Background

Surrey Memorial Hospital is a tertiary care hospital in Surrey, British Columbia, Canada that performs approximately 350-400 knee replacements per year. Knee replacement surgery, or total knee arthroplasty (TKA), is associated with significant postoperative pain, nausea and risk of urinary retention. Almost half of the patients require a urinary catheter (UC) after surgery. Nausea, pain and urinary catheterization create mobility challenges for patients, potentially delaying discharge and predisposing to complications.

Intrathecal morphine (ITM) is commonly used to help control postoperative pain in these patients.

ITM may dramatically increase the number of patients requiring a UC (up to 60% of patients). UCs expose patients to a variety of complications, such as urethral strictures after traumatic insertion, fistula, bladder perforation, and false passage. Furthermore, UC insertion requires two nurses, thus consuming nursing time that may detract from the care of other patients.

It has been shown that equivalent analgesia can be achieved with on-demand (PRN) analgesics like morphine and hydromorphone. Regional anesthesia with an adductor canal block has also been shown to be an effective adjunct for providing analgesia by anesthetizing one of the major sensory nerves of the knee joint for up to 24 hours without affecting motor function, thereby allowing patients to mobilize and participate in rehabilitation exercises.

Our Aim

Our goal was to decrease urinary retention requiring a UC by 25% and decrease postoperative requirements of PRN medications in total knee arthroplasty (TKA) patients, while not worsening pain or length of hospital stay, at Surrey Memorial Hospital by May 2017.

Project Design & Strategy

ITM was replaced with adductor canal blocks for post-op analgesia in a series of TKA patients at Surrey Memorial Hospital. Adductor canal blocks were the method of choice as it provides analgesia while allowing patients to mobilize postoperatively.

Data from discharged knee arthroplasty patients was gathered by the team both electronically and via patient chart reviews. The following data was collected:

1. PRN medications administered postoperative days 0 through 2 (balancing measure).
2. Worst recorded pain scores on postoperative days 0 and 1 (balancing measure).
3. Foley catheter insertion.
4. Hospital length of stay (balancing measure).

Lessons Learned

• By discontinuing ITM, we were able to dramatically decrease the number of patients requiring a UC without a negative impact on postoperative pain scores or hospital length of stay.
• The patients’ pain experience is unique to every individual and data needs to be interpreted cautiously as pain scores and medication requirements vary greatly from patient to patient.
• Some surgeons infiltrate the joint with local anesthetic and other analgesics, which may be responsible for some of the variability in our data.
• It takes significant effort to change culture and behaviour within the healthcare system. More work is needed to implement widespread and sustained change among surgeons and anesthesiologists at Surrey Memorial Hospital.

Moving Forward

Our steps moving forward include sharing our results with the Surrey Memorial Hospital Departments of Orthopedics and Anesthesia. We will explore the impact of surgical joint infiltration on postoperative outcomes in knee arthroplasty patients at Surrey Memorial Hospital. We also intend to refine the post-TKA analgesic pathway in order to improve the patient pain experience. Moving forward, we must also address potential barriers to more universal use of nerve blocks for postoperative analgesia, such as time, skill and equipment required to conduct such procedures, and implement our next PDSA cycle.

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