**Neurologic Injury Predicts Failure of Manipulation Under Anesthesia for Posttraumatic Knee Stiffness**

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**Purpose:** Stiffness is a common complication of periarticular knee injuries. Manipulation under anesthesia (MUA) is considered the first-line treatment for knee stiffness, but there are limited data into the outcomes of MUA for posttraumatic knee stiffness. The purpose of this study is to determine the proportion of MUAs that fail when used as a treatment for posttraumatic knee-stiffness and to identify risk factors for these failures.

**Methods:** We performed a retrospective review of all patients undergoing MUA for treatment of posttraumatic knee stiffness. All patients were treated at a Level I trauma center by an orthopaedic trauma surgeon. The primary outcome was failure of MUA, where failure was defined as the need for additional procedures after MUA to treat recalcitrant stiffness. Secondary outcomes included range of motion after MUA. Information collected on potential confounders included: time from injury to MUA, age, gender, comorbidities, and injury data. Treatment data consisted of surgical interventions, external fixation, and complications from knee stiffness surgery. Multivariable logistic regression was performed to evaluate intraoperative knee flexion, MUA timing, neurologic injury, Workers' Compensation, and extra-articular knee injury on MUA failure.

**Results:** 191 patients with minimum follow-up of 30 days were included. Median follow-up was 10.2 months. 60 patients failed MUA and 47 patients required operative intervention beyond repeat MUA to treat knee stiffness. Three complications occurred—1 compartment syndrome, 1 osteomyelitis infection, and 1 distal femur fracture. The rate of MUA failure did not vary substantially by injury type: 34% for extra-articular injuries, 31% for periarticular injuries, 33% for extensor mechanism injuries, and 30% for ligamentous knee injuries. Time from injury to MUA was similar between groups (median = 117 days for failure vs 126 days, $P = 0.67$). Neurologic injury was associated with failure (53% vs 27%, $P<0.01$). Median knee flexion at final follow-up was 90° for both groups ($P = 0.50$). The multivariable model showed that per 10° of flexion obtained during MUA, the odds of success increased by 18% (odds ratio [OR] = 1.18, $P<0.01$), and neurologic injury was associated with increased odds of failure (OR = 2.57, $P = 0.04$).

**Conclusion:** Our data demonstrated a relatively high failure rate with 31% of patients requiring another procedure to treat recalcitrant stiffness following MUA. Failure of MUA was associated with neurologic injury, as well as obtaining less flexion during MUA. Patients with posttraumatic knee stiffness should be counseled that MUA alone may not be sufficient to obtain acceptable function, but patients requiring additional procedures can expect similar range of motion at final follow-up.