

Evaluation of the current practices for managing postoperative pain and characterization of patients undergoing total knee or hip arthroplasty in a real-world setting

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Purpose

Total knee arthroplasty (TKA) and total hip arthroplasty (THA) are associated with significant tissue damage that can alter the body's processing and interpretation of pain. Persistent postoperative pain, which occurs in 28% of TKA patients, reduces quality of life (QoL). Current management techniques include nonsteroidal anti-inflammatory drugs (NSAIDs), local anesthetics, opioids, or a combination of these among other therapies. This study describes the current analgesic practices employed at an academic medical center for THA and TKA to minimize postoperative pain and assesses the impact of persistent postoperative pain on quality of life and pain-related outcomes.

Method

Study patients were drawn from patients in the University of Utah Orthopedic Clinic Registry who underwent TKA or THA between September 1, 2008 and November 30, 2010. To be included in the study, patients needed to (1) be age 40+ years, (2) have received pre-emptive analgesia (local anesthetics, NSAIDs, gabapentin or pregabalin), (3) have had a postoperative follow-up visit up to 6 months, and (5) have completed the Short Form-36 (SF-36) and a numeric pain rating scale (NPRS) within 6 months prior to and after surgery. Patients with TKA or THA revision, any joint arthroplasty within one year prior to surgery, or comorbid neurological condition that would impair ambulation were excluded. Patient characteristics including surgery-related medications during and post surgery were assessed. Preoperative, 6 week and 6 month postoperative scores for SF-36, NPRS, Knee Society score (KSS), Harris Hip score (HHS) and Lower Extremity Function Scale (LEFS) score were reported.

Results

A total of 177 TKA and 119 THA patients were identified. Average age of the overall cohort was 62.9±11.0 years, BMI was 31.0±7.0 kg/m², and 62% were female. The most common comorbidities included osteoarthritis (≥75%), hypertension (>40%), and chronic back pain (≥30%). TKA patients had significantly higher SF-36 scores at 6 weeks compared to baseline for physical functioning and general health ($P<.001$). At 6 months, all domains were higher ($P<.05$), except general health, emotional role, and mental health. Compared to baseline, KSS and LEFS scores in TKA patients increased at 6 weeks (KSS-85.2 vs 60.5; LEFS-42.6 vs 37.0; $P<.001$) and 6 months (KSS-90.6 vs 65.2; LEFS-49.0 vs 35.1; $P<.001$). THA patients had significantly higher SF-36 scores for all domains except physical role and social functioning at 6 weeks ($P<.05$), and all domains except general health, emotional role, and mental health at 6 months ($P<.001$). HHS and LEFS also showed significant improvements in THA patients at 6 weeks (HHS-82.9 vs 60.9; LEFS-41.5 vs 33.4) and 6 months (HHS-85.2 vs 56.1; LEFS-50.9 vs 32.3 $P<.001$) vs baseline. NPRS scores for both groups improved significantly at 6 weeks vs baseline (TKA-1.2 vs 3.6; THA-0.9 vs 4.1; $P<.001$) and 6 months (TKA-2.0 vs 3.5; THA-0.8 vs 4.5; $P<.001$). Consistent with the Procedure-Specific Postoperative Pain Management (PROSPECT) Working Group recommendations, the only published guidelines, TKA patients were commonly given bupivacaine (99%), oxycodone (97%), fentanyl (94%), morphine (89%), celecoxib (81%), and midazolam (81%) on day of surgery. Four days postsurgery, most TKA patients were prescribed oxycodone (54%), and

hydrocodone/APAP (50%). Also in line with PROSPECT, THA patients commonly received fentanyl (97%), oxycodone (97%), morphine (92%), bupivacaine (86%), and celecoxib (81%) on day of surgery. Drugs common in THA patients 4 days postsurgery were oxycodone (61%) and hydrocodone/APAP (32%).

Conclusions

In an observational analysis of patients treated at an academic medical center, a multimodal perioperative anesthetic and pain management strategy using local analgesia, opioids, and NSAIDs was identified. Postoperatively, patients undergoing TKA or THA surgery had reduced pain, improved health-related quality of life, and improved physical function compared to their baseline preoperative scores. A limitation of this study was that pain scores were likely under reported due to suspected errors in data recording. Further research is required to evaluate the outcomes of preoperative care for long-term (>12 months) pain management in a real-world setting.