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Knee Manipulation Under Anesthesia (MUA) After TKA

Stiffness workup, indications, timing, technique, and post-MUA rehabilitation · companion to the TKA "Quiet Knee" PT Protocol

Stiffness after TKA is time-sensitive: the window for a good manipulation result is measured in weeks, not months. Screen every slow knee early, exclude the causes manipulation cannot fix, and when MUA is indicated — do it promptly. Arthrofibrosis is a diagnosis of exclusion.

STEP 1 · CONFIRM STIFFNESS & EXCLUDE SECONDARY CAUSES

- Rule out prosthetic joint infection — ESR/CRP, aspiration if indicated.
- Rule out component malposition or oversizing, flexion–extension gap imbalance, and instability — weight-bearing and lateral/skyline radiographs; consider CT for rotation.
- Rule out extensor mechanism problems and complex regional pain syndrome.
- Mechanical or malposition-driven stiffness will not respond durably to MUA — direct these to revision, not manipulation.

STEP 2 · INDICATIONS & MOTION THRESHOLDS

- Persistent stiffness despite adequate analgesia and supervised physical therapy.
- Common operational triggers: flexion < 90° at about 6 weeks, or flexion < 80° and/or a fixed flexion (extension) deficit > 20° at 6 weeks. Trials have used ROM < 90° at 4–12 weeks.
- Screen early: patients who are not progressing report weekly ROM so manipulation can be scheduled promptly rather than late.

STEP 3 · TIMING — THE STRONGEST MODIFIABLE PREDICTOR

- Perform MUA early — ideally within 6–12 weeks of the index TKA.
- Early MUA (< 3 months) yields roughly double the flexion gain of delayed MUA (about 32° vs 19°), and the gain declines as the TKA-to-MUA interval increases.
- Delayed MUA carries significantly higher rates of surgical and medical complications and of subsequent revision TKA.
- Manipulation beyond about 6 months is associated with unsatisfactory outcomes; beyond 90 days, expected flexion gains fall to roughly 17°.

STEP 4 · TECHNIQUE

- General or spinal anesthesia with full muscle relaxation.
- Gentle, controlled flexion with a short lever arm — hand near the joint line, not the ankle — to minimize fracture and extensor-mechanism injury. No forceful torque.
- Document immediate post-manipulation flexion and extension. Intraoperative gains are typically large — mean immediate ROM improvement of about 46° in RCT data.
- For persistent stiffness beyond about 3 months or flexion < 90°, consider combining with arthroscopic lysis of adhesions (aLOA) — but isolated MUA gives more consistent gains with lower risk when performed early.

STEP 5 · ADJUNCTS

- Adjuvant anti-inflammatory therapy is not routinely supported: a multicenter RCT found that adding IV dexamethasone 8 mg plus 14 days of oral celecoxib 200 mg to MUA + PT did not improve ROM or clinical outcomes at 6 weeks or 1 year.
- Optimize multimodal analgesia so the patient can do aggressive early rehabilitation — higher postoperative pain is itself a risk factor for stiffness requiring MUA.
- A regional block or catheter may be used to facilitate immediate post-MUA therapy (institution-dependent).

STEP 6 · POST-MUA REHABILITATION

- Begin intensive supervised physical therapy immediately — same day — to preserve the gains achieved under anesthesia.
- Emphasize early, frequent active and passive flexion plus terminal extension work.
- No CPM. A dynamic splint may be considered for a residual flexion contracture (for example > 15°), per surgeon preference.
- Ensure analgesia is adequate to permit therapy.

STEP 7 · EXPECTED OUTCOMES — COUNSELING NUMBERS

- Sustained mean ROM gain of about 26–37°, with final ROM typically > 90–100°.
- RCT data: about 46° immediately, 28° at 6 weeks, 37° at 1 year. A French multicenter cohort showed about 36° of gain sustained at 5 years with 77.5% satisfaction.
- Low complication rate (about 2–3%): hematoma, wound dehiscence, infection, tibial tubercle fracture, patellar tendon rupture.

STEP 8 · FAILURE & ESCALATION

- Failure = repeat MUA, revision for arthrofibrosis, or failure to retain at least 50% of the flexion achieved under anesthesia. Failure often declares itself by the first post-MUA visit.
- Options after failed MUA: repeat MUA (smaller expected gain — about 17–20° increment), arthroscopic or open lysis of adhesions, or revision TKA — individualized by whether the problem is persistent soft-tissue fibrosis or correctable mechanical pathology.

QUICK REFERENCE

- Screen: flexion < 90° at 6 weeks, not improving with PT.
- Act: MUA within 6–12 weeks of the index TKA.
- Escalate / consider aLOA: persistent flexion < 90° beyond about 3 months.
- Reassess for a mechanical cause / revision if MUA fails early.

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