

# Regional Anaesthesia & Enhanced Recovery after Laparoscopic Nephrectomy

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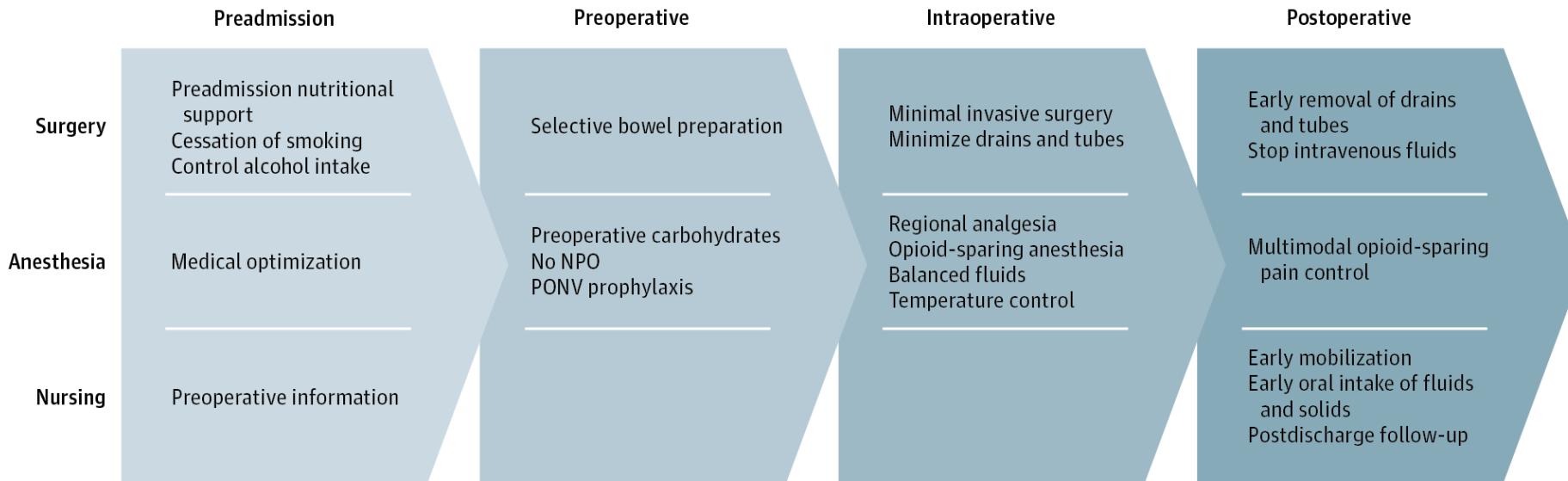
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South Thames Acute Pain Group Conference  
November 2018

Brighton and Sussex   
University Hospitals  
NHS Trust

# Enhanced Recovery After Surgery (ERAS)



Clinical Review & Education

JAMA Surgery | Review

'Enhanced Recovery After Surgery  
A Review

Olle Ljungqvist, MD, PhD; Michael Scott, MD; Kenneth C. Fearon, MD, PhD<sup>†</sup>

JAMA Surgery, 152(3); pp.292-298

Fast track surgery  
30%-50% reduction in length of stay  
Quality recovery  
Fewer complications  
Fewer costs



## BAUS Enhanced Recovery Pathway

### 4.2 Operative

**Aim: maximise pain control & minimise the use of opiate-based analgesia**

The general principle in operative analgesia is to reduce usage of long acting opiates by incorporating local anaesthetic blocks and other techniques.

### 4.3 Post-operative

**Aim: use multimodal analgesia to avoid the use of PCA and minimise the use of opiates, whilst ensuring adequate pain relief**

# Opioid analgesia



Moderate to severe pain

PONV, constipation, dizziness, drowsiness

? ERAS & DREAMing (DRink, Eat & Mobilise)

?? Morphine & cancer recurrence

*British Journal of Anaesthesia* 105 (2): 106–115 (2010)  
doi:10.1093/bja/aeq164

BJA

REVIEW ARTICLES

## Effect of anaesthetic technique and other perioperative factors on cancer recurrence

G. L. Snyder<sup>1,2\*</sup> and S. Greenberg<sup>1,2</sup>

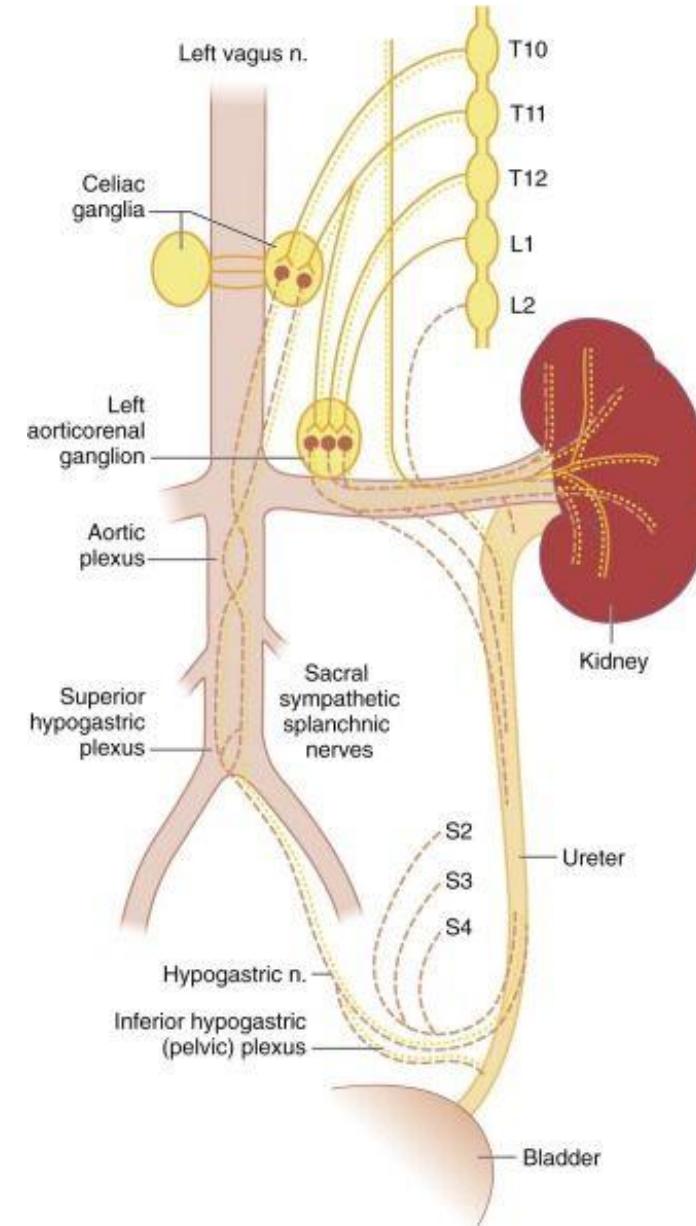
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\* Corresponding author. E-mail. gabrielsnyder@hotmail.com

# Pain pathways

Visceral & somatic  
T8-L1 kidneys  
T10 –L2 ureters

Port pain  
Incisions (to remove big tumours)  
Pelvic organ nociception  
Diaphragmatic irritation  
Urinary catheter & drain discomfort



# Regional Anaesthetic Techniques

- Central Neuraxial techniques (Spinal/Epidural)
- Paravertebral Block
- Abdominal & Thoracic Wall Blocks

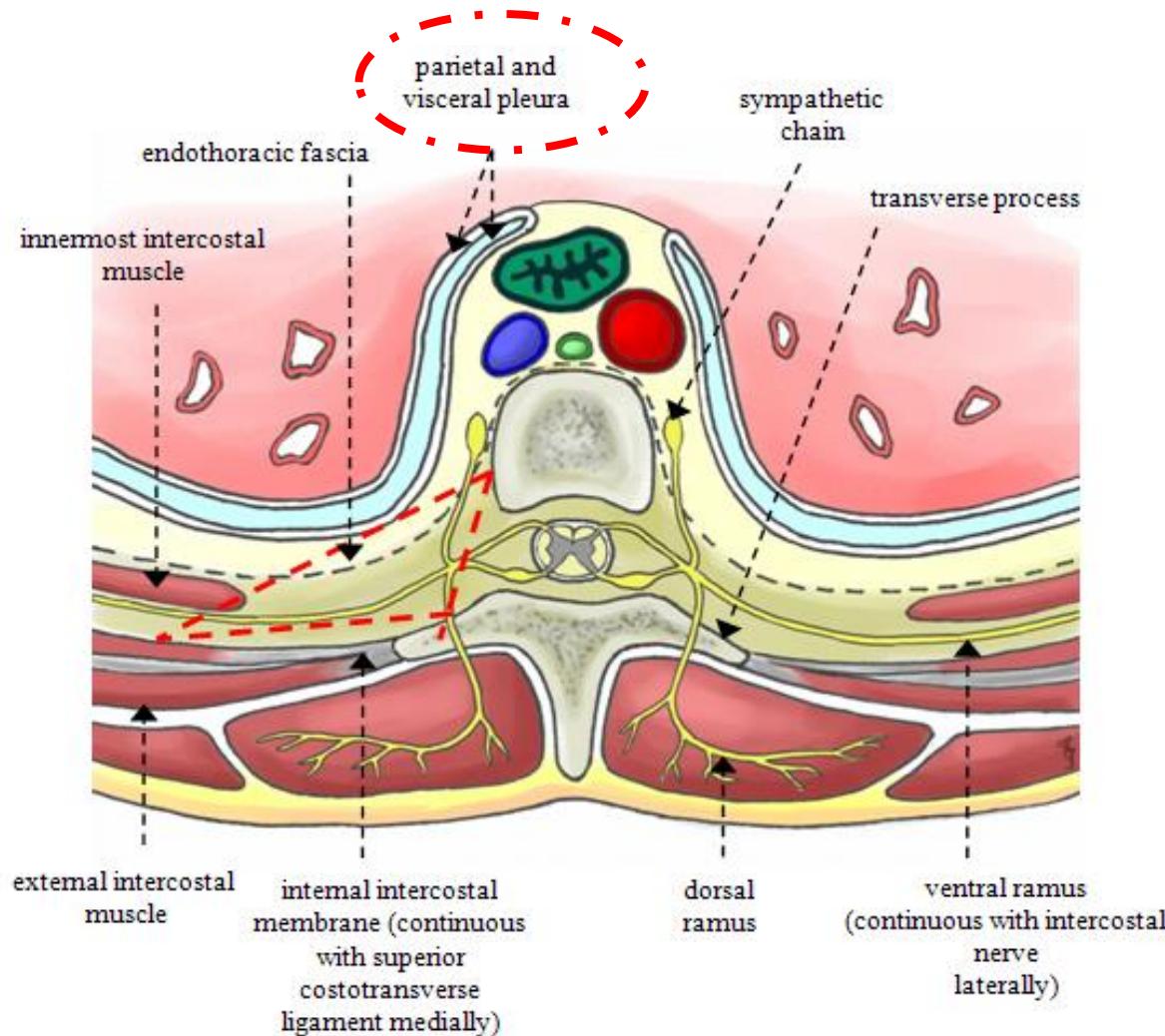


# Central Neuraxial techniques (Spinal/Epidural)

- Superior analgesia
  - .... BUT
- Sympathetic blockade and haemodynamic instability
- Bladder paralysis
- Lower limb paralysis
- Failure



# Paravertebral Block



**USRA**

# Abdominal & Thoracic wall blocks

- **Transversus Abdominis Plane (TAP) Blocks**
- **Quadratus Lumborum (QL) Blocks**
- **Erector Spinae Plane (ESP) Block**



## Essentials of Our Current Understanding: Abdominal Wall Blocks

*Ki Jinn Chin, FRCPC,\* John G. McDonnell, MD, FCARCSI,† Brendan Carvalho, MD,‡ Aidan Sharkey, FCAI,†  
Amit Pawa, FRCA,§ and Jeffrey Gadsden, MD, FRCPC, FANZCA||*

*(Reg Anesth Pain Med 2017;42: 133–183)*

### **Transversus Abdominis Plane (TAP) Blocks**

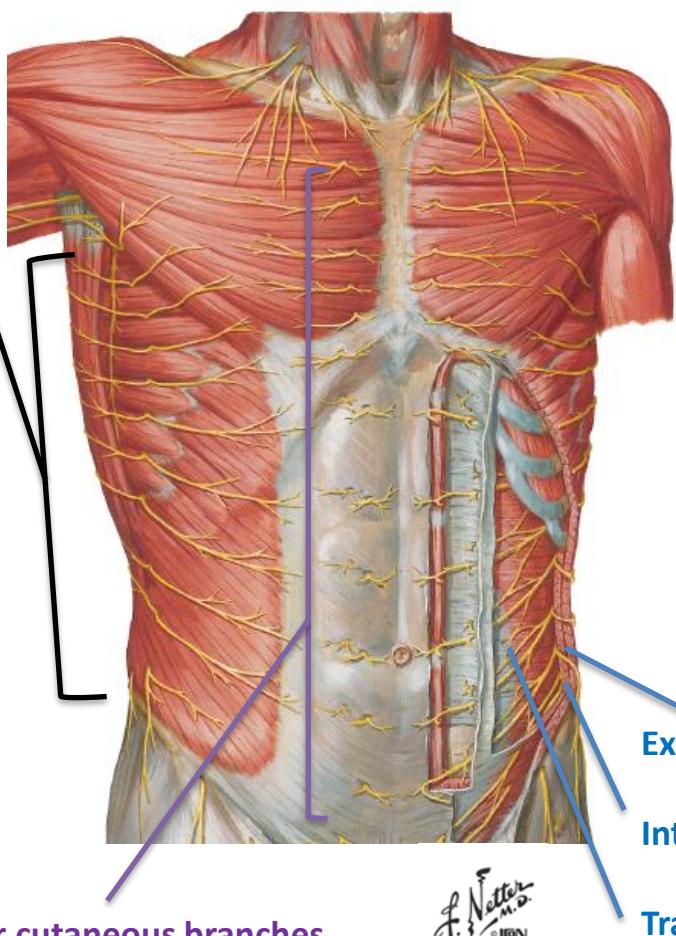
- Landmark-Guided TAP Block
- US-Guided Lateral TAP Block
- US-Guided Subcostal TAP Block
- US-Guided Bilateral Dual TAP Block
- Surgical TAP Block

### **Quadratus Lumborum (QL) Blocks**

- QL1 (lateral)
- QL2 (posterior)
- QL3 (anterior or transmuscular)

# TAPB Anatomy

Lateral cutaneous branches  
of intercostal nerves (T2-T12)

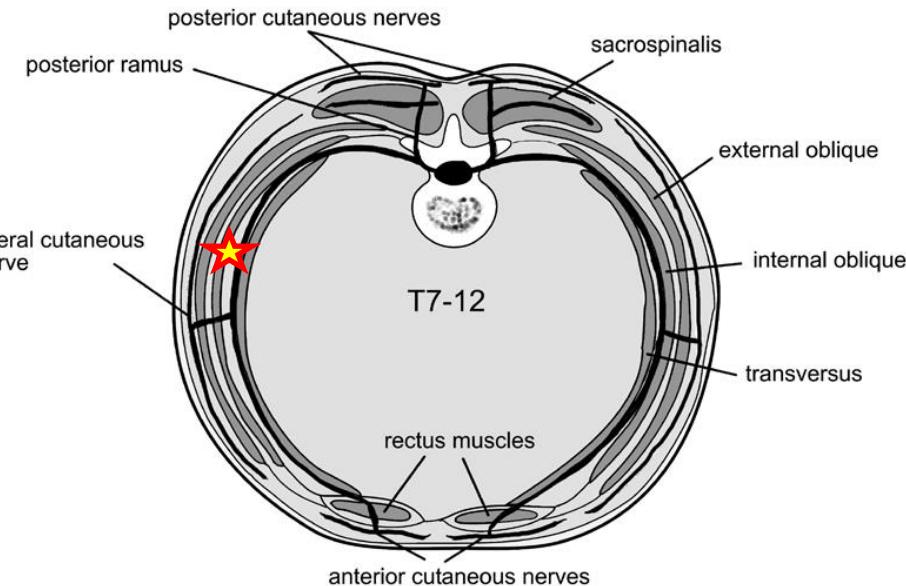


Anterior cutaneous branches  
of intercostal nerves (T1-T12)

External Oblique muscle (cut)

Internal Oblique muscle (cut)

Transversus Abdominis muscle



Update in  
Anaesthesia

The Transversus Abdominis Plane (TAP) block:  
Abdominal plane regional anaesthesia

Katrina Webster

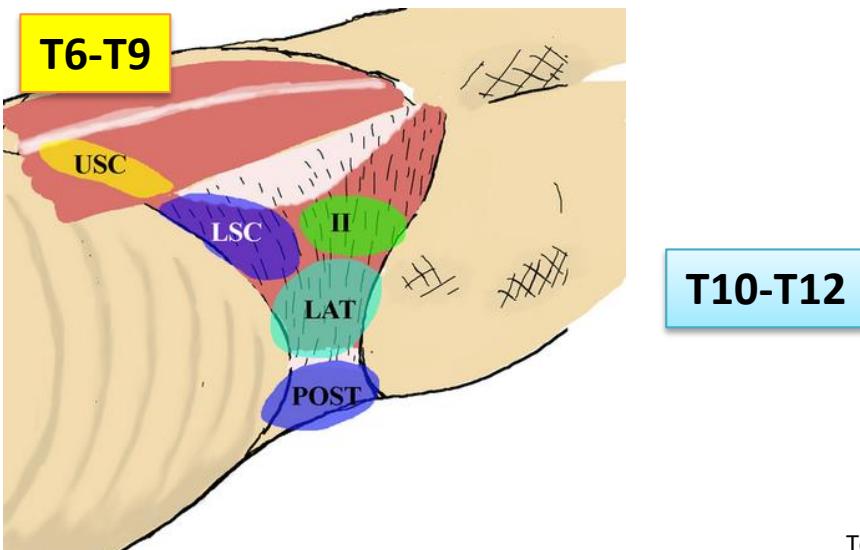
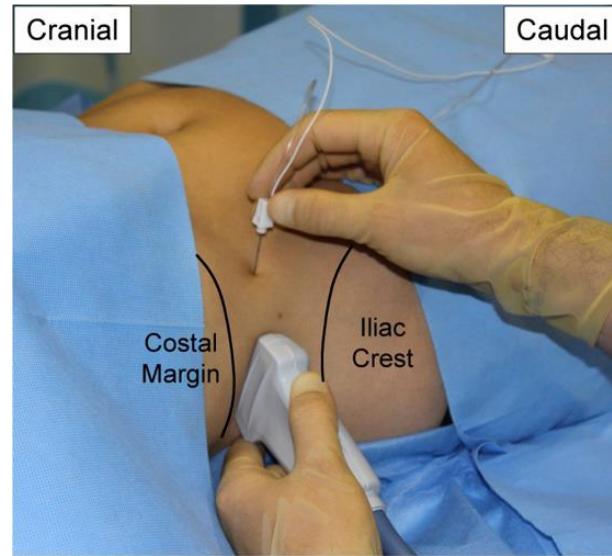
Update in Anaesthesia |  
[www.worldanaesthesia.org](http://www.worldanaesthesia.org)

# TAPB Techniques

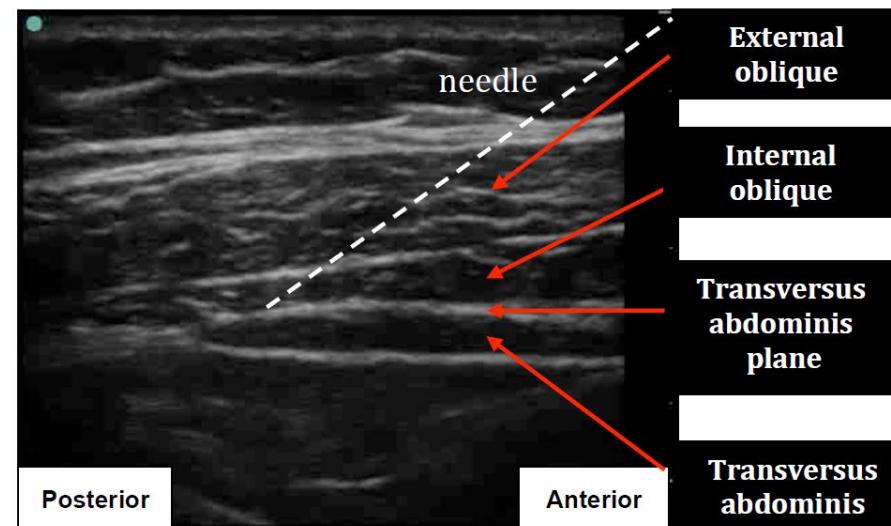


Webster K. The transversus abdominis plane (TAP) block:  
Abdominal plane regional anesthesia.

*Update in Anaesthesia* 2008;24:26



Hebbard P. TAP block nomenclature. *Anaesthesia*. 2015;70(1):112-3.



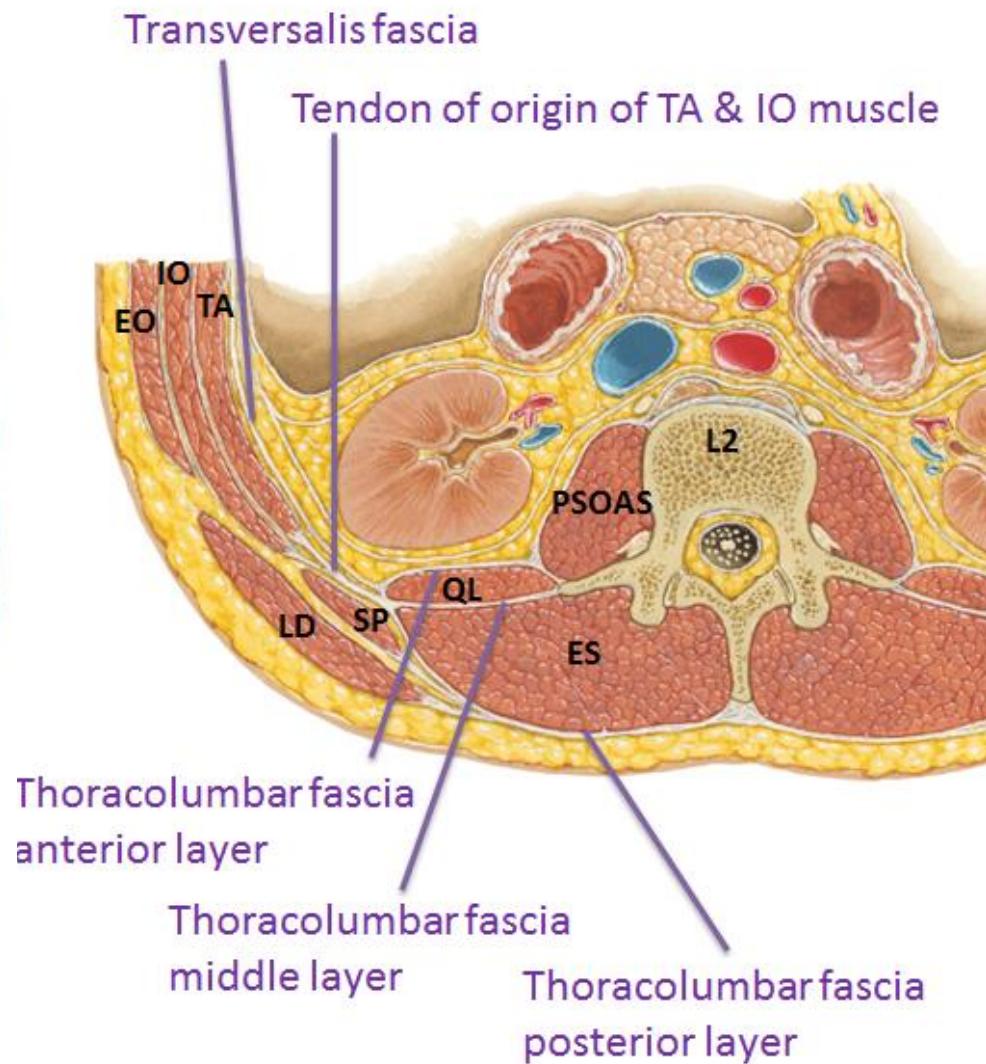
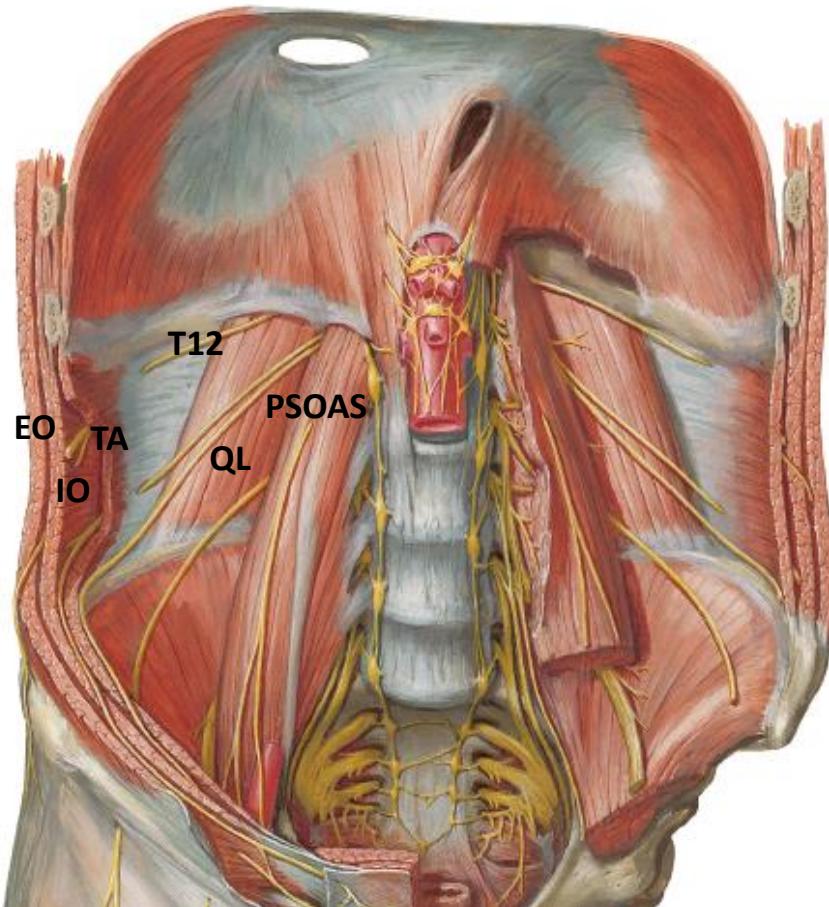
Townsley P, French J, ATOTW 239 Transversus Abdominus Plane Block 2011

# TAPB & lap nephrectomy

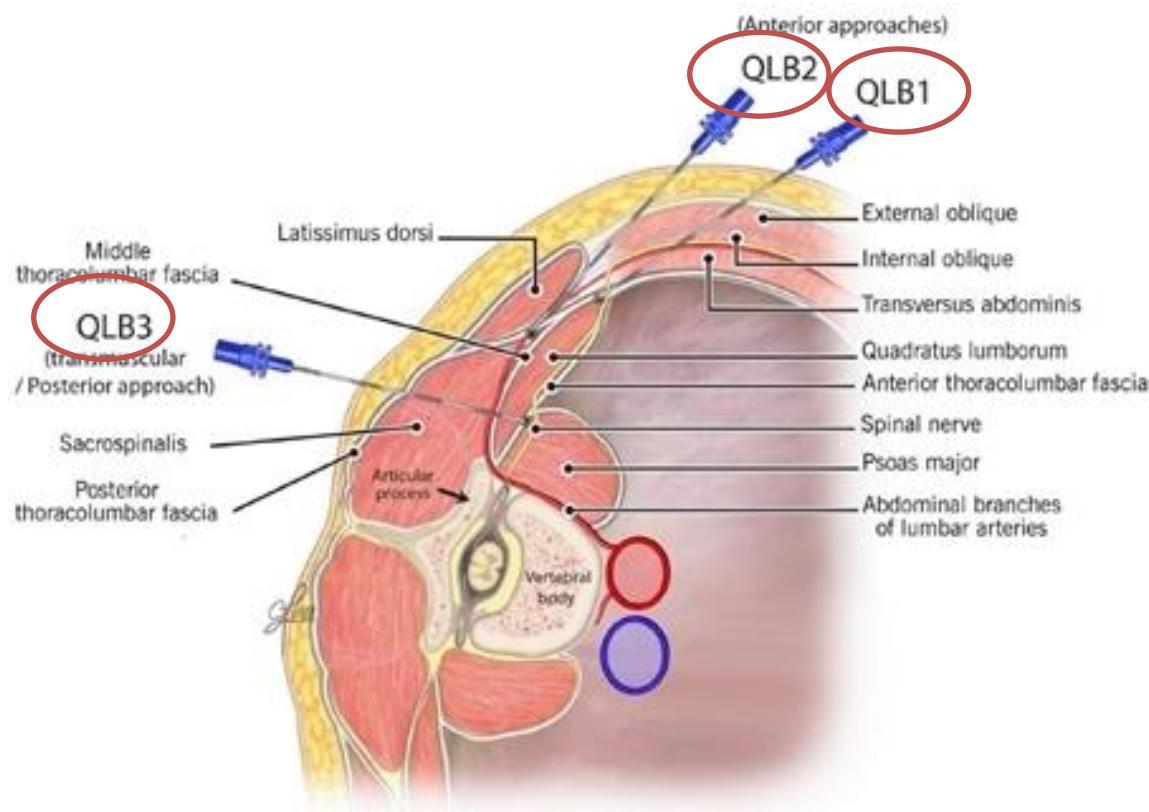
- Paucity of evidence in lap nephrectomy
- Some studies investigated analgesic efficacy of TAPB in Live-Donor Nephrectomy
- Decrease in opioid use
- Reduction in pain scores
- Most benefit in early postop period  
(<12 hours)



# QLB ANATOMY

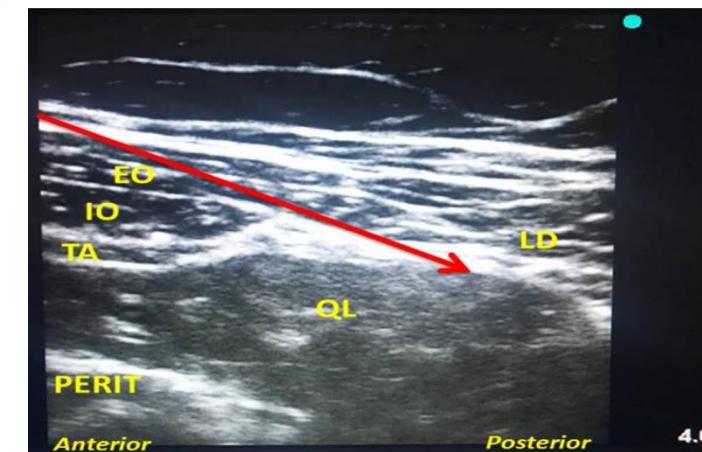


# QLB Techniques



- LA spread to thoracic paravertebral space
- Thoracolumbar fascia sympathetic pain receptors
- Somatic & visceral analgesia

T8-L1



Permission taken from Prof H. Elsharkawy

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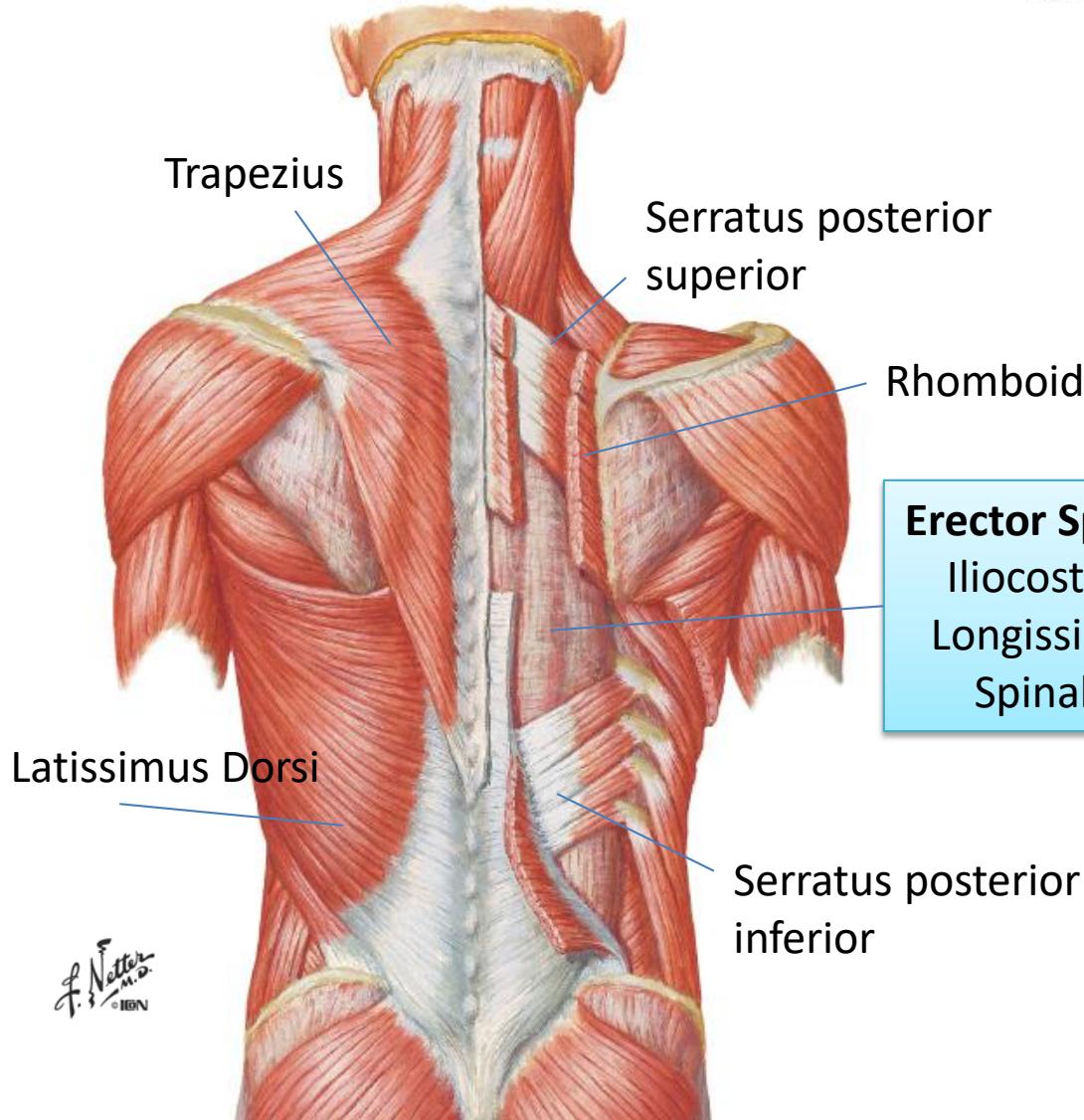
# QLB & lap nephrectomy

- Lack of published studies in lap nephrectomy
- Case reports & series
- Clinical experience
- Clinical efficacy in major abdominal surgery, including laparoscopic nephrectomy

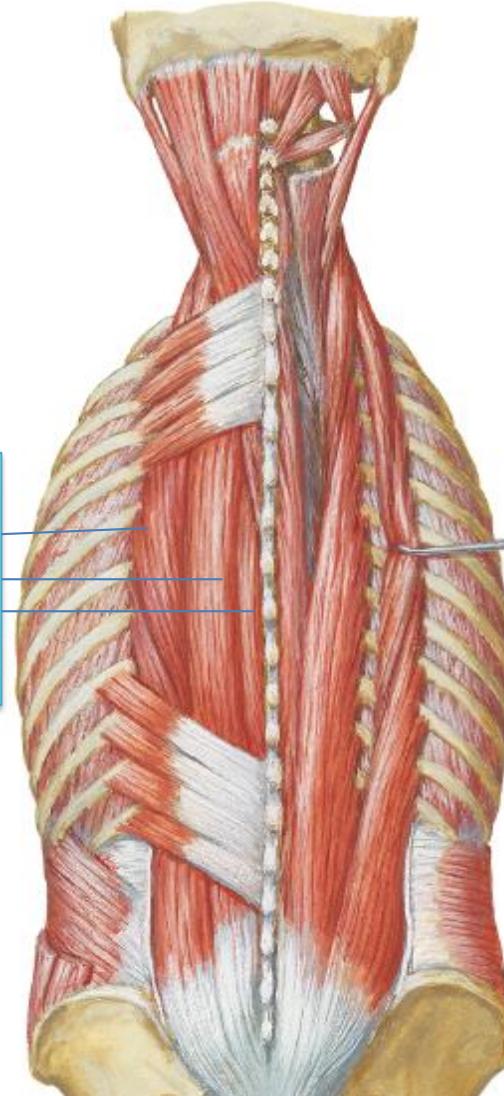


# ESPB Anatomy

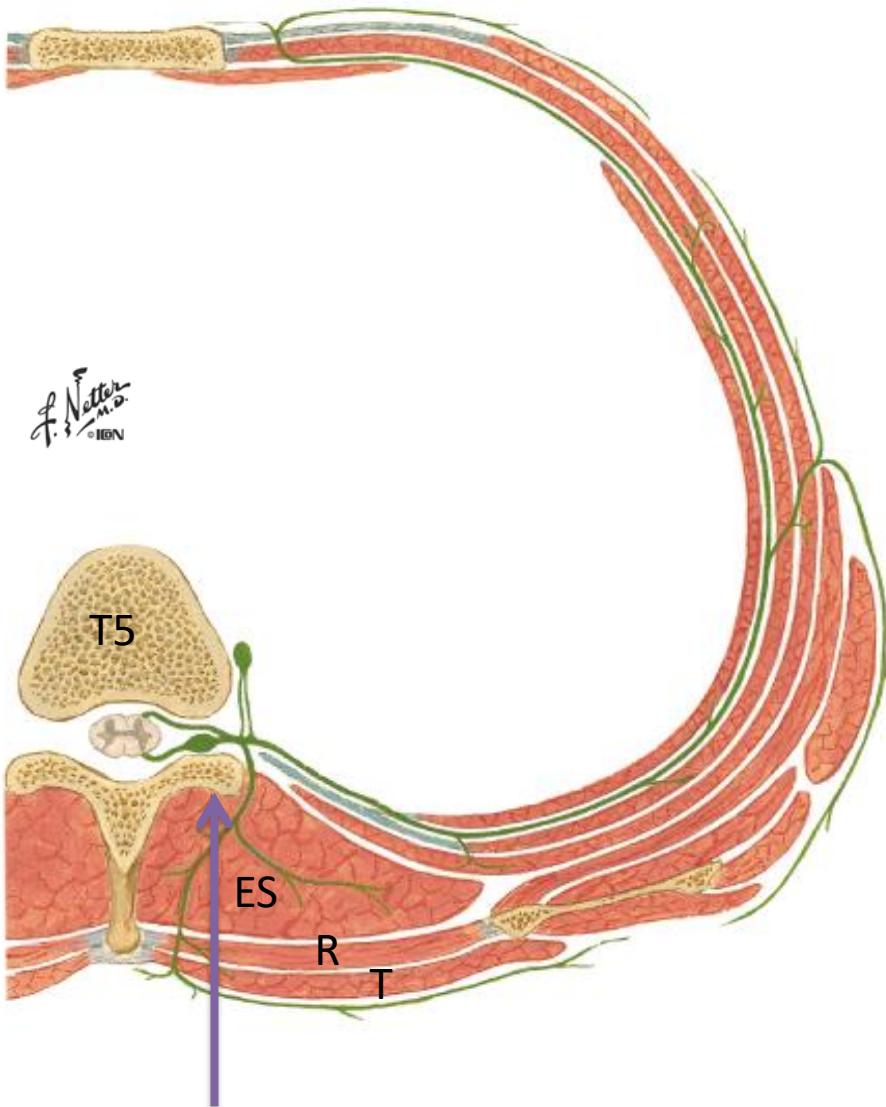
Muscles of Back  
Superficial Layers



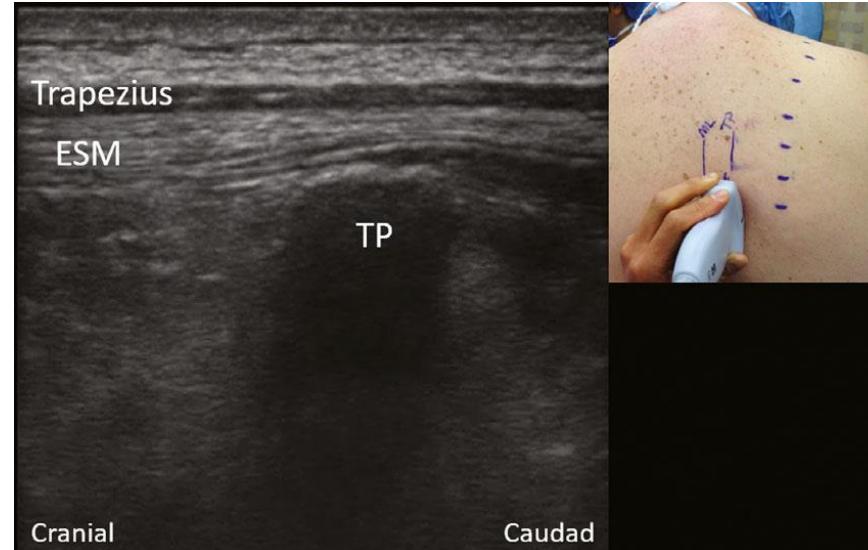
Muscles of Back: Intermediate Layers



# ESPB Technique



Target: plane between erector spinae & transverse process



Anaesthesia 2017, 72, 452–460

doi:10.1111/anae.13814

## Original Article

The analgesic efficacy of pre-operative bilateral erector spinae plane (ESP) blocks in patients having ventral hernia repair

K. J. Chin,<sup>1</sup> S. Adhikary,<sup>2</sup> N. Sarwani<sup>3</sup> and M. Forero<sup>4</sup>

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<sup>4</sup> Associate Professor, Department of Anaesthesia, McMaster University, Hamilton, Ontario, Canada

# ESPB & Lap Nephrectomy



[Indian J Anaesth. 2018 Jul; 62\(7\): 549–554.](#)

doi: [10.4103/ija.IJA\\_57\\_18](https://doi.org/10.4103/ija.IJA_57_18)

PMCID: PMC6053882

PMID: 30078859

## Erector spinae plane block in abdominal surgery: Case series

[Juan Carlos Luis-Navarro](#), [María Seda-Guzmán](#), [Cristina Luis-Moreno](#), and [Ki-Jinn Chin](#)<sup>1</sup>

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4 lap nephrectomy patients

ESP catheter

T8 level

20ml bupivacaine 0.5%

Ropivacaine 0.18% infusion at 7 ml/h × 48 hrs

No rescue opioids



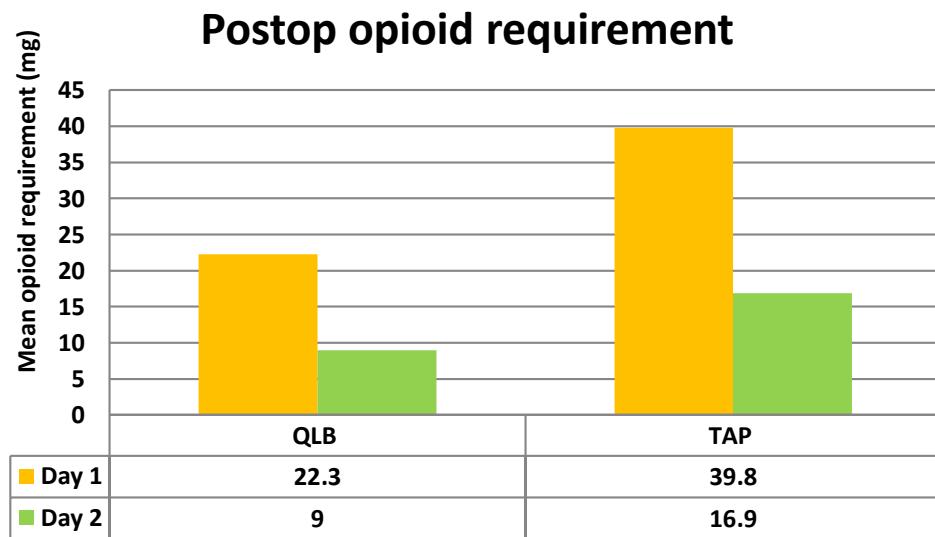
# BSUH Experience

58 laparoscopic nephrectomies  
November 2016 – January 2018  
39 TAPB, 19 QLB  
Retrospective analysis

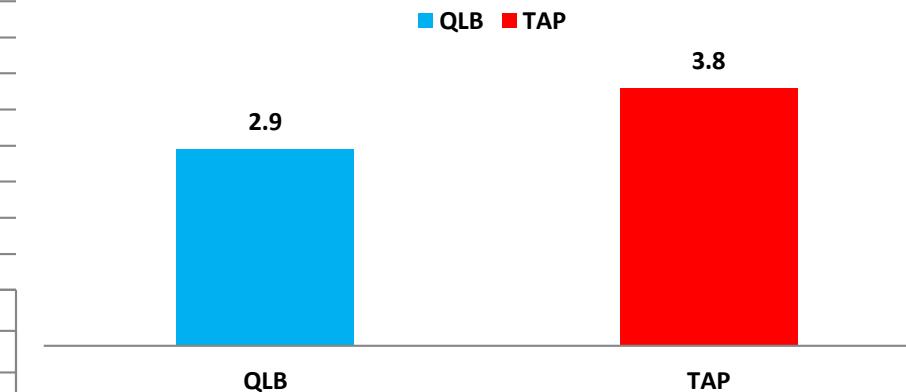
Is a quadratus lumborum block superior to a transversus abdominis plane block for analgesia in laparoscopic nephrectomies?

Katrine Thorup , Thomas Gill, Antony Ratnasingham, Wendy Caddye, Paul Smith, Despoina Liotiri  
P050

DOI: <https://doi.org/10.1016/j.clnesp.2018.03.067>

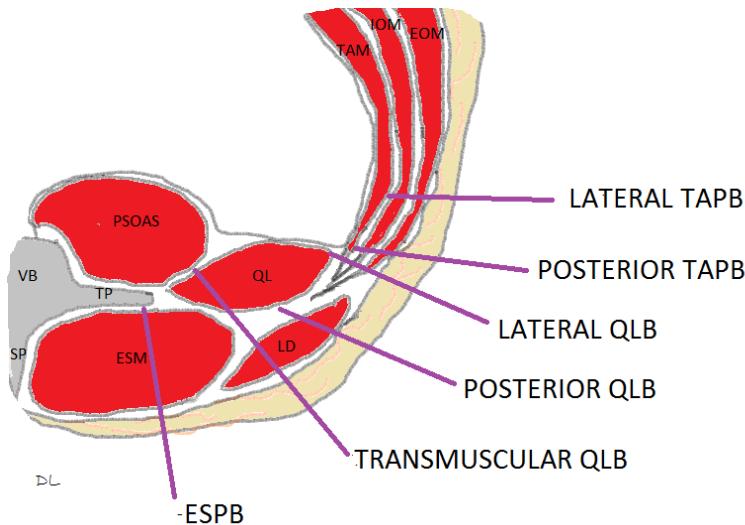


**Average Length of stay (days)**



QLB VS TAPB  
44% D1 - 47% D2 reduction in mean opioid requirement  
1 day reduction in length of stay

Novel thoracic and abdominal wall blocks may be the way forward to facilitate the goals of enhanced recovery, and to provide opioid sparing analgesia



# References

1. Ljungqvist O, Scott M, and Fearon KC. 'Enhanced Recovery After Surgery A Review', *JAMA Surg.* 2017;152(3):292-298
2. THE BRITISH ASSOCIATION OF UROLOGICAL SURGEONS (2015) 'BAUS Enhanced Recovery Pathway'. Available at:  
[https://www.baus.org.uk/professionals/baus\\_business/publications/91/enhanced\\_recovery\\_programme](https://www.baus.org.uk/professionals/baus_business/publications/91/enhanced_recovery_programme) (Accessed 28 October 2018)
3. Snyder GL and Greenberg S, 'Effect of anaesthetic technique and other perioperative factors on cancer recurrence', *British Journal of Anaesthesia* 2010;105 (2):106–115
4. World Laparoscopy Hospital (2018) Port Position in Urological Laparoscopic Surgery. Available at: <https://www.laparoscopyhospital.com/drrkmishra/portpositionslideuro.php> (Accessed 12 October 2018)
5. Malhotra V, Sudheendra V, O'Hara J and Diwan S (2010) 'Anesthesia and the Renal and Genitourinary Systems', in Miller RD (ed.) *Miller's Anesthesia*. 7TH edn. USA: Churchill Livingstone
6. Alper I and Yuksel E, 'Comparison of Acute and Chronic Pain after Open Nephrectomy versus Laparoscopic Nephrectomy A Prospective Clinical Trial', *Medicine* 2016;95(16):e3433
7. Chin KL, McDonnell JG, Carvalho B, Sharkey A, Pawa A, and Gadsden J. 'Essentials of Our Current Understanding: Abdominal Wall Blocks', *Reg Anesth Pain Med* 2017, 42(2); pp.133-183
8. Webster K, 'The Transversus Abdominis Plane (TAP) block: Abdominal plane regional anaesthesia', Update in Anaesthesia [www.worldanaesthesia.org](http://www.worldanaesthesia.org): 24-29

# References

9. Elsharkawy H, 'Ultrasound-Guided Quadratus Lumborum Block: How Do I Do It?', *American Society of Regional Anaesthesia & Pain Medicine* (2018) Available at: <https://www.asra.com/pain-resource/article/48/ultrasound-guided-quadratus-lumborum-block> (Accessed 12 October 2018).
10. Børglum J, Moriggl B, Bendtsen TF, 'Transmuscular Quadratus Lumborum Block', *Ultrasound Guided Regional Anesthesia and Pain Medicine* (2018), Available at: <http://www.usra.ca/regional-anesthesia/specific-blocks/trunk/tqlblock.php> (Accessed 28 October 2018)
11. Blanco R, Ansari T, Riad W, and Shetty N, 'Quadratus Lumborum Block Versus Transversus Abdominis Plane Block for Postoperative Pain After Cesarean Delivery - A Randomized Controlled Trial', *Reg Anesth Pain Med* 2016;41: 757–762
12. Forero M, Adhikary SD, Lopez H, Tsui C, and Chin KJ, 'The Erector Spinae Plane Block-A Novel Analgesic Technique in Thoracic Neuropathic Pain', *Reg Anesth Pain Med* 2016;41: 621–627
13. Chin KJ, Adhikary S, Sarwani N, and Forero M, 'The analgesic efficacy of pre-operative bilateral erector spinae plane (ESP) blocks in patients having ventral hernia repair', *Anaesthesia* 2017, 72, 452–460
14. Luis-Navarro JC, Seda-Guzmán M, Luis-Moreno C, Chin KJ, 'Erector spinae plane block in abdominal surgery: Case series', *Indian J Anaesth* 2018;62:549-54