

# Patellar-Friendly Implant Does Not Affect Patient Perception of Patellar Management Following Total Knee Arthroplasty: A Simultaneous Bilateral Randomized Study

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## INTRODUCTION:

The controversy about whether to resurface or to leave the patella un-resurfaced following total knee arthroplasty (TKA) continues to be debated. Recently, patellar-friendly implants which have deep, elongated and laterally angled patellar groove have been introduced to improve patellar tracking. However, whether patellar-friendly implant would be more beneficial for resurfaced or non-resurfaced patellae remains unclear. We determined (1) whether patients perceive the difference between resurfaced and non-resurfaced patella in terms of patient-reported outcome measures (PROMs); (2) whether patellar-related clinical outcomes and incidence of complication between resurfacing and non-resurfacing are different in patients underwent same-day bilateral TKA using with a contemporary patellar-friendly implant design.

## METHODS:

We undertook a prospective simultaneous bilateral randomized study in 49 patients scheduled to undergo same-day bilateral TKA. One knee was randomly assigned to resurfacing and the other knee was assigned to non-resurfacing group. All TKAs were performed using with a most recently developed, single PS design which has a deep, elongated and laterally curved patellar groove by a single surgeon. These two groups were compared for PROMs in terms of global knee pain level, Forgotten joint score, WOMAC score and side performance and clinical outcomes including range of motion (ROM), Knee Society score (KSS), patellar scores by Feller et al, and radiographic patellar tracking. In addition, incidences of patellar-related complications (crepitus and clunk) and re-operation were recorded at postoperative 2 year.

## RESULTS:

There were no differences in PROMs ( $p > 0.1$  in all comparisons) and side preference (resurfacing 52%; same 4%; non-resurfacing 46%,  $p = 0.935$ ) between resurfaced and non-resurfaced groups. In addition, no group differences were found in clinical outcomes in terms of ROM, KSS, patellar scores by Feller and radiographic patellar tracking during the entire 2-year study period ( $p > 0.1$  in all comparisons). Moreover, there was no difference in complication rate and no re-operation in both groups within 2 years after TKA.

## DISCUSSION AND CONCLUSION:

Patellar-friendly implant offers similar benefits for both resurfaced or non-resurfaced patella. Patients underwent TKA using with a contemporary patellar-friendly implant design do not perceive any difference between knees that underwent patellar resurfacing or retention. Further studies were necessary to ascertain whether resurfaced patella with patella-friendly implant design would provide superior long-term advantage over non-resurfaced patella.

4. Patellar-related clinical outcomes and complication rate at postoperative 2 years

	Resurfacing	Non-resurfacing	P value
ROM (°)	127.1	126.8	0.832
FC	127.7	127.6	0.950
TE	6.5	6.7	0.666
Patellar Scores by Feller			
Anterior Knee Pain	13.5	14.2	0.176
Quadriceps Strength	4.4	4.4	0.982
Ability to Chair Rise	4.1	4.1	0.811
Stair Climbing	4.1	4.0	0.688
Total	26.2	26.7	0.329
Knee Society Scores			
Pain	48.5	48.6	0.816
Function	122.3	122.5	0.919
Total	170.4	170.8	0.897
Radiographic outcome			
Tilt (°)	9.6	9.9	0.753
Displacement (mm)	3.4	3.5	0.742
Complication			
Crepitus (%)	9 (18%)	13 (27%)	0.335
Clunk	0	0	-
Re-operation	0	0	-

2. PROMs at postoperative 2 years

	Resurfacing	Non-resurfacing	p value
Global Knee Pain (VAS)	0.28	0.42	0.582
WOMAC score			
Pain	1.8	1.4	0.562
Stiffness	1.7	1.4	0.463
Function	16.9	15.5	0.636
Total	20.6	18.4	0.514
Forgotten Joint score			
1. in bed at night	0.9	1.0	0.666
2. when sitting on a chair for more than one hour?	0.8	0.9	0.684
3. when you are walking for more than 15 minutes?	1.0	1.0	0.812
4. when taking a bath/shower?	0.9	0.8	0.816
5. when traveling in a car?	0.9	0.9	0.927
6. when climbing stairs?	1.2	1.1	0.749
7. when walking on uneven ground?	1.2	1.1	0.755
8. when standing up from a low-sitting position?	1.5	1.5	0.870
9. when standing for long periods of time?	0.9	0.9	0.830
10. when doing housework or gardening?	1.0	1.0	0.882
11. when taking a walk or hike?	0.9	1.1	0.285
12. when doing your favorite sport?	1.0	1.0	0.928
Total	12.3	12.5	0.924

