

Reducing Opiate Use: *The Tourniquetless TKA*

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Introduction: Tourniquet use in total knee arthroplasty (TKA) remains controversial and few reports exist using contemporary pain protocols and tranexamic acid (TXA). This study aimed to examine whether a modern TKA protocol without a tourniquet results in less blood loss, patient-reported pain, and opioid consumption compared to TKAs with a tourniquet.

Methods: A retrospective study was performed on 210 consecutive primary cemented TKAs using computer-assisted navigation with or without tourniquet. The tourniquet was inflated the entire procedure or not at all, and sterile CO₂ gas was used to maximize cement interdigitation in non-tourniquet knees. All patients received identical implants and underwent the same TKA peri-operative protocols. Standardized inpatient pain level targets were utilized and medication titrated to control post-operative pain. Pain on a 10 point scale in the first 24 hours after surgery and blood loss (pre-operative to post-operative day 1 decline on hemoglobin, total blood loss in liters, drain output in milliliters, and drain output per hour) were analyzed relative to tourniquet use.

Results: After exclusions for confounds, 184 consecutive TKAs (93 tourniquet; 91 tourniquetless) were analyzed. Age ($p = 0.561$) and BMI ($p = 0.580$) did not differ between the two groups. By chance, there were significantly more females in the tourniquet group (55.9%) compared to the no tourniquet group (44.1%) ($p = 0.019$). Consequently, outcome analyses were performed separately for females and males. Median pain in the first 24 hours was significantly lower for women without a tourniquet (1.9 vs. 2.7, $p = 0.002$). This corresponded to significantly less opioid consumption in the first 24 hours among women without tourniquets (18.8 vs. 42.8 Me, $p < 0.0001$). Neither pain nor opioid consumption in the first 24 hours differed based on tourniquet use in men ($p \geq 0.114$). Not surprisingly, significantly more blood loss was observed on all four metrics in tourniquetless knees for both women ($p \leq 0.040$) and men ($p \leq 0.020$).

Discussion: In contemporary TKA using multi-modal pain protocols and TXA, not using a tourniquet resulted in less pain and lower narcotic consumption in the first 24 hours after surgery for women, but not for men. It is possible that women may be more effected by tourniquet-induced ischemia in the early post-operative period. These results are timely with current national initiatives to minimize peri-operative opioid consumption.