Revision total knee arthroplasty using a rotating-hinge implant offers greater improvement in range of motion for patients suffering from severe arthrofibrosis.

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INTRODUCTION

Arthrofibrosis is a condition characterized by limited range of motion (ROM) and pain after total knee arthroplasty (TKA), affecting 1.3% to 5.3% of patients. The management of severely stiff total knee arthroplasty (TKA) can be quite challenging, as the results of revision arthroplasty are generally not as good as they are for other indications.

PURPOSE

1- examine the range of motion trajectory after revision TKA for arthrofibrosis patients with severe flexion limitation vs non-severe limitation
2- compare the range of motion gains and final arc of motion between severity status
2a- Within those considered severe, assess the difference in outcomes between those treated with rotating hinge vs non-rotating hinge revision TKR in arthrofibrosis patients with severe flexion limitation
3- assess the impact of arthrofibrosis severity on revision TKA PROMs.

METHODS

2 groups based on the international consensus definition:
(A) Severe limitation of motion with preoperative range of motion <70
(B) Non-severe limitation of motion with preoperative ROM >70.

Patients were assessed clinically using pre- and postoperative parameters:
Arc of motion, KOOS JR, LEAS and pain scores.
Postoperative gains in arc of motion was compared between both groups.

All patients had a minimum follow-up of 1 year post revision TKA.

RESULTS

- A total of 56 revision TKAs (Group A: 36, Group B: 20) were performed for patients with postoperative fibrosis in our study.
- Group A had significantly better improvement in absolute arc
of motion when compared to Group B
(31.1±20.9 vs 11.4±25.0, p<0.01).
- In the subgroup analysis, the RH group demonstrated significantly better improvement in absolute arc of motion gained when compared to the NRH group
(41.3±19.4 vs 18.3±15.2, p<0.001).
- There were no significant differences in KOOS JR, LEAS or pain scores between Group A and B or between the RH and NRH group at final follow-up.

Table 1: Patient Characteristics and PROMs

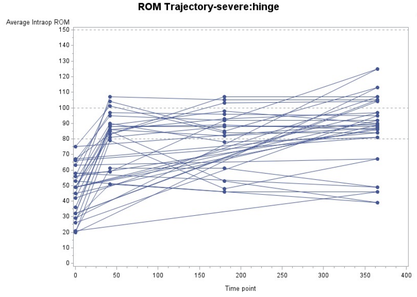
	Group A: Severe (ROMs70) N=36	Group B: Non-Severe (ROM>70) N=20	P-value
Demographics			
Age	66.9 (7.2)	65.6 (7.0)	n.s.
Sex (F)	79%	64%	n.s.
BMI	31.2 (5.6)	29.9 (5.9)	n.s.
OHS			
Preop	44.3 (11.1)	36.9 (11.1)	<0.001***
6-month	26.5 (10.9)	22.3 (8.4)	0.080
2-year	22.3 (8.7)	20.4 (7.7)	0.442

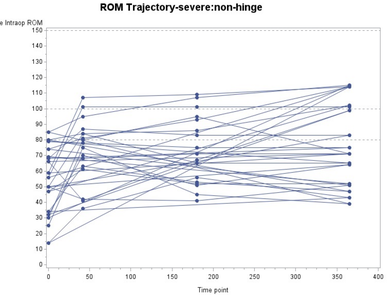
Table 2: Outcomes of severe vs non-severe

	Group A: Severe (ROMs70) N=36	Group B: Non-Severe (ROM>70) N=20	P-value
Postoperative ROM and PROMS (1 year)			
Average ROM	83.2 (25.7)	95.9 (22.5)	n.s.
KOOS JR	59.5 (18.9)	63.5 (16)	n.s.
LEAS	9.5 (3.8)	10.5 (4.0)	n.s
Pain Score	3.2 (3.1)	3.1 (2.9)	n.s
Delta change of ROM (1 year)			
Average ROM	31.1 (20.9)	11.4 (25.0)	0.005*

Table 3: Subgroup analysis of severe arthrofibrosis group - Rotating-Hinge (RH) vs Non-Rotating Hinge (NRH) groups

	Group RH: N=20	Group NRH: N=16	P-value
Postoperative ROM and PROMS (1 year)			
Average ROM	89.5 (23.9)	75.3 (26.4)	n.s.
KOOS JR	60.5 (14.9)	58.3 (23.4)	n.s.
LEAS	10.2 (3.8)	8.7 (3.7)	n.s
Pain Score	3.4 (3.2)	2.9 (3.1)	n.s
Delta change of ROM (1 year)			
Average ROM	41.4 (19.4)	18.3 (15.1)	<0.001*





DISCUSSION

Although the final ROM achieved between severe and non-severe groups were similar, patients with severe arthrofibrosis can generally expect greater absolute ROM gains and similar functional outcomes. Rotating-hinge revision TKA provides greater arc of motion gains for patients with severe arthrofibrosis, with equivalent functional outcomes to NRH implants.
In conclusion, for severe arthrofibrosis patients with severe flexion limitations <70° we recommend the use of a RH revision TKA which can provide excellent results.

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