

Prospective Randomized Trial Comparing Peripheral Nerve Blocks and Periarticular Injection for Pain Management after Total Knee Replacement

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Introduction: Multimodal pain management, apart from narcotic medications alone, is becoming the standard of care for pain management after knee replacement. This study was undertaken to compare the outcome of two adjuvant modalities, peripheral nerve blocks versus periarticular injections, as part of a multimodal pain protocol after total knee replacement.

Methods: 160 patients completed randomization into two treatment arms: 1) peripheral nerve blocks (n=79) with an indwelling femoral nerve catheter and a single shot sciatic block (peripheral nerve block group - PNBG); or 2) periarticular injection (n=81) using ropivacaine, epinephrine, ketorolac and morphine (periarticular injection group - PAIG). All patients received standardized general anesthesia and oral medications.

The primary outcome was post-operative pain, on a 0 – 10 scale, the afternoon of post-operative day 1 (POD 1). Secondary outcomes were patient satisfaction, narcotic use, length of stay, hemoglobin changes, blood transfusions, and peripheral nerve complications.

Results: Mean pain scores on the afternoon of POD 1 were similar between groups (PNBG: 2.9 (SD 2.4); PAIG 3.0 (SD 2.2) 95% CI: -0.8 – 0.6. $p = 0.76$). Mean pain scores taken at three time points on POD 1 and patient satisfaction were also similar between groups. Hospital length of stay was significantly shorter for the PAIG (2.44 days (SD 0.65) vs. 2.84 days (SD 1.34) for PNBG ($p = 0.02$). Narcotic consumption was significantly higher the day of surgery for the PAIG, but thereafter no difference. Mean drop in hemoglobin and transfusion did not differ. Significantly more patients in the PNBG had sequelae of peripheral nerve injury (mainly dysesthesia) at 6 week follow-up (9(12%) vs 1(1%); $p=0.009$).

Conclusion: Patients receiving periarticular injections had similar pain scores and satisfaction with pain management, shorter lengths of stay, but greater narcotic use on the day of surgery compared to patients receiving peripheral nerve blocks.

