Overview

- Background
- What options have we and what works?
- Evidence of benefits?

Transversus Abdominis Plane block (TAP)
PECS block

Quadratus Lumborum block (QL)

Erector Spinae Plane block (ESP)

…. what's current

- Issues with IFP blocks
- Conclusion

CLINICAL FOCUS REVIEW

Jerrold H. Levy, M.D., F.A.H.A., F.C.C.M., Editor

Quadratus Lumborum Block

Anatomical Concepts, Mechanisms, and Techniques

Hesham Elsharkawy, M.D., M.B.A., M.Sc., Kariem El-Boghdadly, M.B.B.S., B.Sc., F.R.C.A., E.D.R.A., M.Sc.,
Michael Barrington, Ph.D., M.B.B.S., F.A.N.Z.C.A.

Update on QL block

- Analgesic option for abdominal procedures
- Initially described approaches;

  Blanco Block 2007

  Similarities with *Rafi's TAP block* 2001

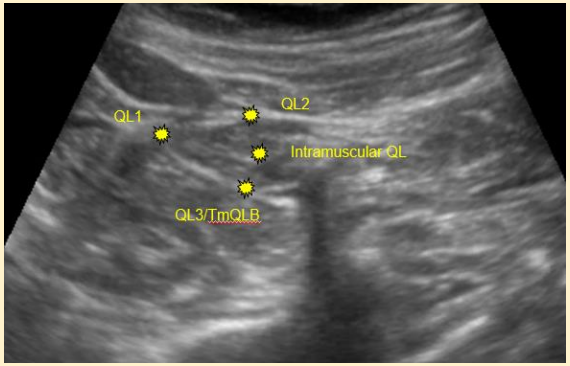
  ? *Posterior TAP*
- Change in nomenclature based on site of injection relative to QL musculature

  QL1, QL2, QL3 to

  Lateral

  Posterior

  Anterior



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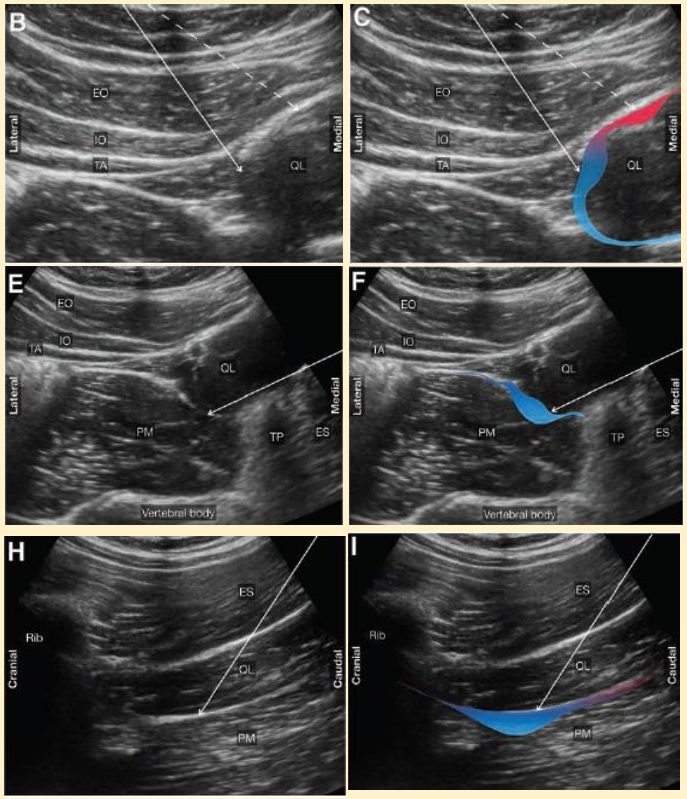
Update on QL block

Approaches;

- Lateral QL (QL1)
- Posterior QL (QL2)
- Anterior QL (TmQL/QL3)
- Anterior Subcostal



…Each ***may have*** different ***mechanisms of action***…

Hypothesized Mechanism of Action.. *Summary*

Endothoracic Fascia Pathway

Spread to PVB were *'regularly' found with* ***Anterior QLB*** *Dam 2017, Elsharkawi 2017*

'.. LA injected ***between Transversalis fascia*** and ***the QL muscle MAY spread*** to the ***TPVB*** space

.... the vertebral ***level of injection will influence the extent*** of cranial spread...'

Hypothesized Mechanism of Action.. *Summary*

Lumbar Spinal nerve roots and branches

Direct ***spread to lumbar plexus*** origins *Carline 2016, Adhikary 2017, Sondekoppam 2018*

Mostly seen ***with Anterior QL***

Hypothesized Mechanism of Action.. *Summary*

Peripheral nerve/sympathetic field

Lateral ***spread to TAP plane*** for ***Lateral and Posterior QL***

Carline 2016

Neuro-circulatory vasomotor changes ***to nociceptors and mechanoreceptors*** of ***Thoracolumbar Fascia***

From RCTs…

Up to 1.5 to 4 fold reduction in opioid consumption… VAS scores at various time points up to 48h

Reduction by half of rescue analgesia requirements…

From Case reports…

Various abdominal surgical, gynaecological, urological procedures and ***hip to lower limb procedures*** … from ***T7-L2 dermatomes*** (1 reported case of TRAM flap for breast reconstruction)

Safety

Reported incidences of ***motor block and weakness*** after ***ALL QL*** approaches. *Wikner 2017 Ueshima 2018*

Hypotension *Cardoso 2017*

LAST not reported so far (reported peak lower than in TAP block) *Murouchi 2015*

No evidence for stratification of risk of bleeding; recommended to ***follow ASRA guidelines for deep peripheral blocks*** for ALL QL approaches.

Weak evidence base but still growing…

REVIEW ARTICLE

Transversus Abdominis Plane Block versus Quadratus Lumborum Block for Postoperative Pain in Abdominal Surgery: A Systematic Review and Meta-analysis

Utsav Malla[1], Nathan Murray[1], Ruan Vlok[2, 3], Thomas Melhuish[4, 5], Willem Basson[1], Leigh White[1, 6*]

Archives of Anesthesiology and Critical Care (Autumn 2018); 4(4): 542-546

5 Databases
All study designs up to May 2018
QL v TAP in abdominal surgery

Primary Outcome;
Post-operative pain

Secondary Outcome;
Time to rescue
Adverse effects
Morphine consumption

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Study	Number of Patients (QL/ TAP)	Patient Group	Indication	Outcome(s)	Level of Evidence*
Blanco et.al. 2016	38/38	Adults	Laproscopic Bariatric Surgery	Morphine Consumption Adverse Effects	1
Murouchi et.al. 2016	11/11	Adults	Laproscopic Surgery	Time to Rescue Analgesia	3
Öksüz et.al. 2017	20/20	Adults	Caesarean Section	Time to Rescue Analgesia Pain Scores Patient Satisfaction Adverse Effects	1
Shafeeket.al. 2018	25/25	Paedatrics	Lower Abdominal Surgery	Time to Rescue Analgesia Morphine Consumption Pain Scores Adverse Effects	1

*Level of Evidence assessed using the Centre for Evidence Based Medicine (CEBM): Levels of Evidence Introduction Document [12]. TAP= Transversus Abdominus; QL= Quadratus Lumborum

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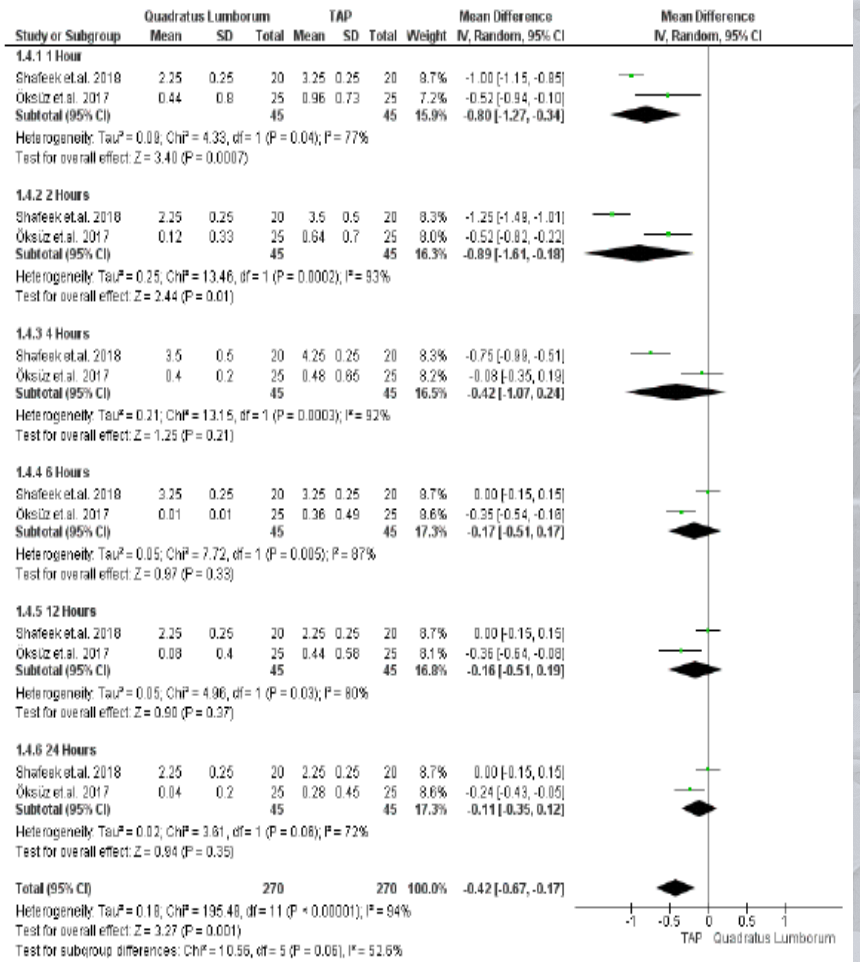
Figure 4- Postoperative pain scores.



2 HQ studies

Overall a ***SS reduction with QL***

-0.42 (-0.67 to -0.17; I2= 94%; ***p=0.001****)*

Significantly @ 1h and 2h.

Reductions @ 4, 6, 12, 24 h were Non SS.

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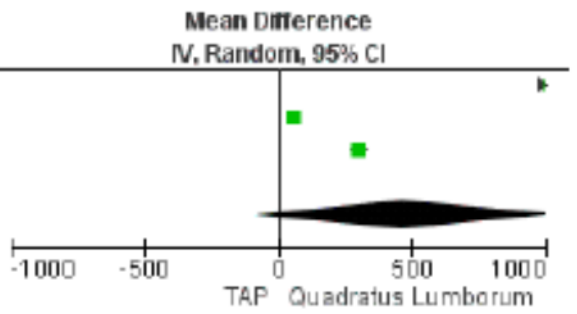
Figure 3- Time to breakthrough analgesia [16,17,18].

Study or Subgroup	Quadratus Lumborum Mean	SD	Total	TAP Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Murouchi et.al. 2016	1,440	6	11	420	60	11	33.3%	1020.00 [984.37, 1055.63]
Shafeek et.al. 2018	187.66	23.84	20	128.07	15.25	20	33.4%	59.59 [47.19, 71.99]
Öksüz et.al. 2017	900	60	25	600	60	25	33.3%	300.00 [266.74, 333.26]
Total (95% CI)			**56**			**56**	**100.0%**	**459.69 [-85.33, 1004.71]**

Heterogeneity: Tau² = 231761.26; Chi² = 2546.63, df = 2 (P < 0.00001); I² = 100%
Test for overall effect: Z = 1.65 (P = 0.10)



2 HQ + 1 LQ studies

No SS difference in ***time to breakthrough analgesia*** with ***QL*** block

459.69 min (-85.33 to 1004.71; I2= 100%; p=0.10)

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2 HQ studies

SS reduction in ***24h morphine consumption***

13.63 mg; *(1.48 to 25.78); I2= 98%;* ***p = 0.03****)*

No Adverse effects *recorded in 3 of 4*

1 study ***improved satisfaction*** *with QL*

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1st Meta-analysis ; QL v TAP for abdominal surgery

Common to all 4 studies:

All 3 parameters favour QL, but only **2** were statistically significant

Pain ***scores beyond 2 h Not SS different***

but being ***lower AT ALL time points***

High heterogeneity (>94%)

Conclusion…

… QL *better analgesic profile*…

… *No* increase in *adverse events* rates…

… *interpret with caution*.. small, heterogenous surgical population and age groups…