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The effect of tourniquet time on pain experienced and narcotics used during total knee arthroplasty

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Introduction: The use of a tourniquet in total knee arthroplasty is still common practice despite adverse results shown in patients including postoperative bleeding, reperfusion injury, postoperative hypotension, intraoperative pain and increased postoperative pain. The objective of this study was to measure the effects of tourniquet time on pain experienced by the patient during surgery as well as the number of narcotics given during surgery. In total knee arthroplasty (TKA), when overall tourniquet time is decreased, the pain individual experiences during surgery will decline and therefore the number of narcotics used during the surgery will decrease resulting in lessened risk of postoperative hypotension and pain.

Methods: This was achieved by examining the anesthesia records of two groups of patients; an increased tourniquet time group (N=40) in which the tourniquet was up for the entire duration of surgery and a decreased tourniquet time group (N=41) in which the tourniquet was used intermittently. The MAP, systolic blood pressure, diastolic blood pressure, $ETCO_2$ levels and heart rate of patients were recorded. The dosage of fentanyl and ephedrine gave were also recorded.

Results: When the tourniquet is up both groups saw an increase in the MAP, systolic blood pressure, diastolic blood pressure, $ETCO_2$, and heart rate. The group with the increased tourniquet time required 1.5 as many redosings of narcotics as the decreased tourniquet group. The increased tourniquet group was given about twice the dosage of pressors that the decreased tourniquet group received.

Discussion: Our results led us to conclude that longer tourniquet times cause patients more pain during TKA, which results in the need for more narcotics to be given. These narcotics cause a continuous drop in blood pressure which can lead to postoperative complications and requires an increased dosage of pressors be given to counteract this.

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