 (1–2)	1 (1–2)
Preoperative pain score (0–100 mm)	9 (5–21)	11 (5–19)
Duration of surgery (min)	48 (12)	51 (13)
Intraoperative sufentanil (µg)	26 (25–28)	26 (23–28)



**Fig 4** Median VAS scores (y-axis, VAS in mm) at rest (VASr) and on movement (VASm) 3 (M3) and 6 months (M6) after surgery. Data expressed as median (horizontal bar) with 25th–75th (boxes) and the 10th–90th (whiskers) percentiles. No differences were noted at rest and movement between the TAP and INH groups. Data are complete for 132 of the 134 patients at M3 and M6 in the TAP group. At 6 months, data were complete for 132 of the 134 and 134 of the 139 patients in the TAP and INH groups, respectively.

1 : la paroi

- plans musculaires
- vascularisation
- innervation

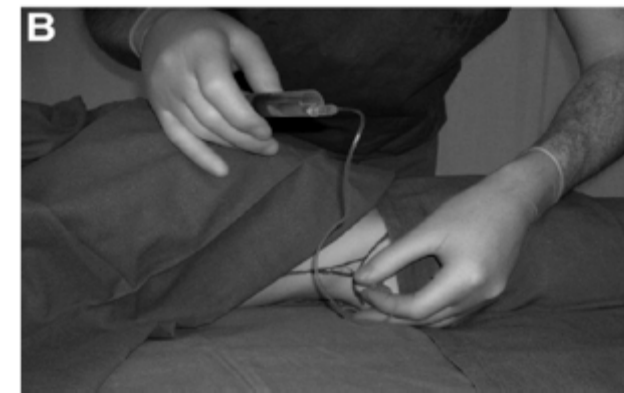
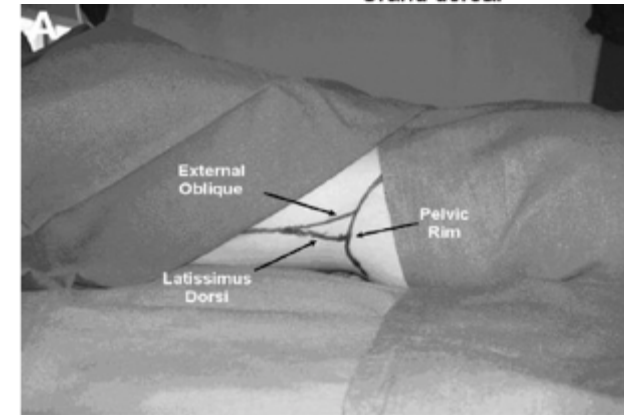
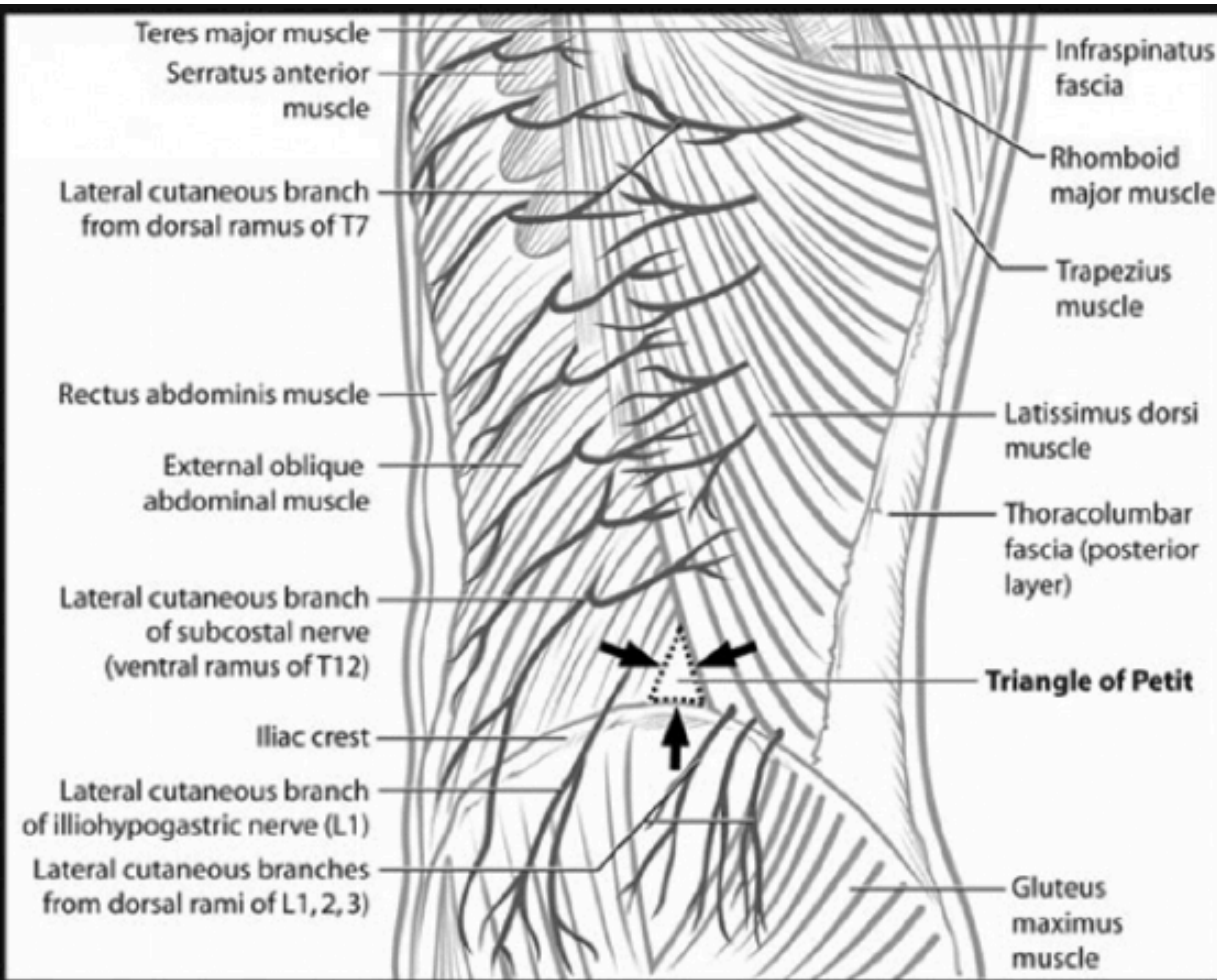
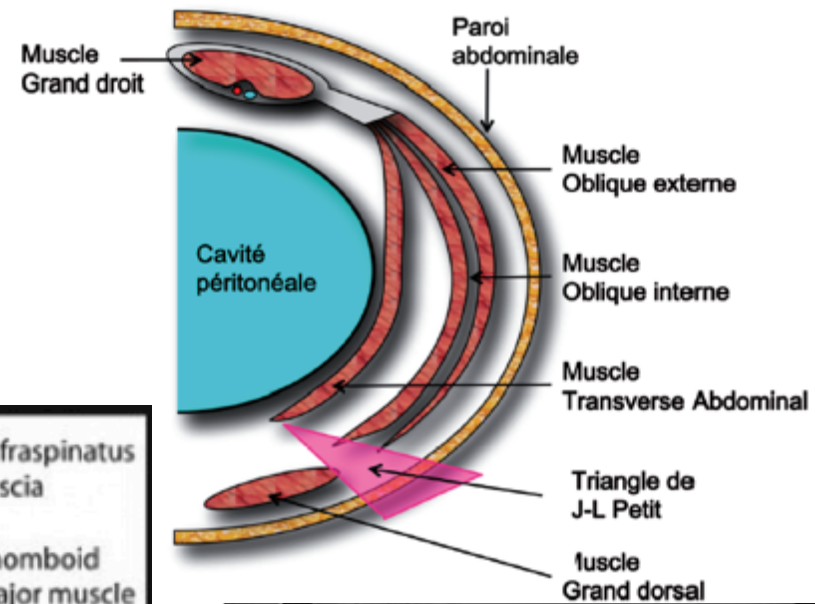
2 : bloc des droits

3 : Bloc ilio inguinal, hypogastrique

4 : TAP block

## « Triangle de Jean Louis Petit » 1916

- situé en avant du muscle oblique interne
- limité => en bas : crête iliaque ; en en arrière : muscle grand

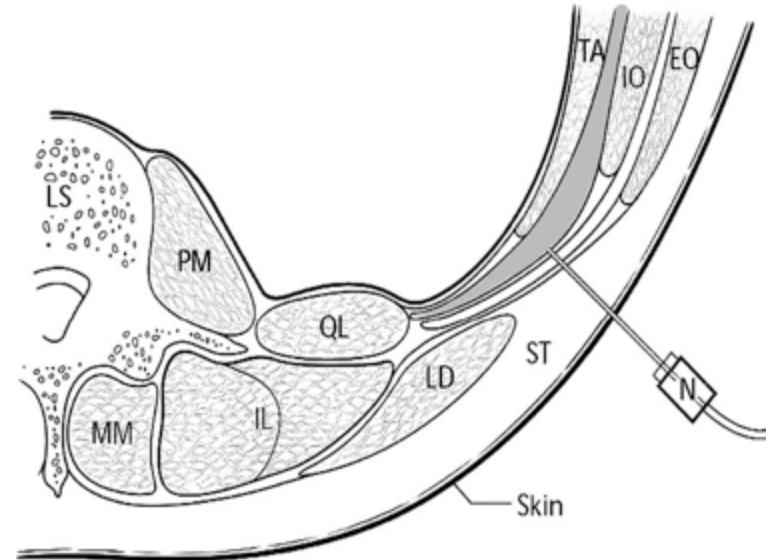


# Technique - efficacité : historique

- Injection dans triangle de « Jean Louis Petit » technique en « 2 pop »

## 1° description

Rafi AN. Abdominal field block: a new approach via the lumbar triangle. Anaesthesia 2001;56:1024-6.



2° : description détaillée + clinique : 2006- 2007

Technique de ponction :

- passe la peau
- progresse jusqu' au 1° pop (aponévrose antérieure de l' IO)
- puis 2° pop (aponévrose post de l' IO) et injection

Sakamoto H, Akita K, Sato T. An anatomical analysis of the relationships between the intercostal nerves and the thoracic and abdominal muscles in man. I. Ramification of the intercostal nerves. Acta Anat (Basel) 1996; 156: 132–42.

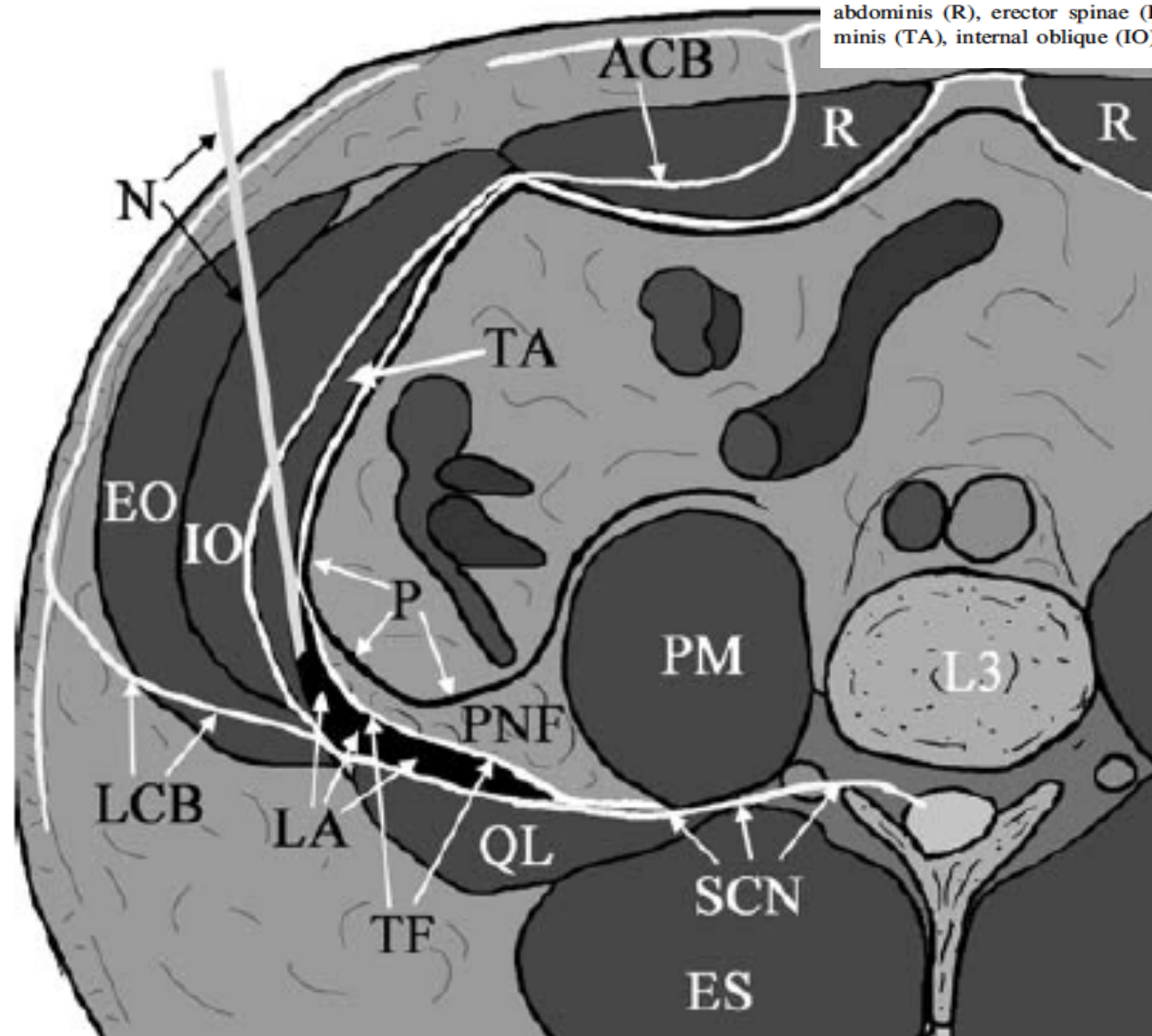


Fig. 2 Transverse diagram through the abdomen above the iliac crest. The course of the subcostal nerve (SCN) is indicated, including the lateral cutaneous branch (LCB) and the anterior cutaneous branch (ACB). The nerve does not actually pass along this transverse plane as it inclines downwards. The location of the local anesthetic (LA) across the anterior surface of the quadratus lumborum (QL) and behind the transversalis fascia (TF) is shown, and the needle position (N), perinephric fat (PNF), peritoneum (P), and transversalis fascia (TF) are indicated. The following muscles are involved: rectus abdominis (R), erector spinae (ES), psoas (PM), transversus abdominis (TA), internal oblique (IO), and external oblique (EO)

## Technique - efficacité

---

- Evaluation efficacité, indication et extension (2006-2007)

McDonnell JG, O'Donnell BD, Farrell T, et al. Transversus abdominis plane block: a cadaveric and radiological evaluation. *Reg Anesth Pain Med* 2007; 32: 399–404

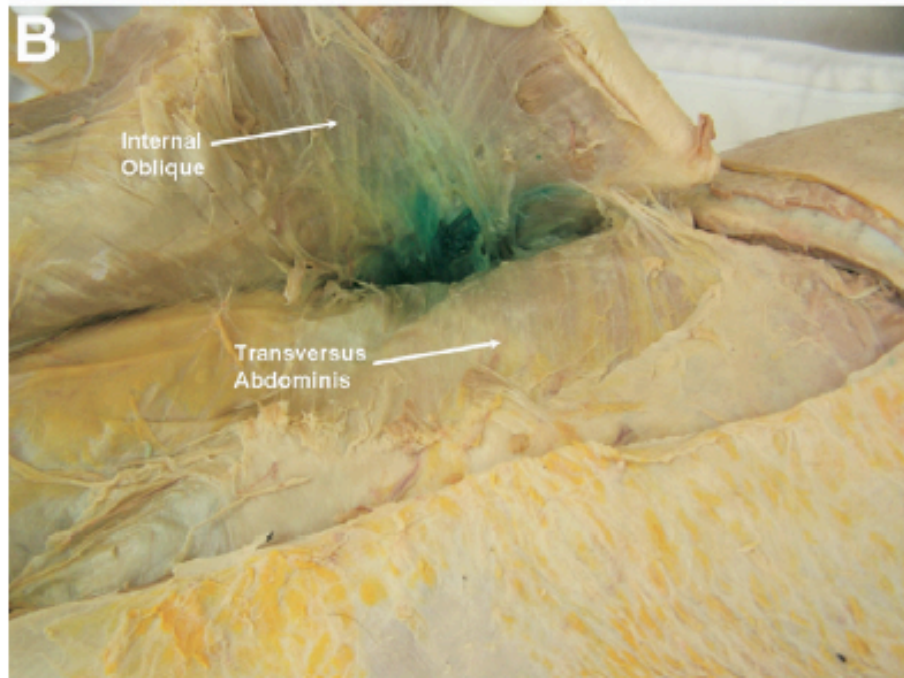
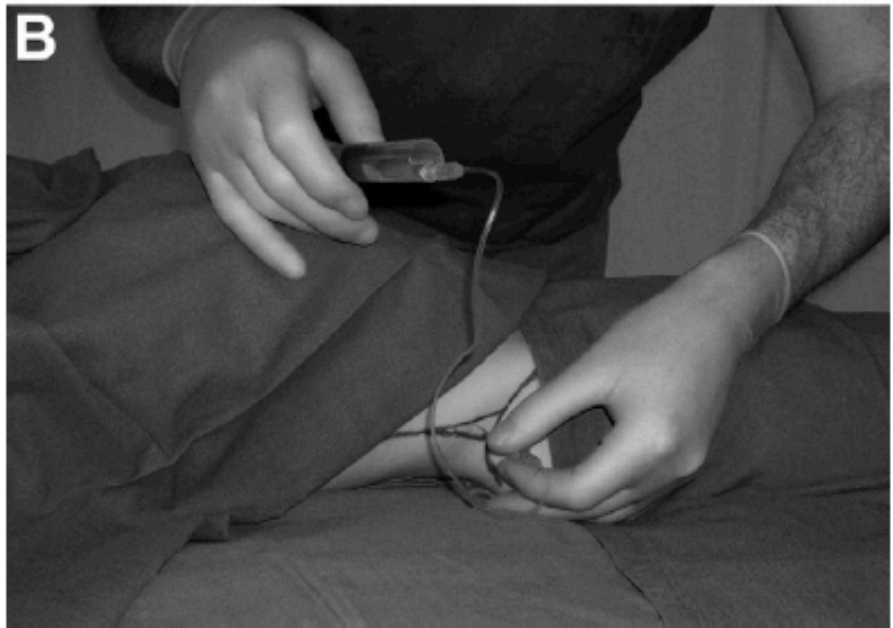
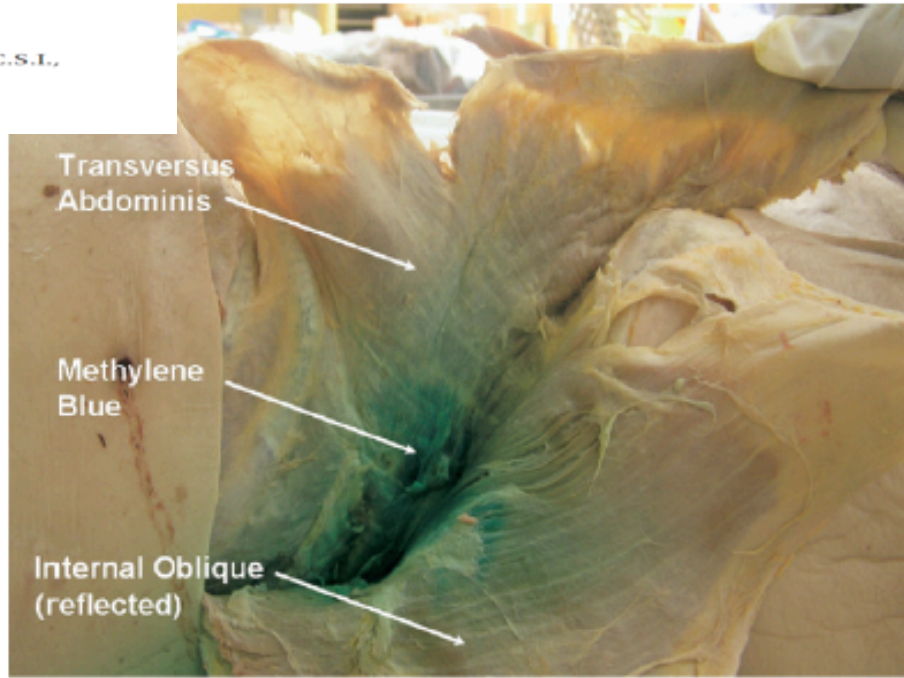
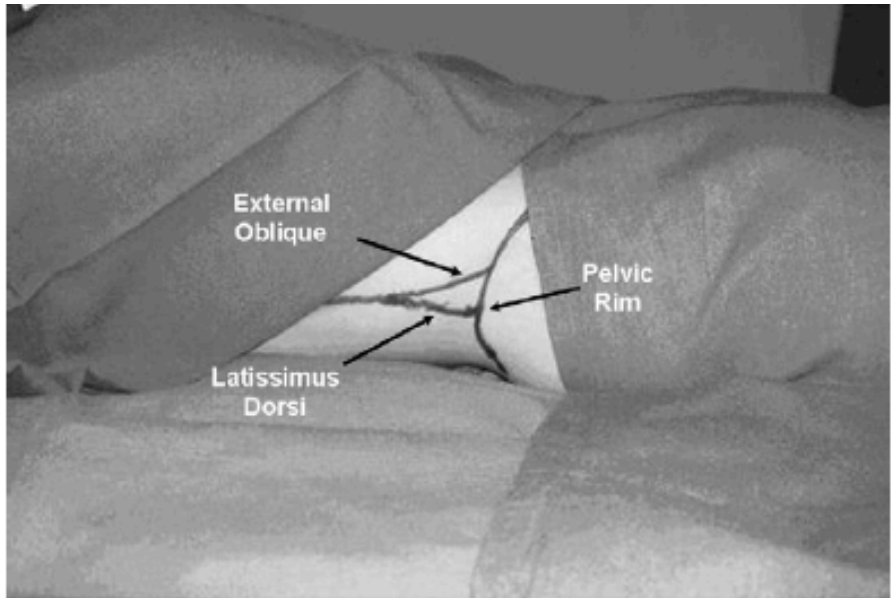
McDonnell JG, Curley G, Carney J, et al. The analgesic efficacy of transversus abdominis plane block after cesarean delivery: a randomized controlled trial. *Anesth Analg* 2008; 106: 186–91, table of contents

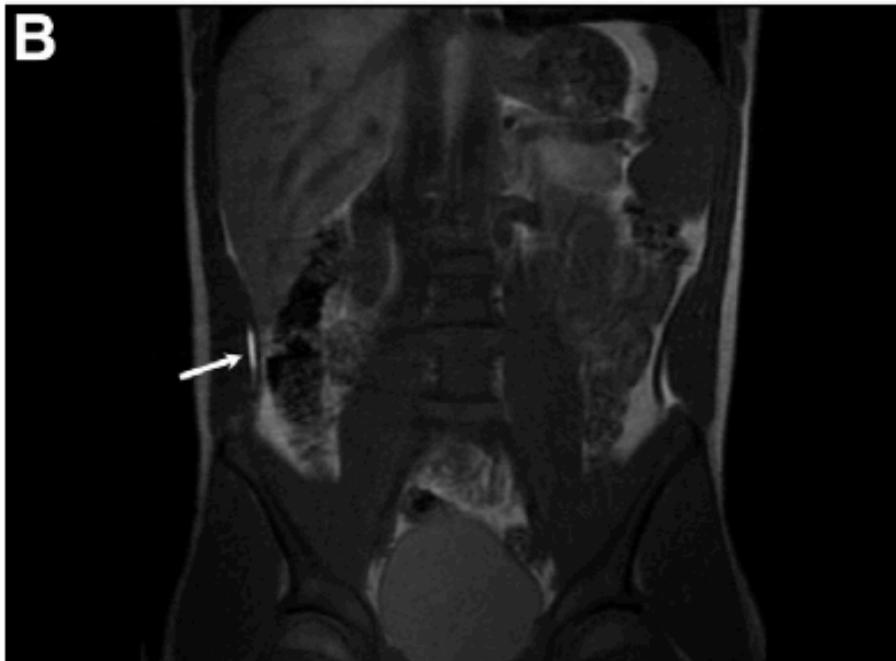
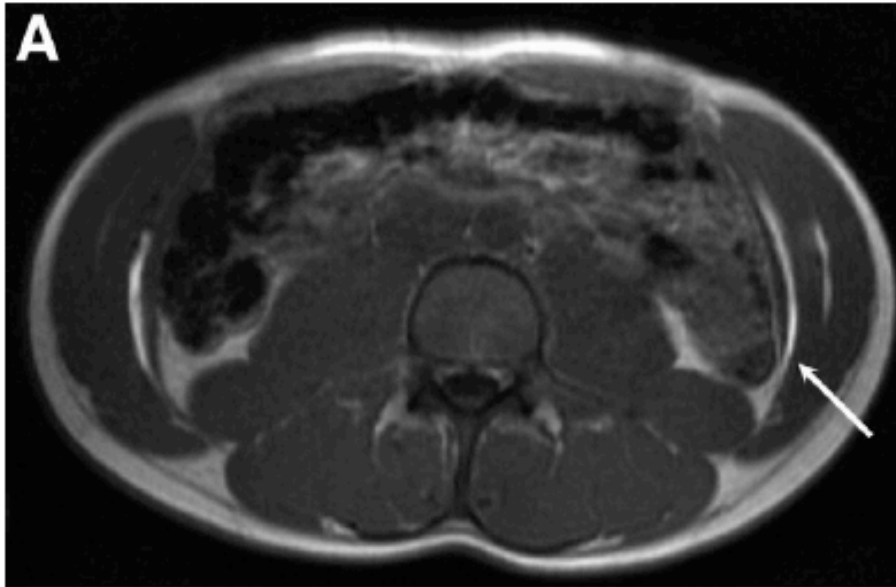
McDonnell JG, O'Donnell B, Curley G, et al. The analgesic efficacy of transversus abdominis plane block after abdominal surgery: a prospective randomized controlled trial. *Anesth Analg* 2007; 104: 193–7

O'Donnell BD, McDonnell JG, McShane AJ. The transversus abdominis plane (TAP) block in open retropubic prostatectomy. *Reg Anesth Pain Med* 2006; 31: 91

# Transversus Abdominis Plane Block: A Cadaveric and Radiological Abdominal Evaluation

John G. McDonnell, M.B., F.C.A.R.C.S.I., Brian D. O'Donnell, M.B., F.C.A.R.C.S.I., Thomas Farrell, M.B., M.A., Ph.D., Niall Gough, M.B., F.F.R.R.C.S.I., David Tuite, M.B., F.F.R.R.C.S.I., Camillus Power, M.D., F.C.A.R.C.S.I., and John G. Laffey, M.D., M.A., B.Sc., F.C.A.R.C.S.I.

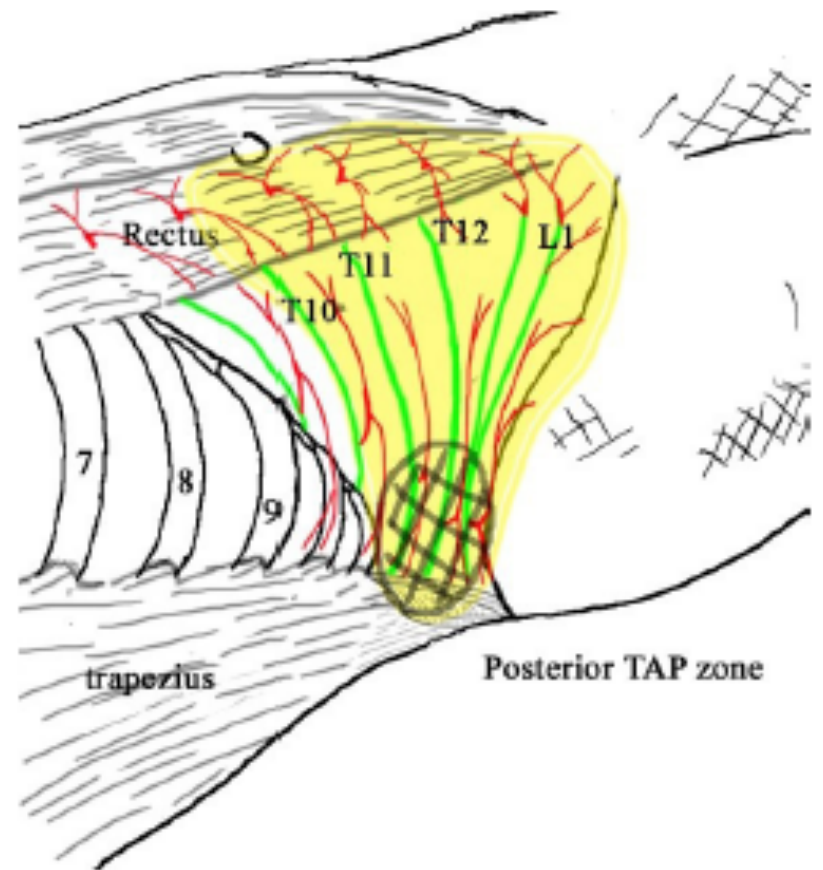
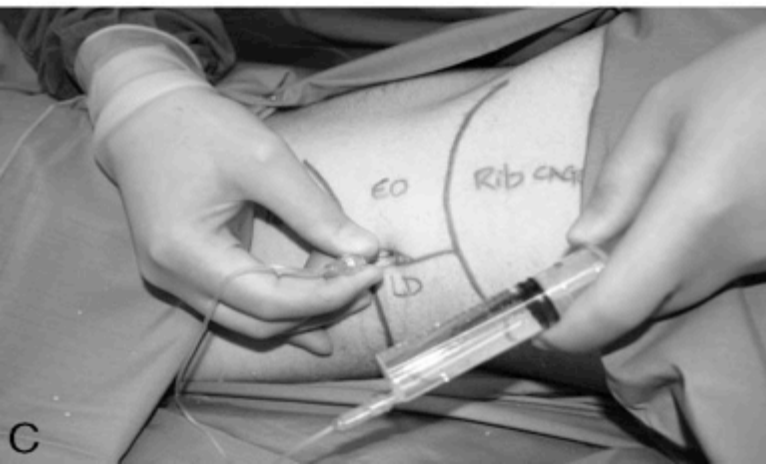




Extension anesthésie de T7 à L1 (dermatomes testés au froid) après 20 ml,  
3 volontaires sains  
(Coupe IRM)



# The Analgesic Efficacy of Transversus Abdominis Plane Block After Abdominal Surgery: A Prospective Randomized Controlled Trial



# The Transversus Abdominis Plane Block Provides Effective Postoperative Analgesia in Patients Undergoing Total Abdominal Hysterectomy

John Carney, MB\*†

John G. McDonnell, MB,  
FCARCSI\*†‡

Alan Ochana, MB†

Raj Bhinder, MB†

John G. Laffey, MD, MA, BSc,  
FCARCSI\*†‡

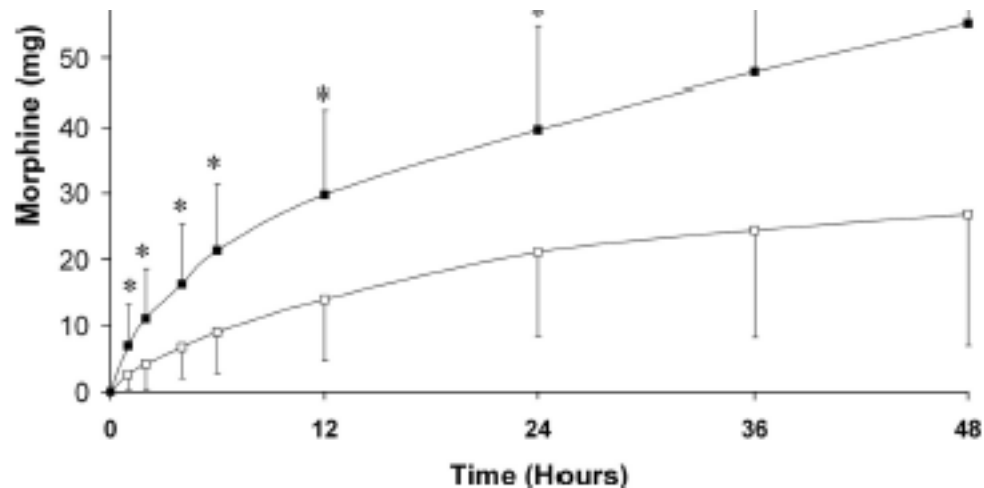
**BACKGROUND:** Patients undergoing total abdominal hysterectomy suffer significant postoperative pain. The transversus abdominis plane (TAP) block is a recently described approach to providing analgesia to the anterior abdominal wall. We evaluated the analgesic efficacy of the TAP block in patients undergoing total abdominal hysterectomy via a transverse lower abdominal wall incision, in a randomized, controlled, double-blind clinical trial.

**METHODS:** Fifty females undergoing elective total abdominal hysterectomy were randomized to undergo TAP block with ropivacaine ( $n = 24$ ) versus placebo ( $n = 26$ ) in addition to standard postoperative analgesia comprising patient-controlled IV morphine analgesia and regular diclofenac and acetaminophen. All patients received a general anesthetic and, before surgical incision, a bilateral TAP block was performed using 1.5 mg/kg ropivacaine (to a maximal dose of 150 mg) or saline on each side. Each patient was assessed postoperatively by a blinded investigator in the postanesthesia care unit and at 2, 4, 6, 12, 24, 36, 48 h postoperatively.

**RESULTS:** The TAP block with ropivacaine reduced postoperative visual analog scale pain scores compared to placebo block. Mean ( $\pm$ SD) total morphine requirements in the first 48 postoperative hours were also reduced ( $55 \pm 17$  mg vs  $27 \pm 20$  mg,  $P < 0.001$ ). The incidence of sedation was reduced in patients undergoing TAP blockade. There were no complications attributable to the TAP block.

**CONCLUSIONS:** The TAP block, as a component of a multimodal analgesic regimen, provided superior analgesia when compared to placebo block up to 48 postoperative hours after elective total abdominal hysterectomy.

(Anesth Analg 2008;107:2056-60)

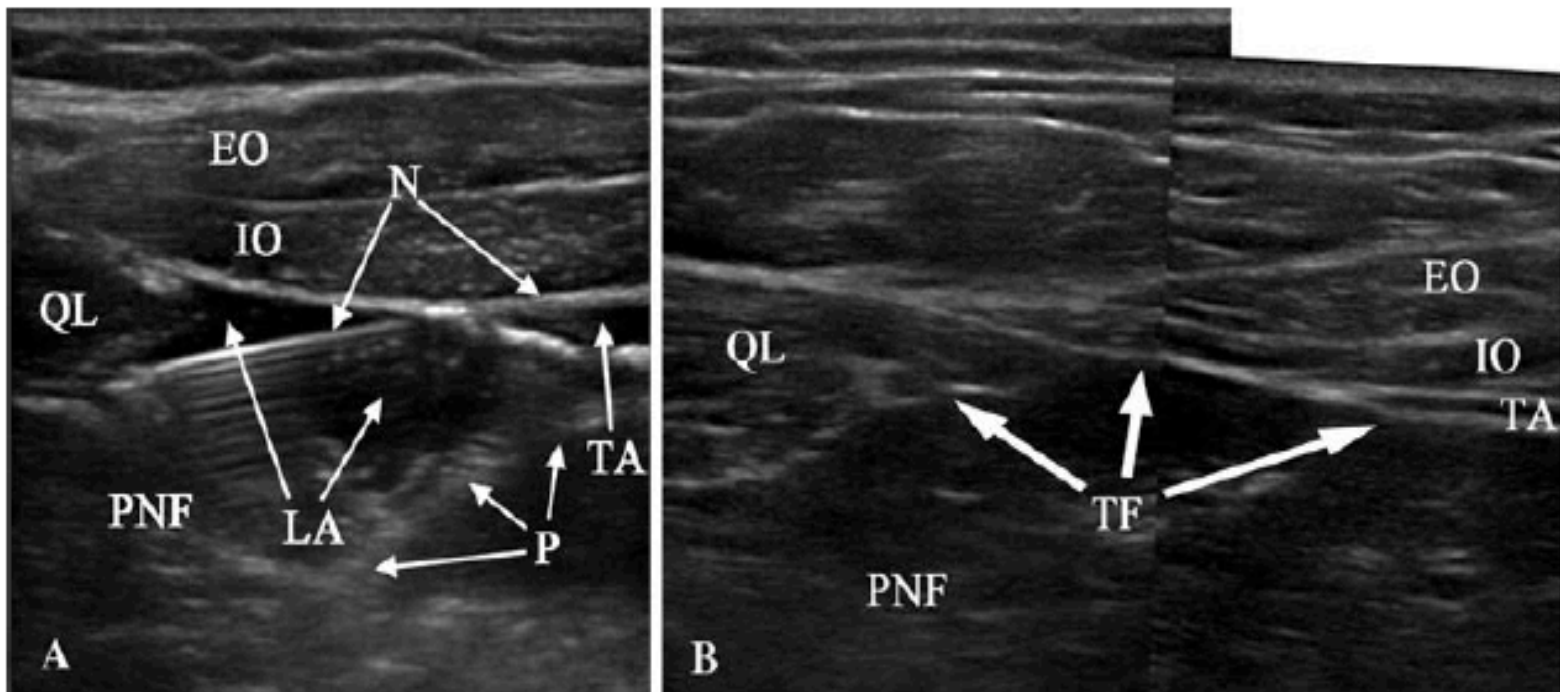


**Figure 2.** Mean postoperative cumulative morphine consumption in each group in the first 48 postoperative hours. \*Indicates significantly ( $P < 0.05$ ,  $t$ -test post ANOVA) higher visual analog scale score compared to the TAP block group.

CORRESPONDENCE

## Transversalis fascia plane block, a novel ultrasound-guided abdominal wall nerve block

Peter D. Hebbard, FANZCA

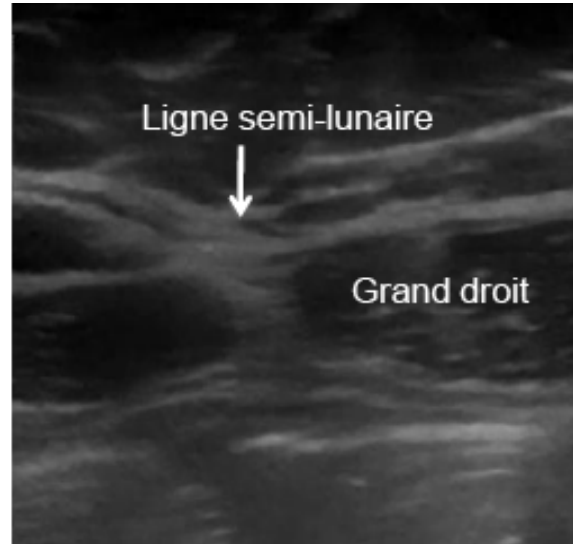
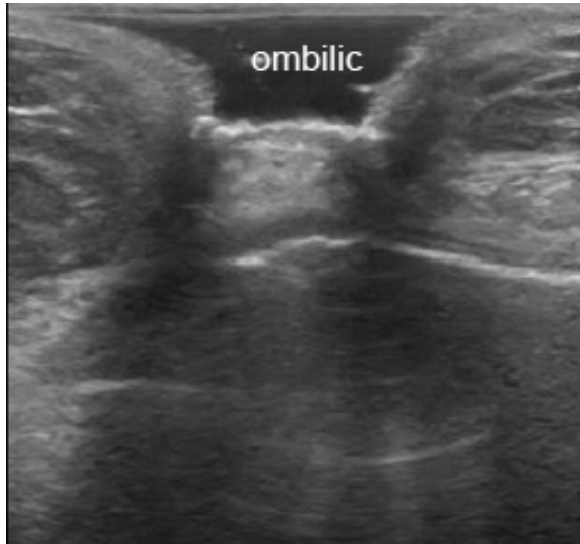


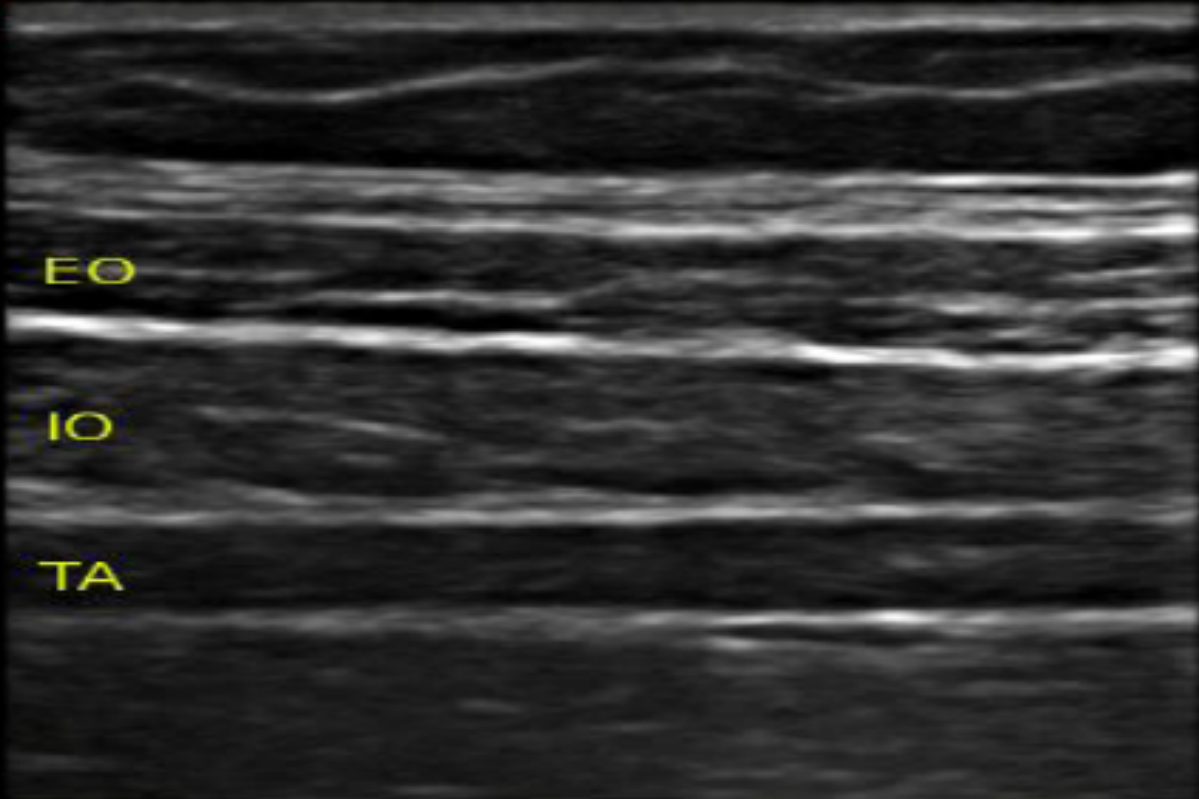
# Technique de ponction

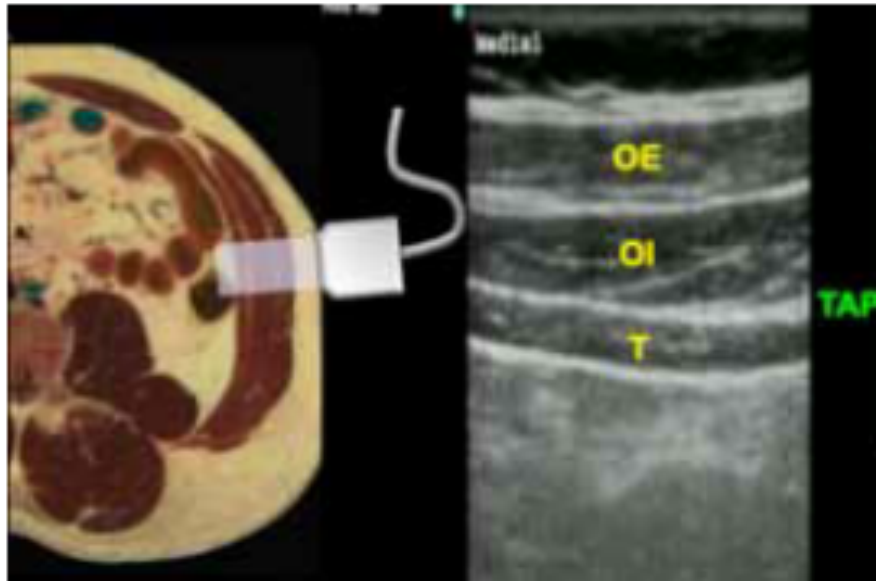
Repérer d'abord l'ombilic: cône d'ombre

Glisser latéralement: voir le ligament semi-lunaire

Poursuivre latéralement: 3 plans musculaires







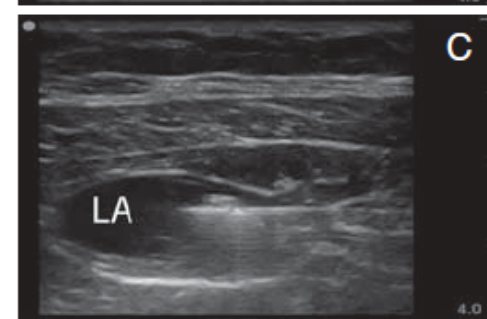
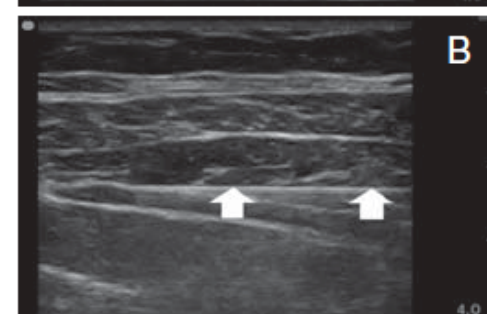
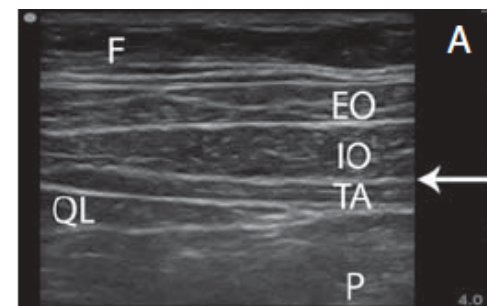
OBSTETRICS

Ultrasound-guided transversus abdominis plane block  
for analgesia after Caesarean delivery

D. Belavy<sup>1 2\*</sup>, P. J. Cowlshaw<sup>1</sup>, M. Howes<sup>1</sup> and F. Phillips<sup>1</sup>

Table 2 Patient-controlled morphine use after surgery. IQR, inter-quartile range. \*Mann–Whitney *U*-test

	Placebo (mg), median (IQR)	Active (mg), median (IQR)	<i>P</i> -value*
Cumulative morphine dose at			
6 h	12.0 (17.0)	6.0 (6.0)	0.039
12 h	16.5 (22.0)	10.0 (8.0)	0.049
18 h	25.5 (28.0)	16.0 (12.0)	0.034
24 h	31.5 (28.0)	18.0 (21.0)	0.046
Morphine dose during time interval			
6–12 h	5.0 (6.0)	4.0 (3.0)	0.226
12–18 h	7.0 (11.0)	4.0 (4.0)	0.143
18–24 h	3.5 (7.0)	4.0 (10.0)	0.966





REPORTS OF ORIGINAL INVESTIGATIONS

## **Transversus abdominis plane block for analgesia after Cesarean delivery: a systematic review and meta-analysis**

### **Bloc dans le plan du muscle transverse de l'abdomen après accouchement par césarienne: revue systématique de la littérature et méta-analyse**

Basem M. Mishriky, MD · Ronald B. George, MD ·  
Ashraf S. Habib, MBBCh

*British Journal of Anaesthesia* 109 (5): 679–87 (2012)  
Advance Access publication 19 August 2012 · doi:10.1093/bja/aes279

BJA

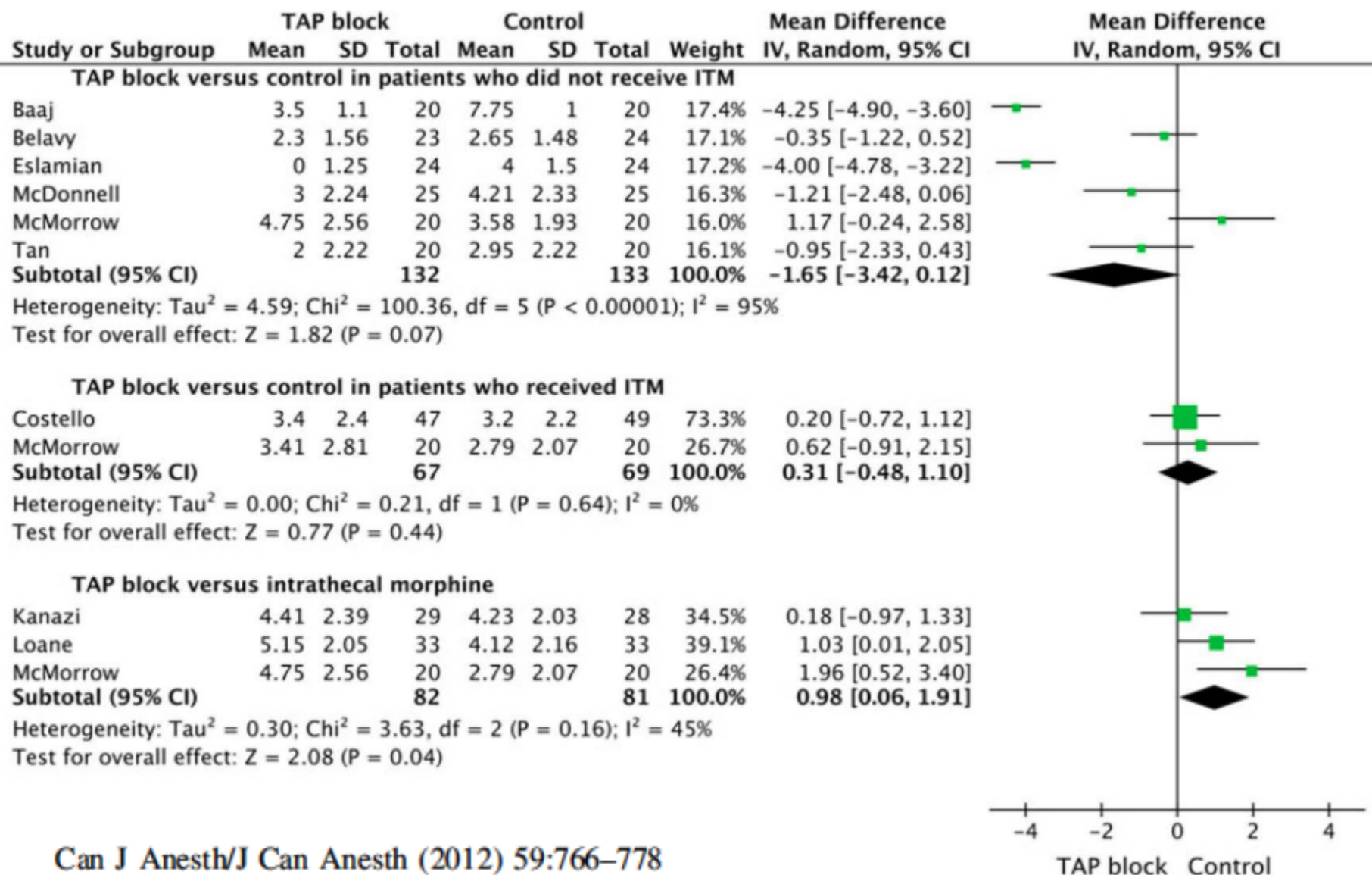
#### REVIEW ARTICLES

### **Transversus abdominis plane block for postoperative analgesia after Caesarean delivery performed under spinal anaesthesia? A systematic review and meta-analysis**

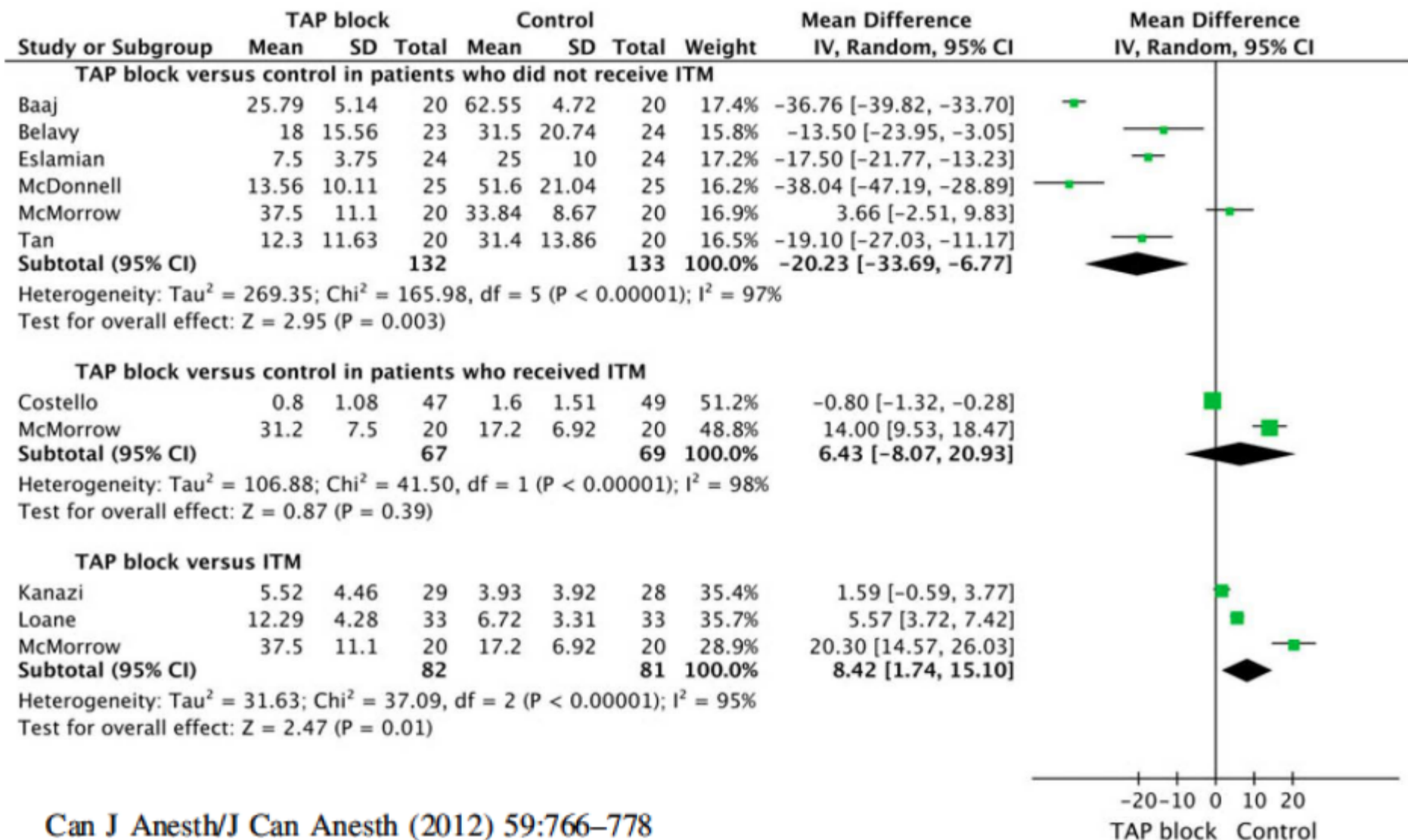
F. W. Abdallah<sup>1,2</sup>, S. H. Halpern<sup>1,2,3</sup> and C. B. Margarido<sup>1,2,3\*</sup>



# Pain scores on movement at 24 hr.



# Opioid consumption at 24 hr.



# The Analgesic Efficacy of Ultrasound-Guided Transversus Abdominis Plane Block in Adult Patients: A Meta-Analysis

Moira Baeriswyl, MD,\* Kyle R. Kirkham, MD,† Christian Kern, MD,\* and Eric Albrecht, MD\*

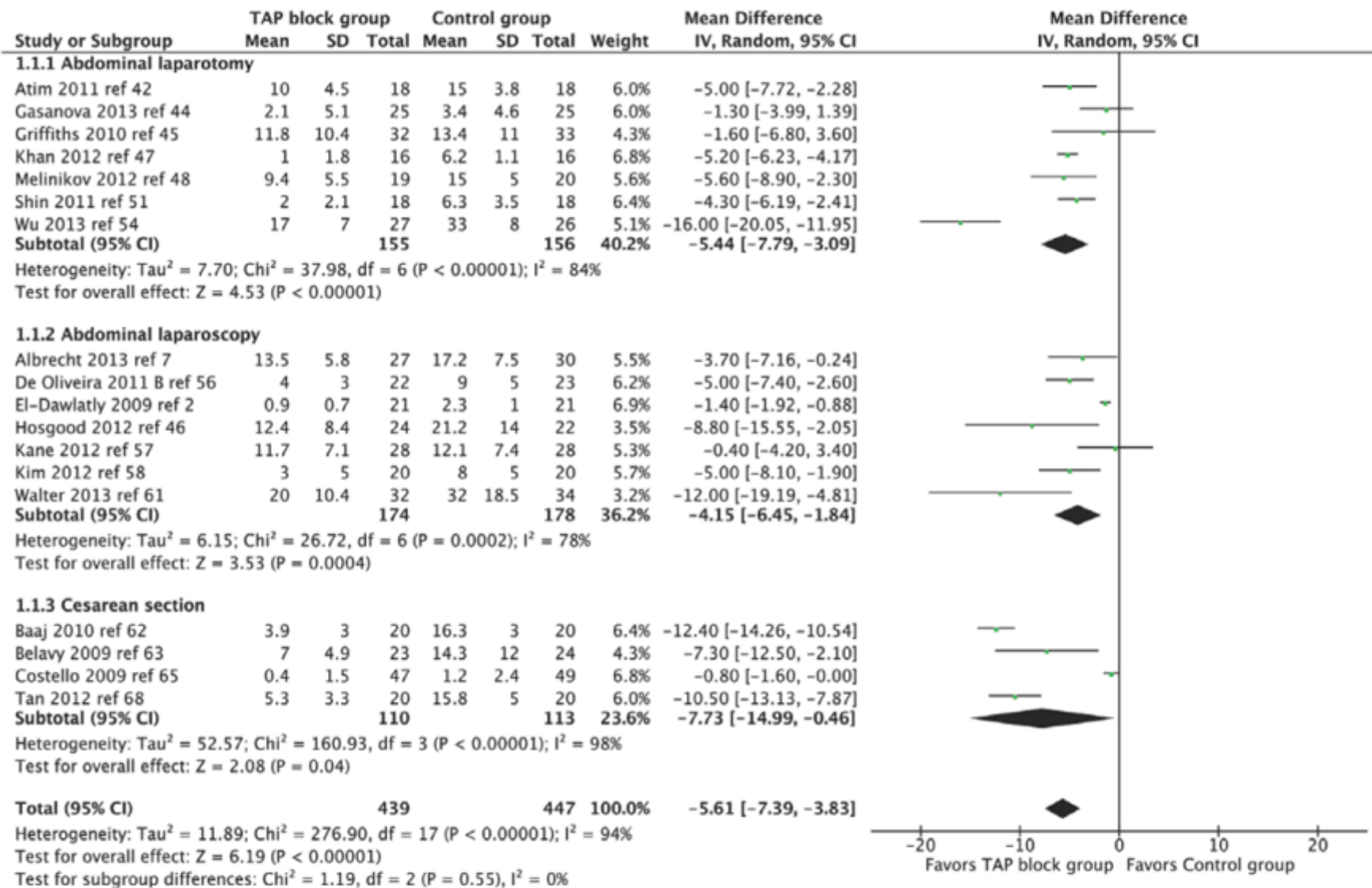
**BACKGROUND:** Previous meta-analyses of the transversus abdominis plane (TAP) block have examined a maximum of 12 articles, including fewer than 650 participants, and have not examined the effect of ultrasound-guided techniques specifically. Recently, many trials that use ultrasound approaches to TAP block have been published, which report conflicting analgesic results. This meta-analysis aims to evaluate the analgesic efficacy of ultrasound-guided TAP blocks exclusively for all types of abdominal surgeries in adult patients.

**METHODS:** This meta-analysis was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement guidelines. The primary outcome was cumulative IV morphine consumption at 6 hours postoperatively, analyzed according to the type of surgery, the type of surgical anesthesia, the timing of injection, the block approach adopted, and the presence of postoperative multimodal analgesia. Secondary outcomes included IV morphine consumption at 24 hours postoperatively; pain scores at rest and on movement at 6 and 24 hours postoperatively; and postoperative nausea and vomiting, pruritus, and rates of complications.

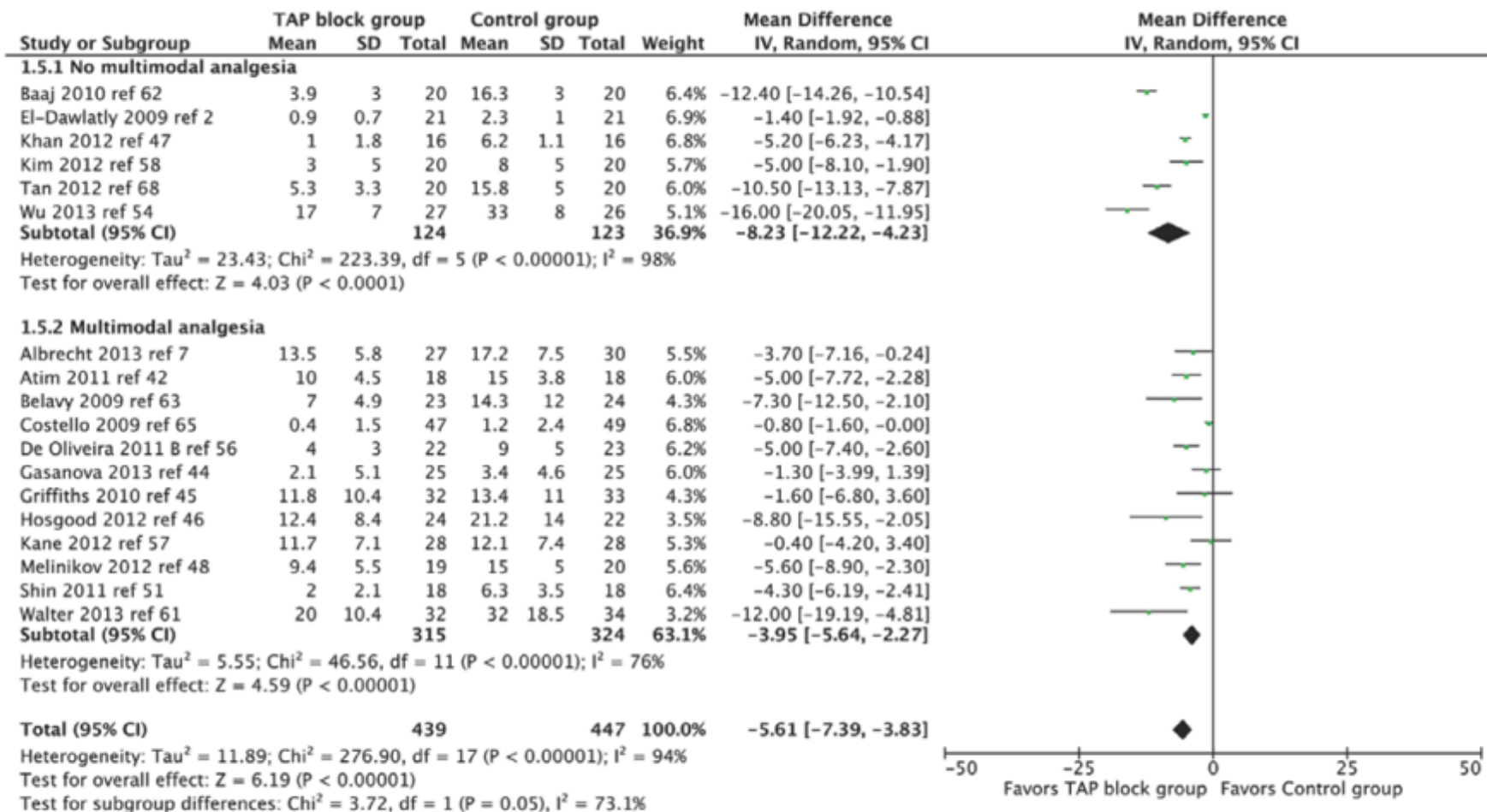
**RESULTS:** Thirty-one controlled trials including 1611 adult participants were identified.

Effet favorable mais modéré : - 6 mg morphine/24h IC (-4; -7)

Anesth Analg sept 2015



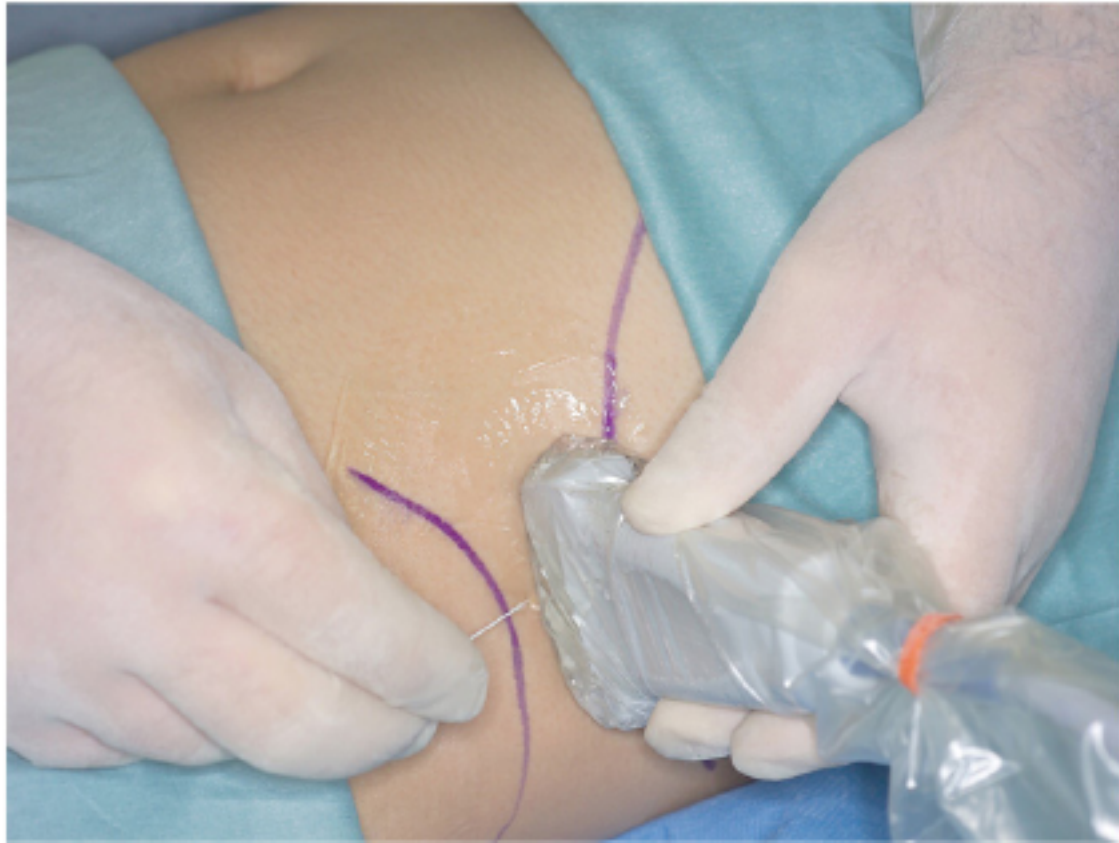
**Figure 3.** Cumulative IV morphine consumption at 6 h postoperatively according to the type of surgery. CI = confidence interval; TAP = trans-versus abdominis plane.



**Figure 7.** Cumulative IV morphine consumption at 6 h postoperatively according to the presence of postoperative multimodal analgesia. CI = confidence interval; TAP = transversus abdominis plane.

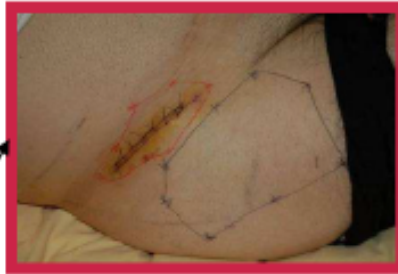
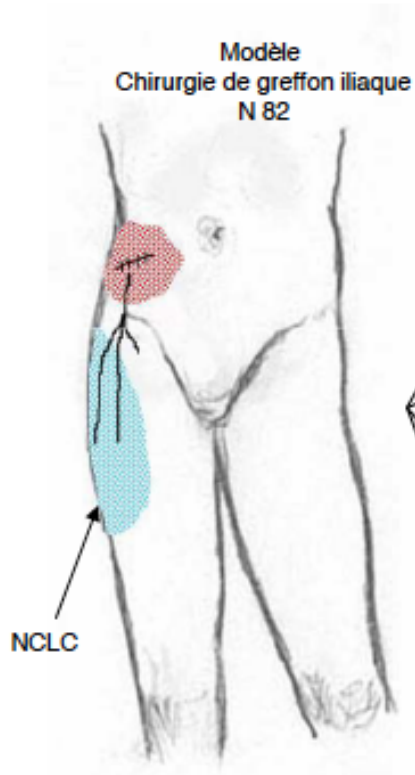
TAP hors plan : appendicectomie (9 ans, 32 kg)

Z Laghari et al, J Clin Anesth 2008



**Fig. 1** Transducer and needle positioning in ultrasound-guided transabdominal plane block.

# Facteurs prédictifs précoces



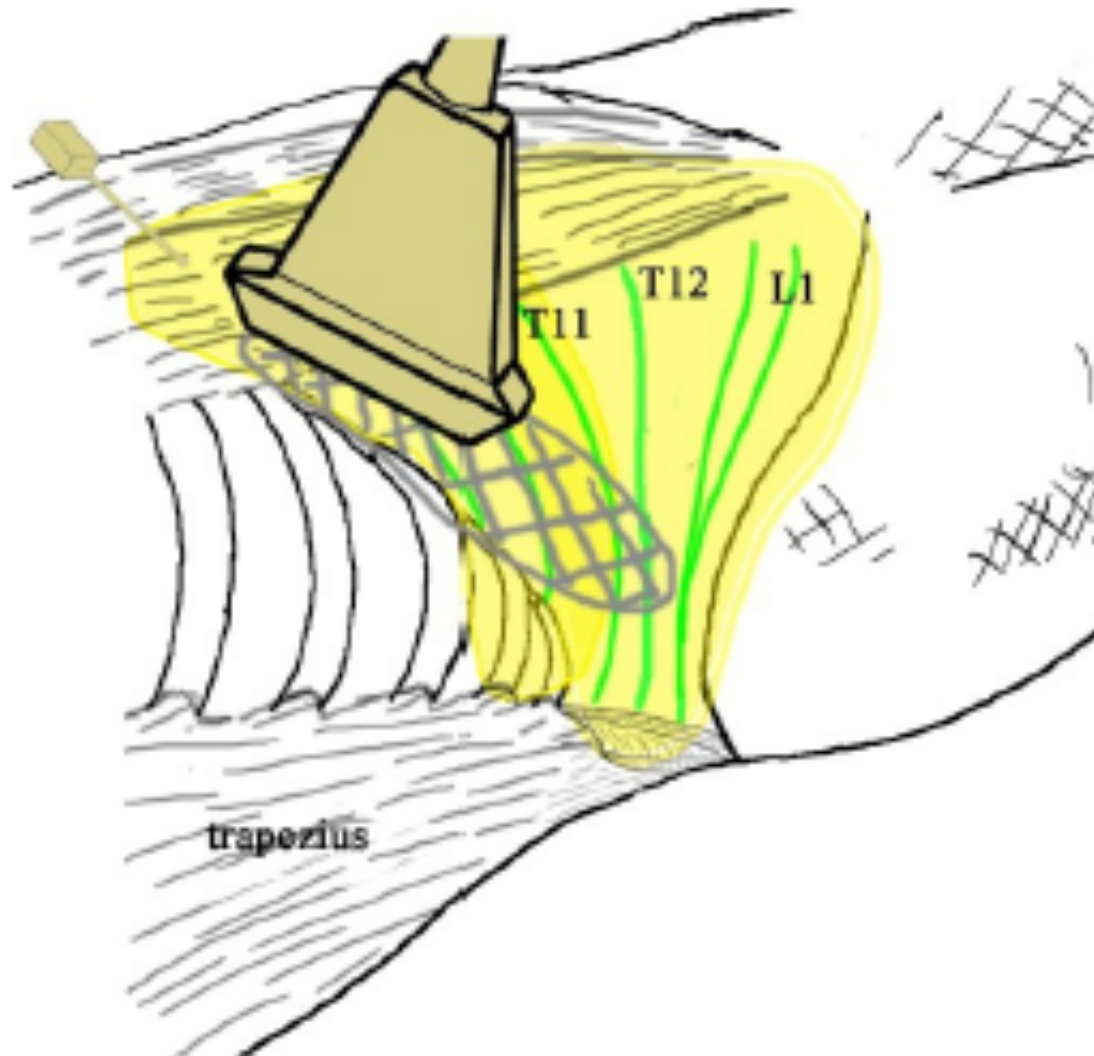
**23 % d. neuropathique à 3 mois**

Régression logistique

Surface d'hyperalgésie 2nde  
+  
Score DN4 à J2

*Martinez et col. Soumis Pain 2011  
Abstract Sfar 72*

# Abord subcostal : chirurgie sus mésocolique (cholecystectomie)



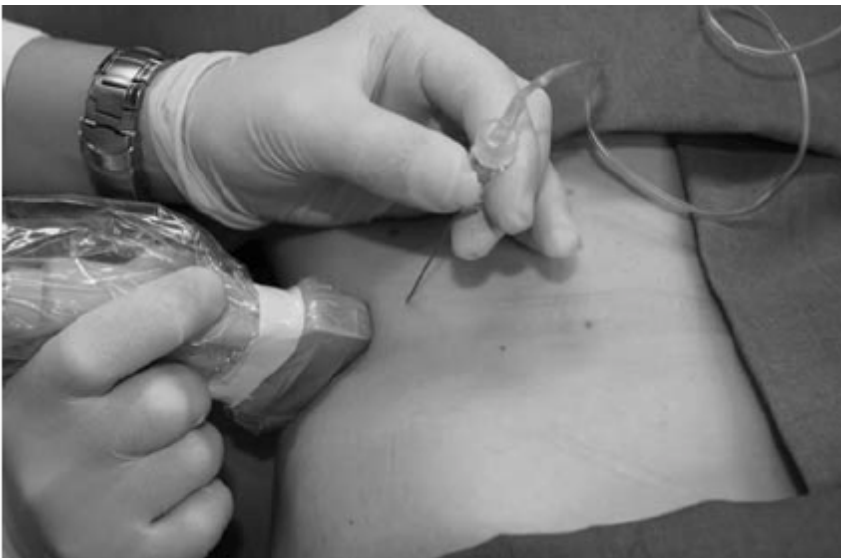


CLINICAL PRACTICE



**Ultrasound-guided transversus abdominis plane block: description of a new technique and comparison with conventional systemic analgesia during laparoscopic cholecystectomy<sup>†</sup>**

A. A. El-Dawlatly<sup>1</sup>, A. Turkistani<sup>1</sup>, S. C. Kettner<sup>2</sup>, A.-M. Machata<sup>2</sup>, M. B. Delvi<sup>1</sup>, A. Thallaj<sup>1</sup>, S. Kapral<sup>2</sup> and P. Marhofer<sup>2\*</sup>



TAP classique (T12-crête)

15 ml X 2 bupivacaïne (5 mg/ml)

**Table 1** Patient characteristics. No statistical significant differences were calculated between the study groups. Data are presented as mean (range), mean (SD) or ratio

	Group A	Group B
Age (yr)	51 (34–65)	43 (22–77)
Weight (kg)	75 (9)	80 (18)
Height (cm)	168 (7)	170 (9)
Sex (female/male)	16/5	19/2
Duration of surgery (min)	55 (11)	64 (21)

**Table 2** Intra- and postoperative analgesia demand. Data are presented as mean (SD)

	Group A	Group B	P-value
Intraoperative sufentanil (µg)	8.6 (3.5)	23.0 (4.8)	<0.01
Morphine (mg) via PCA device (recovery room)	0.9 (0.7)	2.3 (1.0)	<0.05
Morphine (mg) via PCA device (24 h postoperative)	10.5 (7.7)	22.8 (4.3)	<0.05

# The Analgesic Efficacy of Subcostal Transversus Abdominis Plane Block Compared with Thoracic Epidural Analgesia and Intravenous Opioid Analgesia After Radical Gastrectomy

Yiquan Wu, MD,\* Fuli Liu, MD,\* Hongli Tang, MD,\* Quanguang Wang, MD,\* Limei Chen, MD,\* Hui Wu, MD,\* Xuezheng Zhang, MD,\* Jianxia Miao, MD,\* and Meizhen Zhu, MD,\* Chenggang Hu, MD, PhD,† Mark Goldsworthy, MD,‡ Jing You, MS,§ and Xuzhong Xu, MD,\*

Anesth Analg 2013

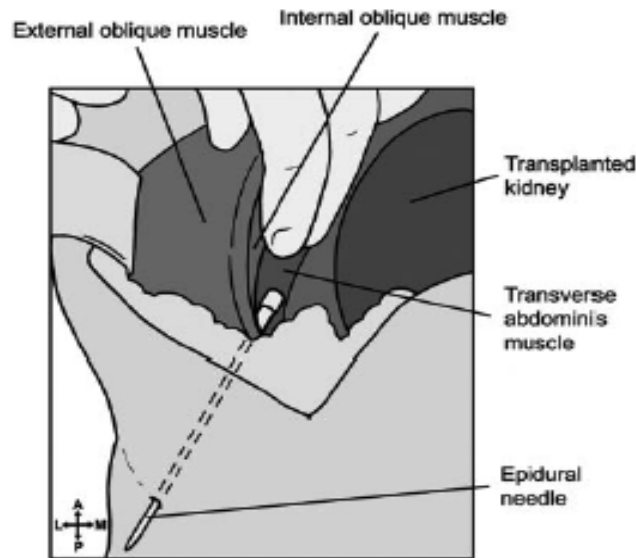
APD en T8-T9 : 8 ml puis 5 ml/h  
TAP : 20 ml x 2 (ropivacaine 0,375 %)

- score EVA : 0=> H24 : NS
- morphine : 0=> 6h : NS
- morphine : 6 = > H24 : > groupe TAP

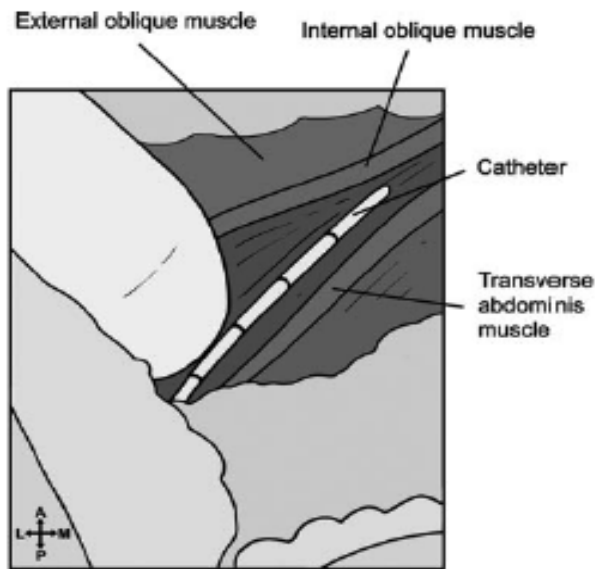


Fig. 1 Transducer and needle positioning in ultrasound-guided transversus abdominis plane block.

# Continuous Transversus Abdominis Plane Block for Renal Transplant Recipients



**Figure 1.** An epidural needle is inserted through the dissected space, the internal and external oblique muscles, the subcutaneous tissue, and the skin, passing through the skin approximately 2 cm from the upper end of the incision. A = anterior; P = posterior; L = lateral; M = medial.



**Figure 2.** Epidural catheter positioned between the transverse abdominis and internal oblique muscle. A = anterior; P = posterior; L = lateral; M = medial.

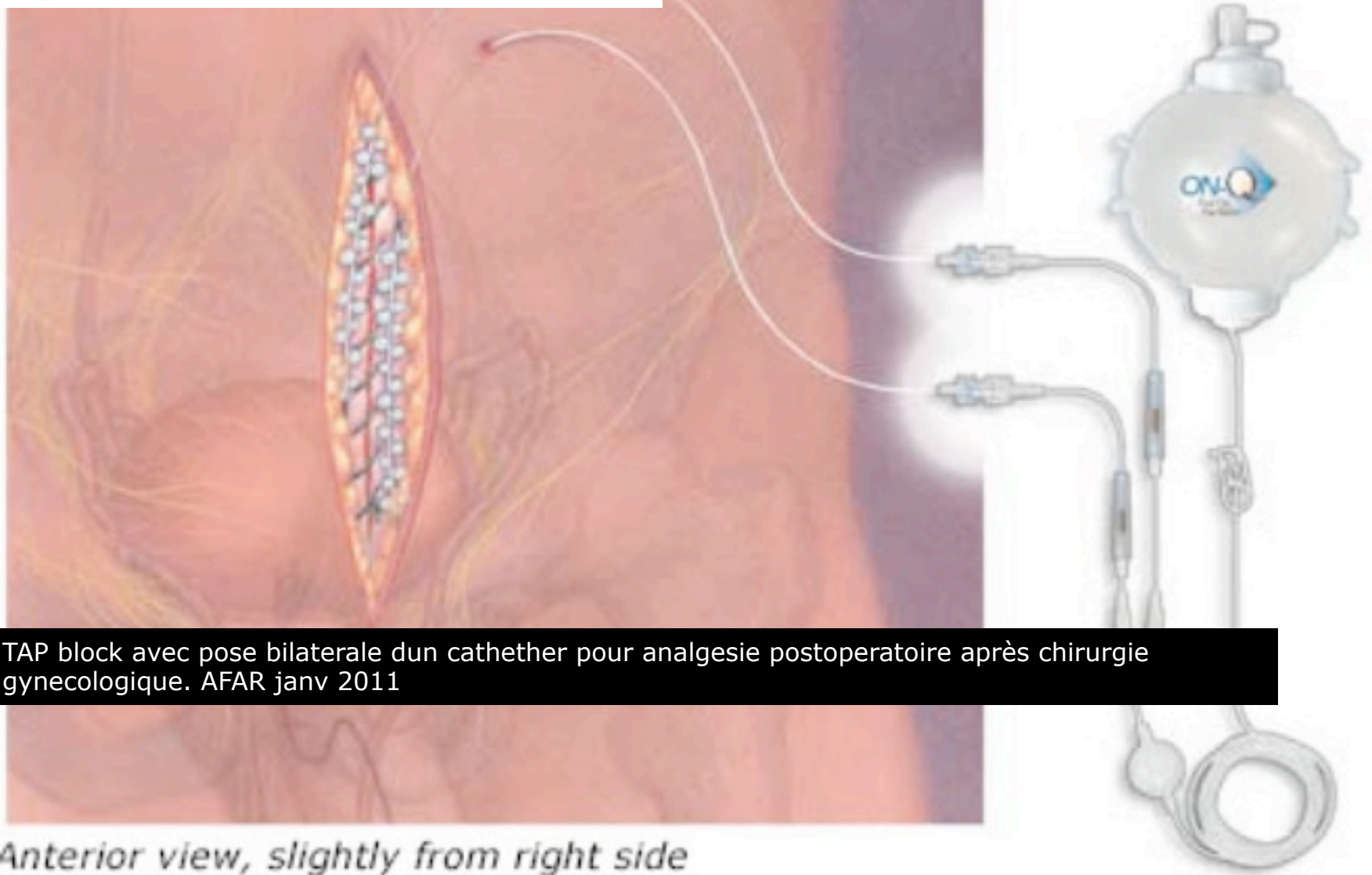
**Table 1.** Comparison of Analgesia Achieved with Continuous TAP Block + Morphine PCA Versus Morphine PCA Alone in Renal Transplant Recipients

Analgesia	No. of patients	Amount of morphine used (mg)		Median pain score	PCA duration (h)
		Median	Range		
Continuous TAP + morphine PCA	7	13.5	4-34	1	24
Morphine PCA	35	61.5	9-167	1	42

PCA = patient-controlled analgesia; TAP = transversus abdominis plane.

**Low-dose infusion with 'surgical transverse abdominis plane (TAP) block' in open nephrectomy**


Forastiere E, Sofra M, Giannarelli D, Fabrizi L, Simone G. Effectiveness of continuous wound infusion of 0.5% ropivacaine by On-Q pain relief system for postoperative pain management after open nephrectomy. *Br J Anaesth* 2008; **101**: 841-7



TAP block avec pose bilaterale dun catheter pour analgesie postoperatoire après chirurgie gynecologique. AFAR janv 2011

*Anterior view, slightly from right side*



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www.sciencedirect.com

Elsevier Masson France  
 EM|consulte  
www.em-consulte.com



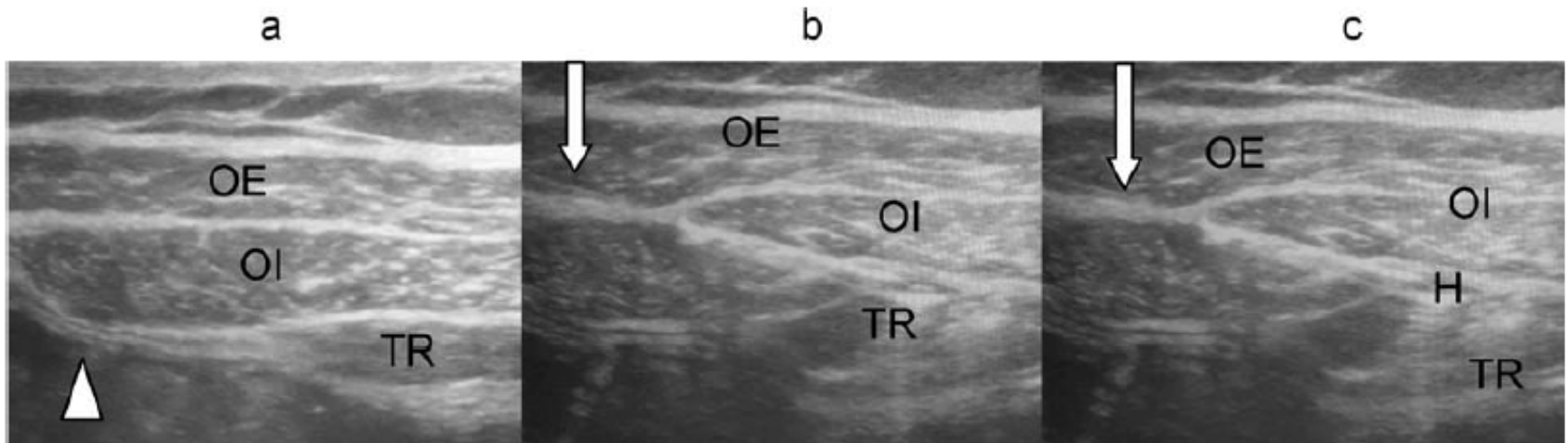
Cas clinique

## TAP block avec pose bilatérale d'un cathéter pour analgésie postopératoire après chirurgie gynécologique

*Bilateral catheter for continuous TAP block and postoperative pain relief after gynecologic surgery*

A. Wyniecki, P. Zetlaoui, M. Bruyère, D. Benhamou \*

Département d'anesthésie-réanimation, hôpital Bicêtre, 78, rue du Général-Leclerc, 94275 Le Kremlin-Bicêtre, France





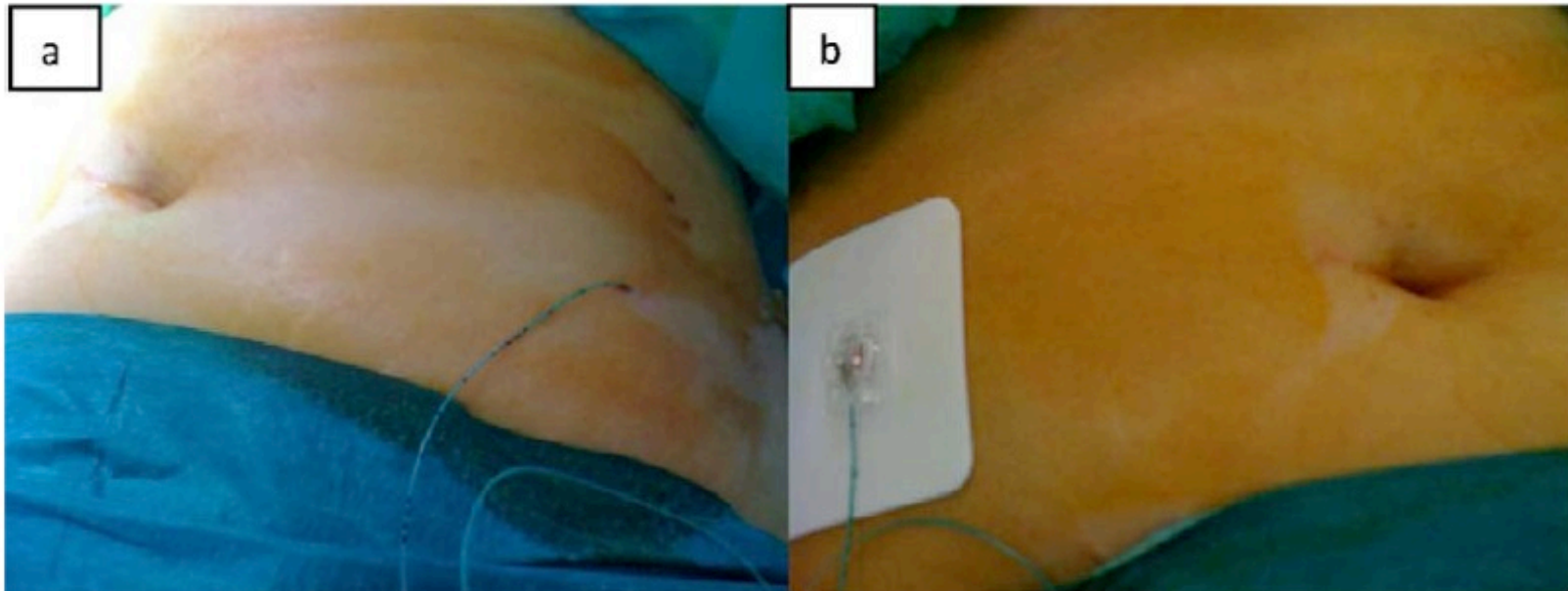
Cas clinique

**TAP block avec pose bilatérale d'un cathéter pour analgésie postopératoire après chirurgie gynécologique**

*Bilateral catheter for continuous TAP block and postoperative pain relief after gynecologic surgery*

A. Wyniecki, P. Zetlaoui, M. Bruyère, D. Benhamou\*

*Département d'anesthésie-réanimation, hôpital Bicêtre, 78, rue du Général-Leclerc, 94275 Le Kremlin-Bicêtre, France*



**Fig. 2.** a : cathéter avant fixation à la peau ; b : fixation à la peau.

Question pour un champion ?

- peroperatoire : lidocaine iv

- TAP block paroi

# Conclusion

- Bloc anesthésique et analgésique
- Analgésie en chirurgie pédiatrique
- Echographie : nouveaux blocs
- Chirurgie lourde: intérêt discuté vs APD ?