

A Double Blinded, Randomized, Controlled Proof of Concept Study to Compare Post-Operative Analgesic and Mobilization Outcomes of Local Infiltration Analgesia, Single Shot Femoral Nerve Block and Intrathecal Morphine in Primary Total Knee Arthroplasty.

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Summary:

A Randomised blinded study of anesthetic techniques in TKA

Abstract:

BACKGROUND

Total knee arthroplasty is associated with early postoperative pain. Appropriate pain management is important to facilitate postoperative rehabilitation and positive functional outcomes. This study compares outcomes in TKA with three techniques; local infiltration analgesia, single shot femoral nerve block and intrathecal morphine.

METHODS

Forty-five patients undergoing elective primary Total Knee Arthroplasty (TKA) with were randomized into one of three groups in a double blind proof of concept study. Study arm 1 received local infiltration analgesia ropivacaine intra-operatively, an elastomeric device of ropivacaine for 24 hours post-op. Study arm 2 received a femoral nerve block of ropivacaine with placebo local infiltration analgesia and placebo intrathecal morphine. Study arm 3 received intrathecal morphine, placebo femoral nerve block and placebo local infiltration analgesia. All patients received standardized pre-operative, intraoperative and Post-operative analgesic medication.

Participants were mobilized at 4 hrs, 24hrs and 48 hrs post operation. Range of Motion, Visual Analogue Scale (VAS) pain intensity scores and two minute walk test and Timed Up and Go test were performed. Postoperative use of analgesic drugs was recorded. Knee Society Score (KSS), Oxford Knee Score and Knee Injury and Osteoarthritis Outcome Score (KOOS) were completed at preoperative and 6 weeks post op.

RESULTS

Preliminary results convey the positive outcomes after total knee replacement demonstrated by the improvement in Oxford Knee Score and Knee Osteoarthritis Outcome score. There are marked improvements in the metres walked in the 2-minute walk tests at the six week time-point. Interestingly at 4 hours post-operative 7 out of 11 patients were able to stand up out of bed and complete a timed up and go test. At day one post-operative only 4 patients were unable to walk. Importantly the study remains blinded, therefore an analysis of the three study arms is not available and is therefore currently difficult to report on the statistical significance. There will be further assessment of the efficacy of analgesia using VAS pain scores collected preoperatively, 0-24hrs and 24-48 hours postoperatively between the three randomized groups. Frequency of use of other analgesia and need for PCA will be compared between groups at 0-24hr and 24-48hrs post operatively. The assessment of functional outcomes will be measured between the three groups by comparing the ability to mobilize the first 4 hrs after surgery, maximal flexion and extension, two minute walk test and timed up-and-go preoperatively, on postoperative day 1 and 2 and 6 weeks.

CONCLUSION

Results from the study will provide important information for the management of TKA in the hospital setting. The

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comparison of the three commonly used analgesic techniques and mobilization outcomes are pertinent for physiotherapy and rehabilitation management, anaesthetic specialists, nursing staff, orthopaedic surgeons and patients.