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“Randomized Controlled trial, Comparing the effectiveness of two different perioperative analgesia techniques: Continuous Adductor Canal Block to Single Shot Adductor Canal block in Outpatient total Knee Arthroplasty Surgery”

Rationale: Total knee arthroplasty / Uni-compartmental knee arthroplasty are one of the most prevalent orthopedic procedures in Canada). Moreover, they have been very successful in improving the outcomes and quality of life of patients suffering from debilitating joint arthritis. Recently, the interest in same day surgery and rapid recovery program following these procedures has increased significantly. One of the main elements is pain control as TKA/UKA have been associated with intense pain in the perioperative and postoperative periods which can lead to increasing the length of stay (LOS), postoperative opioid medication and cost. Therefore, several studies have been looking at the ultimate anesthetic technique. Previously, continuous femoral nerve block and/or sciatic nerve block were commonly used in order to improve postoperative pain control and reduce narcotic consumption. However, 0.1% to 2.5% of patients experience complications associated with nerve blocks including muscle weakness, nerve damage, local infection, or “double crush” with peripheral nerve blocks and tourniquet, therefore, it fell out of favor and currently it has been replaced by Adductor canal block (ACB). ACB provides similar postoperative pain control and reduces narcotic consumption while preserving quadriceps muscles strength therefore less complication rates. ACB can be performed as a single shot or continuous infusion through a perineural catheter. The continuous infusion extends the analgesia provided by the ACB up to the first 48-72 hours postoperatively, which is the most crucial period post TKA/UKA. Both single-shot and continuous catheter-based ACB are commonly used as part of a multimodal analgesia regimen following TKA, but each technique is associated with unique strengths and limitations; namely, the technical ease, safety, and reliability of a single-shot ACB may be offset by its limited duration of analgesia (and possibly rebound pain) when compared with a continuous catheter-based technique. Indeed, the extent to which the clinically important analgesic benefits of single-shot ACB can be enhanced or prolonged by a continuous catheter-based infusion is unclear as evidence from randomized trials comparing single-shot and continuous ACB has so far been mixed. The current literature is still conflicting as to which of continuous or single-shot ACB provides better pain relief following TKA. Therefore, we would like to compare continuous ACB (CACB) to single shot ACB (SACB) in TKA/UKA. We would be looking at the reduction in opioid consumption, pain levels, postoperative lower limb function, postoperative complication rates, hospitalization duration and operating room time. We hypothesize that continuous ACB provides better pain control after TKA/UKA.

Primary outcome measures: is opioid consumption for the first 72hrs.

Secondary outcomes objectives: are to compare the following: a. Postoperative pain at rest assessed using the Numeric pain rating scale (NRS) during the first 96 hours. b. Opioid use post-removal of block on the 4th day (rebound pain). c. Postoperative lower limb function measured with patient capacity to perform. d. Hospital length of stay and incidence of failed discharge at planned time. e. Complication and readmission rates.

Study impact: This study has the potential to improve the already established ERAS program and improve patients care postoperative. Showing that CACB reduces postoperative pain following TKA/UKA surgery will allow for a more efficient, safe and reliable technique for managing postoperative TKA pain and improve recovery while establishing a new gold standard anesthesia care for ERAS program.