

RESEARCH UPDATE: SYSTEMATIC REVIEW OF THE TIMING OF OPERATIVE INTERVENTION AND POSTOPERATIVE REHABILITATION IN MULTIPLE LIGAMENT INJURED KNEES

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Mook et al recently did an interesting systematic review of studies to compare outcomes in early, delayed, and staged procedures as well as the subsequent rehabilitation protocols. Twenty-four retrospective studies were analyzed involving 396 knees dealing with multiple ligament knee injuries involving both cruciates and either or both collaterals. Data were compared as follows: 1) acute (time to surgery <3 weeks), 2) chronic (time to surgery >3 weeks), and 3) staged treatment (combination of repair and reconstruction in the acute and chronic periods). Findings were as follows:

1. Anterior instability – Acute treatment lead to greater instability compared to chronic treatment. No differences were found between acute and staged or staged and chronic. No differences in anterior instability were garnered from postoperative rehabilitation.
2. Posterior instability - Posterior instability was found in 28% who were managed with immobilization compared to 12% of those managed with early mobilization.
3. Varus laxity – Acute treatment resulted in 21% of patients having laxity in the immobilized group compared to only 1.6% managed with early mobilization. In the chronic treatment group, varus laxity was found in 1% managed with immobilization compared to 20% managed with early mobilization.
4. Valgus laxity – Acute treatment resulted in 26% of patients having laxity managed with immobilization compared to 2% of those managed with mobilization.
5. Range of motion – No significant differences were found when groups were compared with surgical timing or rehabilitation.
6. Flexion loss >10° - Significantly more patients (31%) had flexion loss of >10° in the acute group compared to patients in the chronic group. Significantly fewer patients were found to have flexion loss when managed in stages compared to those managed acutely. Flexion loss >10° was reported in 48% of those who were immobilized compared to 28% of those who were allowed early immobilization.
7. Extension loss of >5° - no differences were found based on surgical timing, but 15% of patients immobilized compared to 5% who were allowed early mobilization showed extension losses.
8. Good or excellent subjective outcome scores – Significantly greater outcomes were found in the staged group compared to the chronic group and the acute groups.
9. Abnormal/poor subjective outcomes – Significantly more poor outcomes were found in those managed with immobilization compared to those who were allowed early mobilization.
10. Lysholm Score – no differences in timing or rehab

11. Return to work – acutely managed patients who were immobilized early were significantly less likely to return to work than those who were mobilized early. No differences were found on basis of surgical timing
- 12. *Return to athletics – patients who were managed acutely were significantly less likely to return to athletics than those who were managed in stages.***
13. Operative arthrolysis – significantly fewer patients in the chronic treatment group underwent manipulation when compared to both the acute and staged treatment groups.

From a rehab standpoint, researchers found that those managed acutely with early mobilization had better outcomes as well as less range of motion losses. Observations from the researchers include a few important points. Reconstruction within three weeks after injury results in more anterior instability, more severe ROM complications, and more need for MUA. Secondly, they found patients that are managed in stages had the highest percentage of excellent/good subjective outcomes and the least ROM deficits. Third, although final ROM was preserved best in patients undergoing staged treatment, a high percentage needed follow-up surgery due to arthrofibrosis. This finding suggests that simultaneous repair and reconstruction of the cruciates acutely may lead to substantial ROM deficits and are unresponsive to follow-up surgery. Next, aggressive rehabilitation with early mobilization is associated with less ROM complications and earlier return to work, particularly in those who are acutely managed.

In conclusion, researchers stated:

1. Delayed surgery potentially results in equivalent stability measures compared to acute surgery.
2. Staged procedures produce a better subjective outcome and lower number of ROM deficits, but still needed additional treatment due to joint stiffness.
3. Patient managed acutely are as likely as those who are managed in stages to require additional treatment due to ROM deficits.
4. For the acutely managed patient, early mobilization results in better outcomes.
5. The type of rehab for delayed procedures isn't as important as those who are managed acutely (mobilize acute early).

Does anyone have any thoughts on this study that they would like to share?

Mook WR et al. Multiple-ligament knee injuries: a systematic review of the timing of operative intervention and postoperative rehabilitation. *J Bone J Surg Am.* 2009; 91: 46-57.