

HOT TOPIC 22

SHOULD ALL CHILDREN RECEIVE PATIENT-CONTROLLED ANALGESIA AFTER LAPAROSCOPIC APPENDICECTOMY?

SUMMARY OF KEY POINTS:

- Evidence exists to support perioperative NSAID use¹.
- There is little data to recommend abdominal wall blocks over port site local anaesthetic infiltration^{2,3}.
- PCA remains a reliable means of delivering opioid analgesia post operatively. Nonetheless there are side effects associated with IV morphine use and PCA may delay mobilisation. A device may not be required for all children, especially those with uncomplicated appendicitis.

REVIEW OF EVIDENCE

Laparoscopic appendicectomy is a common surgical procedure performed in paediatric patients in the UK. The surgical pathology can be of varying complexity depending on the presence of perforation, abscess or peritonitis. Pain can be significant post-operatively⁴. This article considers the evidence for perioperative interventions, regional techniques and post-operative analgesia.

A retrospective audit of 649 patients¹ was performed in an Australian centre and published in 2016. This demonstrated significantly reduced pain scores in the first 12 hours, and morphine consumption in the first 24 hours post-operatively following perioperative diclofenac administration. Patients with uncomplicated appendicitis given perioperative diclofenac had shorter median duration of PCA use.

Transverse abdominis plane (TAP) blocks have been compared to port site local anaesthetic infiltration in an Australian randomised-controlled trial with 93 participants², published in 2011. This showed a statistically significant ($p=0.03$) mean increase in procedure time of 14 minutes with ultrasound-guided TAP block. The study failed to demonstrate differences in morphine consumption, analgesic use or pain score following return to the ward. There was a difference in the baseline characteristics of the control and intervention groups. 69% patients in the TAP block group had uncomplicated appendicitis, compared to 89% in the control group ($p=0.02$). Nonetheless, the authors concluded there was no clinically important benefit of TAP blocks following laparoscopic appendicectomy.

Rectus sheath block efficacy was examined in a single-centre RCT in New Zealand, published in 2015. The group receiving the block had decreased pain scores in the first 3 hours after surgery, but no ongoing benefit after this. There was no effect on length of stay or post-operative opioid requirements³. Intraperitoneal local anaesthetic has been suggested to reduce PCA requirements post-operatively in adult patients⁵, and has been suggested as an area for further work in paediatric patients⁶.

Following open surgery, APAGBI guidance supports the use of patient controlled analgesia (PCA) post-operatively⁷. However, after laparoscopic surgery, guidance suggests that either PCA or oral opioid analgesia may be suitable⁷. A study in a US centre recommended an analgesic regimen incorporating PCA, IV ketorolac, local anaesthetic infiltration, and paracetamol with oral hydrocodone⁴. The authors recommended post-operative PCA use, but suggested that more work might identify subgroups that could be managed with oral analgesia.

A single-centre audit in the UK⁸ found no correlation between pain scores and PCA use, which perhaps suggests that PCA may not be a panacea for post-operative pain. Morphine consumption was generally low and the authors postulated that oral opioids might provide equivalent analgesia.

In another study¹, children with uncomplicated appendicitis who received perioperative NSAID were noted to have lower morphine consumption and shorter duration of PCA use. Based upon this finding 38 children with uncomplicated appendicitis, who were given perioperative NSAID, were managed with oral analgesia post-operatively. The analgesic regimen used in this study was: regular paracetamol, prn ibuprofen, prn oxycodone and/or tramadol. The study reported high rates of parental satisfaction, and acute pain service interventions due to poorly controlled pain were not required.

A retrospective audit of 50 cases in our own centre has also shown no correlation between morphine consumption and pain scores (correlation coefficient -0.14). Opioid related side effects occurred in about ¼ of cases. The median duration of PCA usage was 14 hours. We found lower morphine consumption in children with appendicitis who do not require ongoing antimicrobial therapy post-operatively (p=0.05). Use of antimicrobials post-operatively was chosen as a binary marker of more complex surgical pathology. Small numbers of children in our data set were found not to have evidence of appendicitis at laparoscopy; however this group had notably higher pain scores and morphine consumption. This may be due to the ongoing presence of other pathology in the post-operative period.

In view of the short median duration of PCA use, and lack of correlation between PCA use and pain scores, we are currently exploring using regular simple analgesia combined with tramadol and prn oral morphine for children over the age of 6, with no requirement for post-operative antibiotics, who also do not have other pathology found at laparoscopy.

In conclusion: consideration should be given to perioperative NSAID use. Evidence for regional techniques is currently lacking. PCA remains a reliable means of delivering opioids post-operatively although there are disadvantages to PCA use, and some children may be suitable for oral analgesia.

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