

ORIGINAL ARTICLE

A comparative study of patellar resurfacing and non-resurfacing in patients undergoing bilateral total knee arthroplasty

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ABSTRACT:

Background: Total knee arthroplasty (TKA) is commonly performed for end-stage osteoarthritis (OA) of the knee. The present study compared patellar resurfacing and non-resurfacing in patients undergoing bilateral TKA. **Materials & Methods:** 60 patients undergoing TKA of both genders were divided into 2 groups of 40 each. In group I, patients underwent resurfacing and group II patients underwent non-resurfacing of patella. Parameters such as Knee Society Score (KSS), Modified Samsung Medical Centre Score (MSMCS), Feller patellar score were recorded in both groups. **Results:** Group I had 12 males and 18 females and group II had 13 males and 17 females. MSMCS pain was 1.47 in group I and 1.62 in group II, MSMCS function was 3.29 in group I and 3.60 in group II, KSS pain was 2.07 in group I and 2.84 in group II, KSS function was 3.16 in group I and 4.21 in group II, Feller patellar score was 2.88 in group I and 3.26 in group II, congruence angle was 2.34 in group I and 2.56 in group II and patellar tilt angle was 2.03 degree in group I and 2.12 degree in group II. The difference was non-significant ($P > 0.05$). **Conclusion:** Clinical and radiological parameters were comparable in both groups. Thus, both patellar resurfacing and non-resurfacing can be performed in patients undergoing bilateral total knee arthroplasty.

Key words: Patellar resurfacing, total knee arthroplasty, orthopaedic surgeons

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INTRODUCTION

Total knee arthroplasty (TKA) is commonly performed for end-stage osteoarthritis (OA) of the knee, orthopaedic surgeons are still seeking clarification regarding the indications for patellar resurfacing during this procedure. Currently, the decision to perform patellar resurfacing is still largely based on the surgeon's preference, experience, and training.¹ Some surgeons prefer selective non-resurfacing of the patella for patients with OA, while others prefer routine patellar resurfacing for more predictable results. The potential risk of patellar fracture leading to patellar resurfacing and the challenge posed while managing the resurfaced patella at revision has led some authors to advocate the non-resurfacing of patella technique during TKA.² The outcome indicators such as Knee Society Score (KSS), function score of KSS, range of motion (ROM), anterior knee pain (AKP) postoperative and the ratio of reoperation are different in various studies. The different outcomes of previous studies provide the basis for different choices of patellar resurfacing or not.³

In a long-term follow-up, patellar resurfacing might make a difference of KSS. While in other aspects, the benefit of patellar resurfacing was limited.⁴ To address

the effect on patellar cartilage, its radiological evaluation has been considered important. However, postoperative imaging of TKA using magnetic resonance imaging (MRI) is difficult due to the susceptibility of implants, which are generally made of cobalt-chrome, to generate artefacts despite recent metal artefact reduction techniques.⁵ The present study compared patellar resurfacing and non-resurfacing in patients undergoing bilateral TKA.

MATERIALS & METHODS

The present study comprised of 60 patients undergoing TKA of both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. The patients were divided into 2 groups of 40 each. In group I, patients underwent resurfacing and group II patients underwent non-resurfacing of patella. All procedures were performed by single orthopaedic surgeon. Parameters such as Knee Society Score (KSS), Modified Samsung Medical Centre Score (MSMCS), Feller patellar score were recorded in both groups. Radiological evaluation was performed at 1 year follow up. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Groups	Group I	Group II
Method	Resurfacing	Non- resurfacing
M:F	12:18	13:17

Table I shows that group I had 12 males and 18 females and group II had 13 males and 17 females.

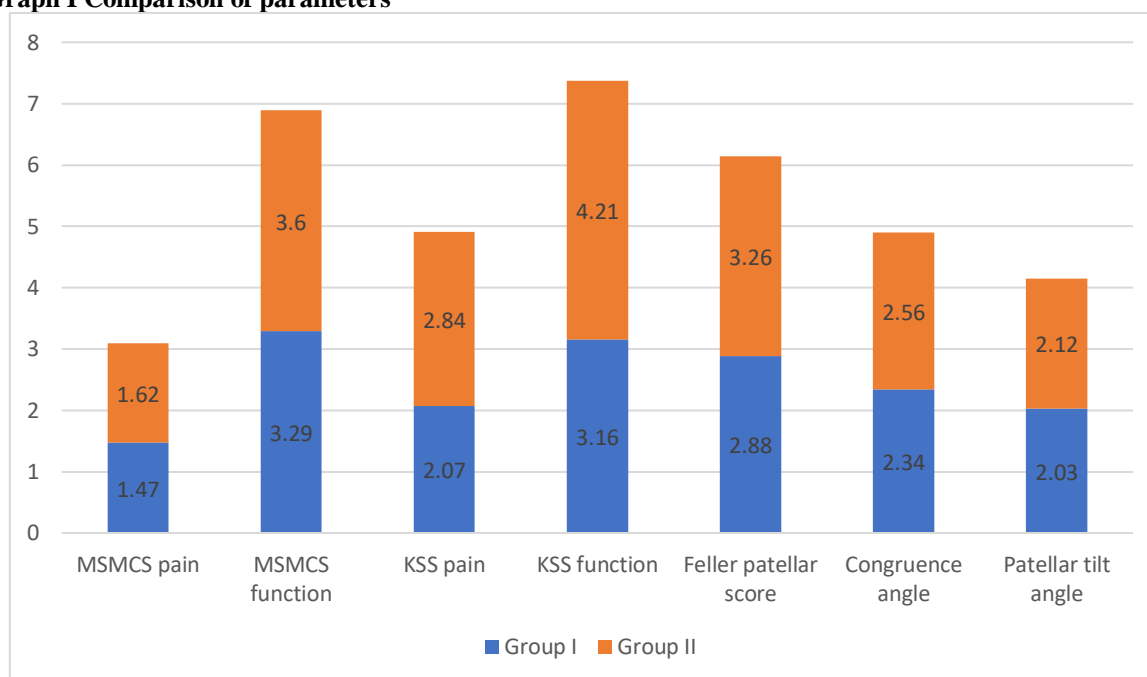
Table II Comparison of parameters in both groups

Parameters	Group I	Group II	P value
MSMCS pain	1.47	1.62	0.92
MSMCS function	3.29	3.60	0.81
KSS pain	2.07	2.84	0.94
KSS function	3.16	4.21	0.05
Feller patellar score	2.88	3.26	0.91
Congruence angle	2.34	2.56	0.87
Patellar tilt angle	2.03	2.12	0.95

Table II, graph I shows that MSMCS pain was 1.47 in group I and 1.62 in group II, MSMCS function was 3.29 in group I and 3.60 in group II, KSS pain was 2.07 in group I and 2.84 in group II, KSS function was 3.16 in group I and 4.21 in group II, Feller

patellar score was 2.88 in group I and 3.26 in group II, congruence angle was 2.34 in group I and 2.56 in group II and patellar tilt angle was 2.03 degree in group I and 2.12 degree in group II. The difference was non-significant ($P > 0.05$).

Graph I Comparison of parameters



DISCUSSION

About 11% of all individuals above 64 years of age show symptomatic knee osteoarthritis (KOA).⁶ The most successful operative option for the treatment of advanced KOA is total knee arthroplasty (TKA). The demand for primary TKA is projected to increase to 3.4 million annually by 2030 in the USA.^{7,8} In spite of the excellent record for TKA in the treatment of KOA, some patients show poor functional results and persistent anterior knee pain after TKA. This could be attributed to patellofemoral joint problems.^{9,10} The present study compared patellar resurfacing and non-resurfacing in patients undergoing bilateral TKA.

We found that group I had 12 males and 18 females and group II had 13 males and 17 females. Parvizi et al¹¹ reported no significant difference in the re-intervention rate between the resurfaced and non-resurfaced patella. The cumulative percentage revision rate for patellar resurfacing after non-resurfacing patella TKA was reported to be 10–15% after primary TKA within a 5–10-year follow-up period.

We observed that MSMCS pain was 1.47 in group I and 1.62 in group II, MSMCS function was 3.29 in group I and 3.60 in group II, KSS pain was 2.07 in group I and 2.84 in group II, KSS function was 3.16 in group I and 4.21 in group II, Feller patellar score

was 2.88 in group I and 3.26 in group II, congruence angle was 2.34 in group I and 2.56 in group II and patellar tilt angle was 2.03 degree in group I and 2.12 degree in group II. Hozack et al¹² at five years of follow-up, the rate of patellar clunk syndrome was obviously lower in the patellar resurfacing side compared with the patellar non-resurfacing side. The surgical technique, patellar shape, abnormal patellar tracking, soft tissue imbalance, femoral component design, and positioning have been implicated in the aetiology of the patellar clunk syndrome.

A previous systematic review showed that most meta-analyses unanimously reported equivalent results after patellar resurfacing compared to non-resurfacing in terms of functional scores and complication rates; however, an increased risk of reoperation after patellar non-resurfacing was reported. Persistent AKP remains an important clinical issue after non-resurfacing patella TKA.¹³

Despite advances in design and surgical techniques, the reported rates of AKP in the patellar resurfacing group is 0%–47% and in the non-resurfacing group is 0%–43%. Studies have concluded that irrespective of the management of patella approximately 10% of the patients will still have AKP after TKA. Another complication seen with patellar resurfacing is patellar clunk syndrome. There are various etiologies for patellar clunk syndrome, including the high position of the patellar component, inadequate synovial tissue debridement at the upper pole of patella, abnormal patellar tilt and tracking, joint line alteration of 8 mm or more, etc.^{14,15}

The limitation the study is small sample size.

CONCLUSION

Authors found that clinical and radiological parameters were comparable in both groups. Thus, both patellar resurfacing and non-resurfacing can be performed in patients undergoing bilateral total knee arthroplasty.

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