

## Prognostic Criteria in Traumatic Knee Dislocations: A Retrospective Study of 42 Cases

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**Objectives:** Traumatic knee dislocation (TKD) is an orthopaedic emergency, which may include not only knee joint's structures, but also neurovascular tissues. While such a major trauma can easily be expected to cause significant impairment in knee joint's functions in long term, individual impact of these injured structures on the outcome needs to be clarified. This study questions the effect of injury type and the effect of the presence of neurovascular injuries on the functional outcome after TKD treatment in a level 3 trauma center.

**Methods:** Between 1997 and 2013, 42 knee joints of 42 patients (mean age 34; range 18 – 80) were diagnosed with TKD and treated accordingly. Patients were reviewed after a mean period of 116 months (range 12 – 204), retrospectively. The type of knee injury was classified according to Schenck's criteria, accompanying injuries and emergency and elective surgical interventions were recorded. Patients were evaluated radiographically and clinically on the follow-up examination. Clinical outcome parameters were KSS, Lysholm-Tegner, IKDC and SF-36 scores, grouping patients as either "good or excellent" or "poor or fair". Cut-off values for this stratification was 70 points or higher for KSS, 80 or higher for Tegner-Lysholm and 70 for IKDC score. Effect of injury patterns on the clinical outcome was investigated using frequency tables and Chi-Square test for categorical data and Anova one-way analysis or Kruskal-Wallis test for numerical results.

**Results:** According to Schenck's classification, 6 knee joints (13.9%) were classified as KDI, 3 joints (6.9%) as KDII, 10 joints (23.2%) as KDIII, 19 joints (44.1%) as KDIV and 3 (6.9%) as KDV. An arterial injury was diagnosed in 11 cases (25.5%), fibular nerve injury in 12 cases (27.9%) and tibial nerve injury in 2 cases (4.6%). An external fixator was placed in 20 patients (46.5%) in the emergency setting. Vascular repair was performed in 6 patients, of which four (9.3%) also received a fasciotomy with a diagnosis of compartment syndrome. Fibular nerve was repaired in 9 joints. ACL reconstruction was performed in 22 joints, PCL in 10, MCL repair in 26, LCL repair or reconstruction in 35 and PLC repair or reconstruction in 10. In the final follow-up examination, mean ROM was calculated as 116 degrees, mean KSS-1 score as 79, mean KSS-2 score as 78; mean Tegner-Lysholm score as 80, mean IKDC score as 72, mean SF-36 MCS as 50 and mean SF-36 PCS as 48. Both arterial and fibular nerve injuries were associated with a poor outcome using the IKDC, KSS 1-2 and Tegner-Lysholm scores ( $p < 0.01$ ). A vascular injury was related to a significantly lower ROM degree ( $p < 0.05$ ) in the final follow-up, as well as the fibular nerve damage ( $p < 0.05$ ). The severity of knee injury (Schenck's grade) was inversely correlated with ROM degrees ( $P < 0.05$ ). SF-36 life quality scores were significantly better in KDI group when compared to the remaining four groups ( $p = 0.02$ ), while no difference was observed between groups KDII - KDV. Incidence of neurovascular damage was not increased with the severity of the Schenck's grade.

**Conclusion:** A Schenck's grade of KDII or higher and presence of arterial or nerve injury is correlated with poor outcome in traumatic knee dislocation. The incidence of neurovascular injury was not significantly related Schenck's grade.

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