Continuous Passive Motion Combined with Peripheral Nerve Block Decreases Pain and Opioid Consumption Following Operative Fixation of Intra-Articular Lower Extremity Fractures About the Knee

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Purpose: Our objective was to prospectively evaluate the impact of continuous passive motion (CPM) with or without peripheral nerve block on postoperative pain and opioid analgesic use after treatment of intra-articular lower extremity fractures about the knee (distal femur and tibial plateau).

Methods: Patients with isolated operative fractures of the distal femur or tibial plateau were randomized to the treatment group (CPM) or control group (No CPM). Patients in the treatment group were provided a CPM device with instructions to use it 2 hours on and 2 hours off, with knee flexion set to a maximum of 60°. A peripheral nerve block was administered perioperatively by the anesthesia service based on patient preference. Pain visual analog scale scores (VAS) and total opioid medication administered (measured in morphine milliequivalents [MME]) were recorded daily for both groups.

Results: 58 patients with operative distal femur or tibial plateau fractures (26 CPM and 32 No CPM) were enrolled in the study. Ten patients in the CPM group received a peripheral nerve block, whereas 18 patients in the No CPM group received a nerve block. Two-way analysis of variance of patients with or without CPM, peripheral nerve block, or both revealed a significant relationship between peripheral nerve block and CPM use in reduction of pain VAS ($P = 0.045$) and opioid use ($P = 0.069$). Patients with a combination of CPM and nerve block had lower mean pain VAS than those with nerve block alone (VAS 4.2 vs 5.6) and lower mean opioid use (19 vs 29 MME); however, these differences were not statistically significant ($P = 0.175$ and 0.182, respectively).

Conclusion: Continuous passive motion coupled with peripheral nerve blockade following surgical fixation of intra-articular distal femur and tibial plateau fractures appears to reduce pain and opioid use compared to either modality used alone.