

Clinical and Functional Results of 116 Patients with Knee Dislocations

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Purpose: Knee dislocations are rare injuries that may be limb-threatening and often associated with functional limitations. Treatment strategies vary among institutions, without consensus regarding timing, surgical tactic, and rehabilitation. Furthermore, high-energy and low-energy mechanisms are described that impact distinct patient populations with different risks. Our purpose is to describe the clinical results and functional outcomes of knee dislocations treated with a similar strategy and to identify risk factors for complications and poor outcomes.

Methods: 138 adult patients with knee dislocations (OTA 40A) over 14 years at one institution were reviewed; 22 had insufficient data, leaving 116: 74 (64%) male with mean age 36.9 years, mean body mass index (BMI) 30.7, and mean ISS 14.9. High-energy mechanisms occurred in 79 (68%), mostly motor vehicle (31%) and motorcycle (22%) collisions. 21 (18%) had popliteal artery injury requiring revascularization, while five others were observed. Eight patients (6.9%) had primary amputation; seven of them had vascular injuries. All others underwent initial closed reduction, and 38 patients (33%) with open injuries had urgent surgical debridement. 89% of all patients had provisional external fixation, retained for mean 6.8 weeks in 51%. Repair of medial and lateral structures and posterolateral corner occurred at mean 5.8 days (range, 0 to 26) after injury. Fixation of cruciate avulsion fractures (5 posterior cruciate ligament and 1 anterior cruciate ligament [ACL]) occurred concurrently. Due to residual instability, bicruciate reconstruction was performed in 4 patients at a mean of 29.4 weeks, while 1 other had ACL reconstruction, (4.6% with delayed cruciate reconstructions). Complications included deep vein thrombosis (DVT), pulmonary embolism, wound infection, heterotopic bone (HO), and arthrosis. Functional outcomes were measured with the Musculoskeletal Function Assessment (MFA) survey.

Results: After a mean 18 months follow-up, 63 early complications were noted in 45 patients (39%), requiring 31 (27%) to undergo 148 secondary operations, including 3 late amputations. Open knee dislocations resulted in more amputations (23% vs 1.3%, $P < 0.001$). Popliteal arterial injuries were associated with more amputations (31% vs 4.3%, $P < 0.001$), infection (39% vs 12%, $P = 0.002$), and DVT (23% vs 8.8%, $P = 0.05$). Open dislocations with arterial injuries were associated with the most complications: DVT in 77% ($P = 0.005$), infection in 54% ($P = 0.066$). Patients with wound infections were more likely to develop HO (39% vs 9.8%, $P < 0.001$) and less knee motion (98° vs 115° , $P = 0.14$). Patients with $ISS \geq 20$ had less knee motion at six months (86° vs 122° , $P = 0.036$) and one year (91° vs 120° , $P = 0.016$). 42 patients completed MFA surveys and had a mean score of 38.9 after a minimum of 12 months.

Conclusion: Few patients (4.6%) experienced functional instability requiring late cruciate reconstruction. However, early complications occurred frequently (39%), particularly in patients with open injuries and/or arterial injury. Limitations in knee motion were associated with high ISS, infection, and HO. Mean outcome scores are poor, and data collection is ongoing, which may provide valuable information to identify modifiable risk factors. Alternative treatment strategies could be more effective in promoting recovery and function.

The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device he or she wishes to use in clinical practice.