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Total Knee Arthroplasty Without the Use of a Tourniquet

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Abstract
The major benefit of TKA with tourniquet is operating in a bloodless field. A possible secondary benefit is a better cement bone interface for fixation. The disadvantages of tourniquet use for TKA include multiple risk factors both local and systemic including: nerve damage, altered hemodynamics with limb exsanguinations and reactive hyperemia with tourniquet release, delay in recovery of muscle or nerve function, increased risk of DVT with direct trauma to vessel walls and increased levels of thrombin-antithrombin complexes. A greater risk for large venous emboli propagation and transesophageal echogenic particles, vascular injury with higher risk in atherosclerotic, calcified arteries, and an increase in wound healing disturbances. Our initial experience with TKA without tourniquet was in high risk patients with previous DVT or PE, multiple scarring, or compromised cardiovascular status. We have used this method on all patients for the last eight years. The protocol includes regional anesthesia, incision and approach made with 90 degree knee flexion, meticulous hemostasis, jet lavage and filtered carbon dioxide delivered to dry and prepare bone beds for cementation and routine closure. We have encountered no differences in blood loss or transfusion rates, less post-op pain, faster straight leg raise and knee flexion gains, and fewer wound healing disturbances. We recommend TKA without tourniquet.

Keywords: total knee arthropasty, tourniquet complications, total knee surgery without tourniquet, cement fixation of TKA, hemodynamic issues with tourniquet use

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Figure 1 CarboJet-filtered carbon dioxide delivery system.