[PR1-108] Accuracy of predicted versus actual PACU pain scores in pediatric orthopedic patients

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Background and Objectives: There is a need for improved postoperative pain management in children. We anticipated that postoperative pain levels of children undergoing orthopedic surgery without regional anesthesia may exceed surgeon expectations. Many patients are influenced by the recommendations of their surgeon (1) These expectations have a substantial impact, and the potential to improve patient satisfaction, reduce deleterious effects, and prevent morbidity and mortality events related to pain and its management.

Methods: Approval by our institution's IRB was obtained. All patients aged one to seventeen years having orthopedic surgery without regional anesthesia were eligible, and exempt from consent, with a total of 86 patients enrolled. The patient's surgeons were enrolled and consented, totaling 4 surgeons, with the majority of the data collected from 3 surgeons. Prior to surgery, the surgeon was asked to predict the patient's highest postoperative pain level. Postoperatively, the patient's highest reported pain score in PACU was recorded. Post-operative pain was evaluated by PACU nurses using the appropriate pain scale. The type of procedure was recorded. Data collection occurred between July 2011 and December 2012.

Results: A total of 86 male and female patients between the ages of one and seventeen were enrolled. Surgeon estimations ranged from 0-10 with a mean estimation of 4.78. Postoperative patient scores ranged from 0-10 with a mean recorded score of 4.84. The Bland and Altman method and plot was used to assess agreement between predicted and actual pain scores (2,3). This plot is summarized in Figure 1. This analysis found mild and moderate pain was accurately predicted, versus severe pain which tended to be underestimated. When analyzing specific procedures and the associated maximum pain score, an unpaired t-test was applied. For example, patients s/p repair of slipped capital femoral epiphysis (SCFE) had a mean pain score of 8.3 (SD 1.63) which was significantly higher than the mean predicted score of 5.5 (SD 2.01) with a p-value of 0.003. This suggests the surgeons at our institution consistently underestimate the pain associated with this procedure.

Conclusions: We found that as the severity of pain increases, the postoperative pain levels of children undergoing orthopedic surgery without regional anesthesia exceeds surgeon expectations and tends to be underestimated. With increasing recognition that the benefits of regional anesthesia often exceed potential risks and complications, we hope to increase the acceptance of regional anesthesia for post-operative pain management in this population.

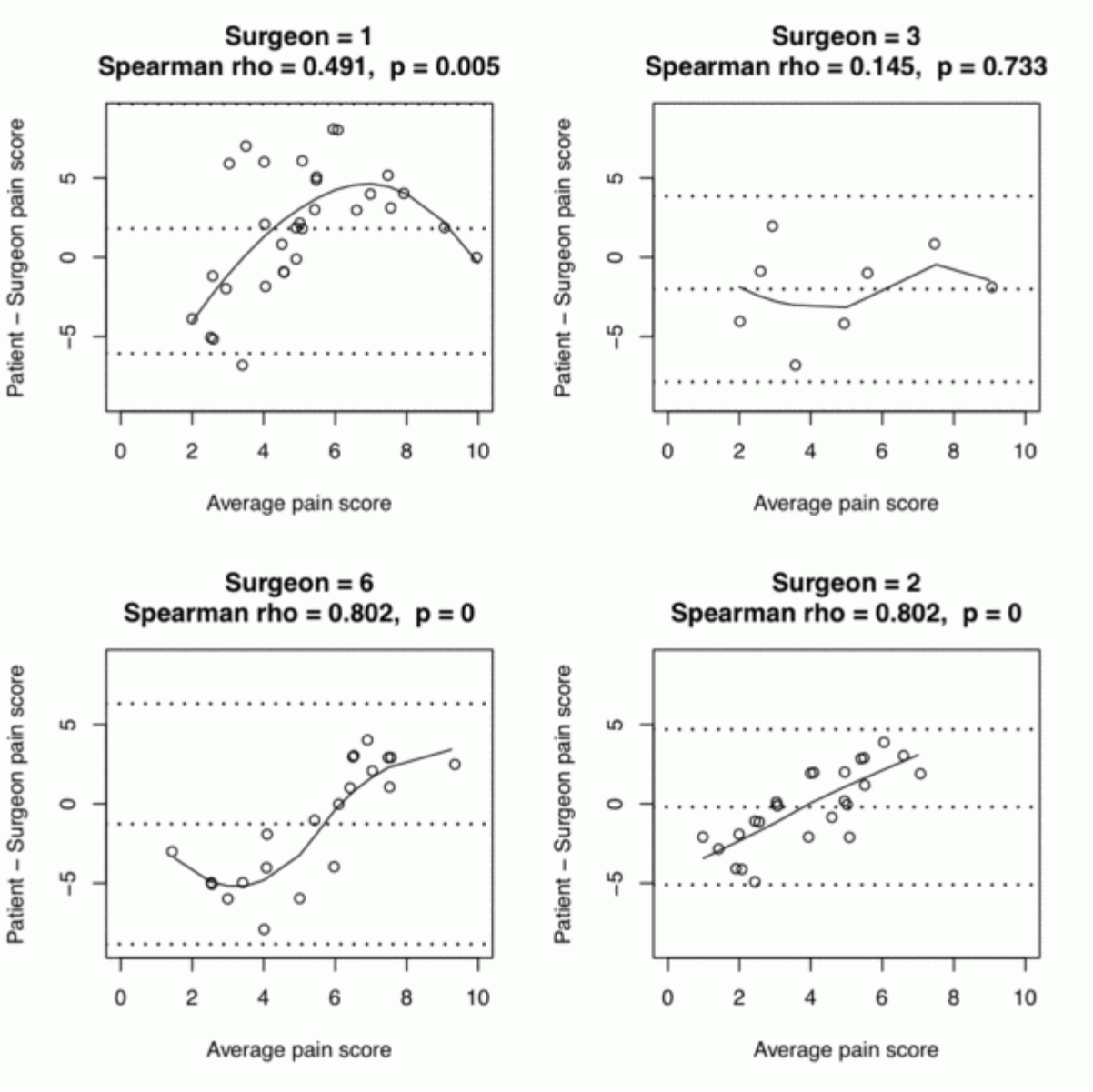
Surgeon = 1
Spearman rho = 0.491, p = 0.005
Surgeon = 3
Spearman rho = 0.145, p = 0.733
Surgeon = 6
Spearman rho = 0.802, p = 0
Surgeon = 2
Spearman rho = 0.802, p = 0
Patient – Surgeon pain score
Average pain score
−5
0
5
0
2
4
6
8
10

Figure 2: Predicted versus Actual PACU pain scores based on procedure type

Procedure	N	Mean Predicted Pain Score	SD	Mean Actual Pain Score	SD	95% CI	P value
CRPP extremity	17	5.05	±2.6	4.5	±3.6	-1.59 to 2.64	0.60
ORIF digit or extremity	24	5.4	±1.8	4.5	±3.5	-2.55 to 0.66	0.24
SCFE	10	5.5	±2.0	8.3	±1.63	-0.83 to - 4.39	0.003

- CRPP: closed reduction and percutaneous pinning fixation
- ORIF: open reduction and internal fixation
- SCFE: slipped capital femoral epiphysis
- SD: standard deviation