Introduction:
Pain following colostomy closure can be attributed to two primary sources, namely the somatosensory pain originating from the surgical wound on the anterior abdominal wall and the visceroperitoneal pain from bowel and peritoneum. The ability to effectively anesthetize the thoracolumbar spinal nerves innervating the abdominal wall has been shown to accelerate recovery from surgery. While local anesthetic infiltration has the ability to anesthetize the surgical wound, the duration of action is limited. Ultrasound-guided alternatives, such as the transversus abdominis plane (TAP) block, have been shown to improve analgesia efficacy and patient comfort in the post-operative period. Thus, it appears to us that utilizing ultrasound-guided TAP blockade would serve as an effective method of providing analgesia allowing for decreased intravenous opioid use following colostomy closure. This retrospective case-control study describes our experience with pain management in children following colostomy closure with TAP blocks (cases) and without TAP blocks (controls).

Aim:
Although neuraxial blockade is an effective means of pain relief method following abdominal surgery, its use may be contraindicated or deemed as excessive for analgesia following colostomy closure. Clinicians must then rely upon the use of potent opioid analgesics, which are associated with undesired adverse side effects. Therefore, the need for a better modality for pain control in this patient population remains. The primary aim of this retrospective analysis was to investigate the analgesic efficacy of TAP blockade in children undergoing colostomy closure by examining perioperative opioid requirements. Given the known analgesic efficacy of TAP blockade, we hypothesized that overall perioperative opioid requirements would be decreased in those children who received a TAP block.

Method:
After obtaining IRB approval, a total of 40 medical records of pediatric patients undergoing colostomy closure within the past two years were reviewed. As this is a retrospective review, no standardization of anesthetic protocols occurred, including opioid dosing. In all cases, TAP blockade was performed with the patients under general anesthesia following completion of surgery utilizing a linear high frequency ultrasound probe. Once the blocks were completed, patients were awakened and transported to the post-anesthesia care unit where pain scores, opioid requirements, and sensory blockade were recorded. This outcome measures were then compared with an equal number of patients who did not receive TAP blockade following colostomy closure.

Conclusions:
- TAP blocks have proven to effectively provide analgesia in various abdominal surgical procedures. This was affirmed with this retrospective study, as patients who received a TAP block required a statistically significantly lower amount of morphine during the intraoperative period.
- While the total intraoperative morphine equivalents were not significantly different between the two groups, a trend towards significance was noted in this relatively small study.
- Though the TAP group patients had longer surgical time, they required less opioids and reported similar pain scores as those who did not receive a TAP block.
- The ability to decrease overall postoperative opioid use is key in surgeries involving bowel manipulation, as it allows for faster bowel recovery and decreases the incidence of post-operative ileus. While the cohort receiving single-injection TAP blocks did not demonstrate any difference in bowel recovery and incidence of postoperative ileus, the retrospective nature of the study makes it challenging to discern whether this was impacted by the analgesic technique employed or secondary to the extent of the surgical repair performed.
- As this is an on-going study, a larger sample size and a stratification by extent of surgery will better define the impact of TAP blocks.
- TAP catheters offer extended pain relief, therefore may further extend opioid sparing effects beyond the intraoperative period and help reduce postoperative ileus following bowel surgery.

References: