

Rotating-hinge Revision Total Knee Arthroplasty Provides Greater Arc of Motion Gains for Patients with Severe Arthrofibrosis

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INTRODUCTION

Arthrofibrosis is a common postoperative total knee arthroplasty (TKA) complication which results in limited range of motion (ROM). There is limited literature on outcomes after revision TKA (rTKA) for arthrofibrosis based on preoperative ROM restriction. The aims of this study were to: (1) examine ROM trajectory after rTKA for arthrofibrosis patients with severe vs. non-severe limitation; (2) compare ROM gains and final arc of motion (AOM) between severe and non-severe cohorts; (2a) ROM gain in severe cohort treated with rotating hinge (RH) versus non-rotating hinge(non-RH) construct; (3) assess impact of arthrofibrosis severity on Patient Reported Outcome Measures (PROMs).

METHODS

Patients were divided into 2 groups: Group A had preoperative ROM<70o (severe) and Group B had preoperative ROM>70o (non-severe). Patients were assessed clinically using AOM gain, absolute ROM, Knee injury and Osteoarthritis Outcomes Score for Joint Replacement (KOOS, JR), Lower Extremity Activity Scale (LEAS) and pain scores. Postoperative gains in AOM were compared between both groups.

RESULTS

A total of 56 rTKAs (Group A(severe): n=36, Group B(non-severe): n=20) were performed for patients with postoperative fibrosis. Group B had better ROM at one-year timepoint (Group B:95.9±22.5 vs. Group A:83.2±25.7). Group A had significantly better improvement in absolute AOM than Group B (31.1±20.9 vs 11.4±25.0, p<0.01). RH group demonstrated significantly better in absolute AOM gain than non-RH group (41.3±19.4 vs 18.3±15.2, p<0.001). However, there were no significant differences in PROMs between Group A and B or between RH and NRH groups at final follow-up.

DISCUSSION

The retrospective nature of the study is prone to selection bias. The small sample size of the study means that this study may be underpowered. The type of different RH and NRH implant designs could have affected ROM or outcomes. This study did not control for patient comorbidities or other perioperative interventions that could have affected outcomes. The study has a short follow-up time frame which precludes the presentation of survivorship data.

CLINICAL SIGNIFICANCE

Final ROM achieved between severe and non-severe arthrofibrosis groups were similar, and patients with severe arthrofibrosis can expect greater absolute ROM gains and similar functional outcomes than non-severe arthrofibrosis patients. RH rTKAs provided greater AOM gains for patients with severe arthrofibrosis, with equivalent functional outcomes to non-RH implants.

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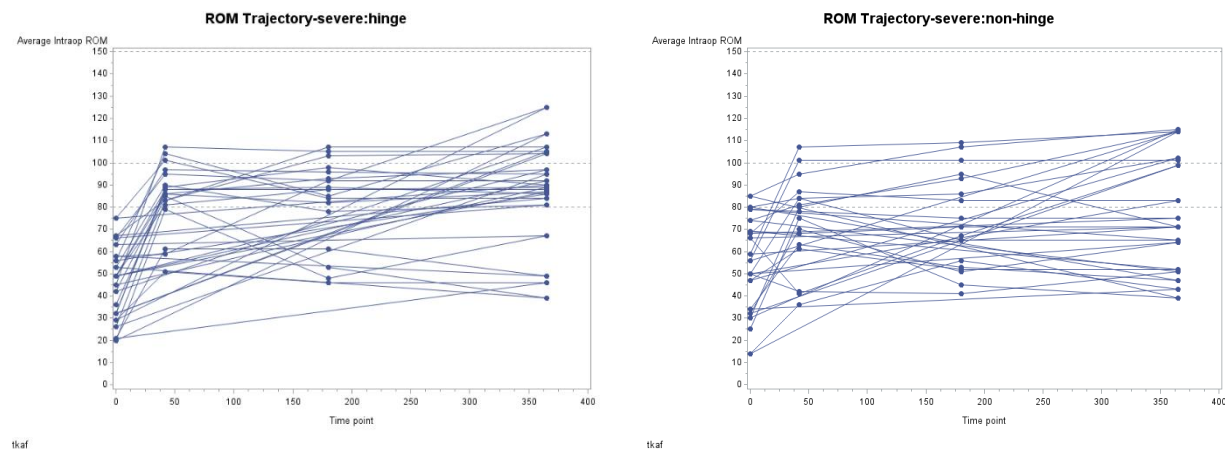


Figure 1a. Range of Motion Trajectory (Severe arthrofibrosis patients with hinge implants)

Figure 1b. Range of Motion Trajectory (Severe arthrofibrosis patients without hinge implants)