In this prospective, randomized study of 80 patients, Abdel-Salem and Eyres reported significantly lower pain scores in the non-tourniquet group than in the tourniquet group using a linear analogue scale (mean pain score at 4 hours = 4 and 8, respectively, \( p < .05 \)). In addition, the authors identified more cases of wound infection and deep-vein thrombosis in the tourniquet group.

Using a linear analogue scale in a prospective, randomized double-blind study of 88 patients, Barwell et al. reported significantly lower pain scores in the early tourniquet release group compared to the post-closure release group (median pain score at 4 hours = 1 and 4, respectively, \( p = .001 \)). The authors also identified significantly more minor complications (ooze, erythema, cellulitis, \( p = .04 \)) and cases of excessive swelling (\( p = .02 \)) in the release post-closure group.

In this prospective, randomized study of 88 patients, Abdel-Salem and Eyres reported significantly lower pain scores in the non-tourniquet group than in the tourniquet group using a linear analogue scale (mean pain score at 4 hours = 4 and 8, respectively, \( p < .05 \)). In addition, the authors identified more cases of wound infection and deep-vein thrombosis in the tourniquet group.
Denervation


Complications


In this meta-analysis, Rama et al. systematically analyzed eleven randomized, controlled studies involving 872 patients and 893 primary knee arthroplasties. Tourniquet release after closure significantly increased the risk of regional complications, including wound complications, symptomatic deep vein thrombosis, and knee stiffness requiring manipulation (p < .006).

Rate of reoperation due to post-operative complication was 3.1% (9/290) in the late release group in contrast with 0.3% (1/290) in the early release group (p = 0.04). Complications included wound dehiscence, hematomas, and infections that required drainage and/or debridement and knee stiffness requiring manipulation with the patient under anesthesia.


In this meta-analysis, Smith and Hing reported a trend toward increased wound haematoma, peroneal nerve palsy, superficial wound healing disorders, blisters, DVT, and PE in tourniquet versus non-tourniquet patients.


Parmet et al. compared findings of large venous emboli from 23 patients that underwent total knee arthroplasty (TKA) without pneumatic tourniquet inflated to previous investigations of large venous emboli during TKA with a pneumatic tourniquet inflated. Through multiple regression analysis, they determined 5.33 times greater risk of large venous embolism associated with tourniquet usage.

Patellofemoral Tracking


In this prospective, randomized study of 48 patients. Six weeks following surgery, functional and EMG examination found (1) 17 of 24 (71 %) of the tourniquet group had EMG evidence of denervation and a functional capacity of 39% of the normal leg, (2) 7 of 24 (29%) of the tourniquet group had no evidence of denervation and a 71 % functional capacity, and (3) the control group had no evidence of denervation and a functional capacity of 79%.

Methicillin-Resistant Staphylococcus Aureus (MRSA)


Ahmed et al. sampled 20 tourniquets used in orthopaedic procedures. Coagulase-negative Staphylococcus spp. were found on every tourniquet sampled. Methicillin-resistant Staphylococcus aureus (MRSA) were found on two tourniquets. Pseudomonas spp. were found on one, and Staphylococcus aureus were found on one.

Total Blood Loss


In this prospective, randomized study, 30 patients underwent total knee replacement with a tourniquet and 30 patients went without. Li et al. found no significant difference in total blood loss between the two groups. The mean morphine requirement, postoperative swelling, scope of ecchymosis, earlier straight leg raising, and post-operative knee flexion were significantly better in the non-tourniquet surgery group.

Total measured blood loss was not found to be significantly different in tourniquet and non-tourniquet groups by Tetro and Rudan in this prospective, randomized study (blood loss = 654 and 742 mL, respectively, p > .25). A trend toward more complications such as increased postoperative pain and slower recovery was reported in the tourniquet group (p = .06).