



Quadratus Lumborum Versus Transversus Abdominis Plane Nerve Blocks for Pediatric Renal Transplantation: A Retrospective Study

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Introduction

- Effective pain management following pediatric renal transplantation is challenging.
- There is a paucity of evidence for the use of peripheral regional anesthesia.
- QL and TAP blocks have been used for adult renal transplantation analgesia.
- This retrospective study evaluated the effectiveness of QL blocks and TAP blocks in pediatric renal transplantation.
 - Primary outcome: Postoperative opioid consumption measured in morphine milligram equivalents (MME)
 - Secondary outcome: Time to extubation
- We hypothesize that QL blocks will be more effective in reducing postoperative opioid consumption in the first 24 hours following pediatric renal transplantation.

Methods

- Following IRB exemption, a retrospective chart review was conducted on all patients under 21 years of age undergoing renal transplantation at a single academic pediatric hospital from 2019 to 2023.
- Exclusion criteria included weight less than 15 kg and chronic pain.
- A total of 108 patients undergoing kidney transplant surgery were divided into one of four categories:
 - Unilateral QL block with contralateral rectus sheath (RS) block [QL group]
 - “High-dose” unilateral TAP block where the weight-based local anesthetic administered exceeded 40% of the patient’s maximum allowable local anesthetic mass in milligrams [hTAP group]
 - “Low-dose” unilateral TAP [lTAP group]
 - No block group
- All blocks were single injections without the use of any adjuvants.

Results

Table 1: Demographics

	QL group	High-dose TAP group	Low-dose TAP group	No block group
N	14	31	11	52
Age (years) (avg +/- SD)	12.3 +/- 4.9	12.1 +/- 4.7	14.6 +/- 4.4	12.1 +/- 4.6
Weight (kg) (avg +/- SD)	40.6 +/- 20.0	35.6 +/- 14.2	63.7 +/- 28.3*	41.0 +/- 20.1
ASA Status (avg)	3.0	3.5	3.2	3.3
Local Anesthetic Mass (mg) (avg +/- SD)	56.2 +/- 27.5	62.9 +/- 28.8	46.0 +/- 17.5	--
% of Maximum Local Anesthetic Mass Allowed (%) (avg +/- SD)	47.5 +/- 13.4	59.3 +/- 14.4	26.1 +/- 8.3*	--

*Significant differences compared to the other groups (p<0.05).

Table 2: Postoperative MME on Post-Operative Days 0 and 1

Block Group	N	POD 0 MME Mean ± SD	p-value	POD 1 MME Mean ± SD	p-value
QL group	14	8.2 ± 7	0.03*	26.2 ± 36.6	0.59
High-dose TAP	31	12.6 ± 11.4	0.42	15.5 ± 10.9	0.32
Low-dose TAP	11	12.9 ± 6.9	0.49	23 ± 21.3	0.74
No block	52	15.3 ± 18.8	--	20.4 ± 32	--

* P-values derived from t-test comparing each block group to the no block group. P-value < 0.05 denotes statistical significance.

Results

Block Group	N	N Intraoperative Extubation	%	Mean Extubation Time	SD	p-value
QL group	14	14	100	0	0	0.001*
High-dose TAP	31	27	87	0.2	0.9	0.27
Low-dose TAP	11	9	82	0.1	0.3	0.05
No block	52	33	63	0.5	0.9	--

* P-values derived from t-test comparing each block group to the no block group. P-value < 0.05 denotes statistical significance.

Table 3: Comparison of Time to Extubation in Each Block Group

Discussion

- This study provides a direct comparison between QL and TAP blocks for postoperative analgesia following pediatric renal transplantation.
- Patients who received nerve blocks showed a tendency toward reduced opioid consumption on POD 0.
- The group with the QL block was the only one to exhibit significantly lower opioid consumption on POD 0.**
- The trend toward higher opioid consumption on POD 1 may suggest a type of rebound effect in the QL group.
- All groups had similar opioid requirements on POD 1 presumably due to block resolution. Although **the QL group had the shortest extubation times**, multiple factors outside of pain control likely contributed to the extubation times.

References

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