The James A. Rand Young Investigator's Award

Battling the Opioid Epidemic with Prospective Pain Threshold Measurement

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Introduction: Responsible analgesic prescribing is paramount in the opioid epidemic era yet there exists no standardized outpatient prescription regimen with total joint arthroplasty. We aim to: (1) quantify and correlate the amount of outpatient opioid needed after total knee and hip arthroplasty (TKA/THA) with preoperative objective pain pressure thresholds (PPT) and subjective pain measures (2) report incidence of non-surgical opioid prescription in the six-week postoperative period.

Methods: Prospectively, PPTs were measured using an algometer with a maximum force of 20 pounds in 160 consecutive patients undergoing arthroplasty (90 TKA/70 THA). Two locations tested: operative joint (medial epicondyle for TKA or lateral iliac crest for THA) and contralateral olecranon for systemic threshold. Visual Analog Score (VAS), Pain Severity Score (PSS), Pain Interference Score (PIS), and subjective pain threshold also obtained. Six-week outpatient narcotic consumption in morphine equivalents recorded and prescriptions cross checked with North Carolina Controlled Substance Reporting System. Multivariate analysis was performed to evaluate local and systemic PPT and subjective measures with narcotic consumption.

Results: Average operative site and systemic PPT were 6.91 and 7.72 pounds force, respectively. Subjective averages were: VAS 7.14, PSS 5.05, PIS 5.16, and perceived threshold 6.77. Six-week average outpatient narcotic consumption was 314.9 morphine equivalents or 125 five milligram oxycodone pills. On average patients required narcotics for 29 days and 20% received opioids from outside providers. Linear regression revealed a negative correlation between operative site PPT (-0.26; p=0.047) and systemic PPT (-0.31; p=0.021) while all subjective pain metrics failed to meet significance.

Conclusion: This novel, prospective study demonstrated a statistically significant negative correlation between preoperative pain threshold and outpatient narcotic consumption. 20% of patients received opioid prescriptions outside orthopaedic providers in the six weeks following surgery highlighting the importance of interdisciplinary communication. This information may prove vital in the development of a standardized prescribing policy.