

How Safe is Regional Anesthesia in Pediatric Orthopaedics: A Review of Prospective Data from the Sports Cohort Outcome Registry (SCORE) – A Quality Improvement Initiative

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Purpose:

The purpose of this study was to review a multi-center quality improvement registry in pediatric lower extremity surgeries to evaluate complications associated with regional anesthesia.

Methods:

A multi-center quality improvement registry, SCORE, (16 institutions, 27 surgeons) was reviewed to investigate the use of peripheral nerve regional anesthesia (or blocks) during specific procedures including ACL reconstructions, tibial spine fixation, discoid meniscus, and meniscus repairs. Consecutive patients <19 years old from contributing surgeons were included in the database. Surgical data, as well as, specific data pertaining to complications were reviewed and classified according to the Clavien Dindo classification (CD). Descriptive data as well as a comparative analysis of factors related to complications was performed.

Results:

A total of 3,920 surgical cases with 41 total complications (1%), were included in the registry with a total of 3,993 single shot and 797 indwelling catheters used for the purposes of regional anesthesia (Table 1). 761 (19.4%) patients did not receive regional anesthesia while 1571 (40.1%) received multiple blocks.

The most common complication was sensory loss that occurred in 21 patients (0.5%) of which 8 (0.2%) had persistent numbness > 120 days post-operatively. Temporary sensory loss from regional anesthesia resolved at an average of 106 (range 37-219) days following the procedure. The adductor canal was the most common block utilized (n=1643) and showed the following complications: 9 (0.54%) temporary sensation loss, 5 (0.3%) temporary motor loss, 1 (0.06%) hematoma formation, and 2 (0.12%) with ongoing (> 6 months) sensory loss. Three patients sustained CD IV complications with ongoing (>6 months) motor loss related to their block (1 = sciatic and 2 = adductor).

Additional notable complications including bupivacaine toxicity (1) and indwelling catheter leakage (2). Although a majority of complication related to regional anesthesia occurred during ACL reconstruction with a meniscus repair, there was no associated with age, gender, height, weight, or tourniquet time related to these complications.

Conclusion:

Complications, including long term disability, associated with regional anesthesia are rare but do occur. A majority of sensory loss that occur following regional anesthesia resolve in less than 4 months.

Significance:

The value of regional anesthesia in a pediatric population, including weighing cost with benefit and risk, should continue to be analyzed with knowledge of known short term and long term complications.

Table 1: Total regional anesthesia used and complications

Block Location	Single Shot	Indwelling Catheter	TOTAL	Failed Block	Motor Loss	Sensory Loss	Other	Total
<i>Adductor Canal</i>	1643	327	1970	2	5	9	3	19
<i>Femoral</i>	725	439	1164	3	0	7	3	13
<i>Popliteal</i>	142	2	144	0	0	0	0	0
<i>IPACK</i>	544	12	556	1	0	0	0	1
<i>Sciatic</i>	833	17	850	0	2	4	1	7
<i>Saphenous</i>	105	0	105	0	0	1	0	1
<i>Obturator</i>	1	0	1	0	0	0	0	0
TOTAL	3993	797	4790	6	7	21	7	41