Original Research

Evaluation of Impact of Prior Arthroscopic Procedures on the Outcomes and Complication Rates of Total Knee Arthroplasty at a Tertiary Care Hospital

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Abstract

Background: Knee arthroplasty refers to the surgical reconstruction of the knee joint, commonly known as total knee replacement. Prior research has indicated that undergoing knee arthroscopy prior to total knee arthroplasty (TKA) may lead to suboptimal results. Hence the present study was conducted to evaluate the impact of prior arthroscopic procedures on the outcomes and complication rates of total knee arthroplasty.

Materials & Methods: A cohort of 50 patients diagnosed with grade 4 osteoarthritis, as classified by the Kellgren-Lawrence system, participated in the study following total knee arthroplasty (TKA). The inclusion criteria specified that all participants had undergone primary TKA procedures. The patients were categorized into two distinct groups. Those exhibiting mechanical symptoms attributable to degenerative meniscus tears who subsequently underwent knee arthroscopy (n=25), and those who did not experience such symptoms (n=25). Clinical and demographic data were meticulously documented. The outcome measures included the visual analog scale (VAS), the McMaster Universities Osteoarthritis Index (WOMAC), the Knee Society scoring system (KSS), and the range of motion (ROM) of the knee, all of which were assessed preoperatively and at the final follow-up.

Results: The mean age of the patients of Previous arthroscopy surgery group and Previous arthroscopy surgery free group was 60.8 years and 61.7 years respectively. Majority proportion of patients of both the study groups were males. Right side involvement occurred in majority proportion of patients. Both the groups were comparable in terms of BMI. Non-significant results were obtained while comparing VAS, WOMAC, KSS and ROM at final follow-up in between the two study groups.

Conclusion: Clinical outcomes and complications were comparable between patients who underwent primary total knee arthroplasty (TKA) and those who had previously received knee arthroscopy.

Key words: Knee Arthroplasty, Arthroscopic Surgery.

INTRODUCTION

Knee arthroplasty refers to the surgical reconstruction of the knee joint, commonly known as total knee replacement. This procedure is recognized for its reliability and the predictability of its outcomes. Total knee arthroplasty (TKA) serves as a highly effective intervention for patients suffering from symptomatic osteoarthritis affecting at least two of the three

compartments of the knee, particularly when conservative treatment methods have proven ineffective. Furthermore, partial knee arthroplasty (PKA) is a viable option for those with symptomatic osteoarthritis confined to a single compartment of the knee, also after conservative treatments have failed. The primary objective of both surgical approaches is to achieve lasting pain relief while enhancing the patient's functional capabilities.[1-3]

Arthroscopy is a minimally invasive surgical technique utilized for addressing minor surgical injuries, which is associated with reduced morbidity and shorter hospital stays in comparison to traditional surgical methods. A critical inquiry arises regarding the impact of knee arthroscopy on subsequent knee arthroplasty outcomes. Prior research has indicated that undergoing knee arthroscopy prior to total knee arthroplasty (TKA) may lead to suboptimal results. However, alternative studies have found no detrimental effects associated with this sequence of procedures. Additionally, some investigations suggest that negative outcomes are more likely when there is a brief interval between the two surgeries, whereas extending the time between them appears to mitigate these adverse effects.[4-6] Hence the present study was conducted to evaluate the impact of prior arthroscopic procedures on the outcomes and complication rates of total knee arthroplasty.

MATERIALS & METHODS

A cohort of 50 patients diagnosed with grade 4 osteoarthritis, as classified by the Kellgren-Lawrence system, participated in the study following total knee arthroplasty (TKA). The inclusion criteria specified that all participants had undergone primary TKA procedures.

The patients were categorized into two distinct groups. Those exhibiting mechanical symptoms attributable to degenerative meniscus tears who subsequently underwent knee arthroscopy (n=25), and those who did not experience such symptoms (n=25). Clinical and demographic data were meticulously documented. The outcome measures included the visual analog scale (VAS), the McMaster Universities Osteoarthritis Index (WOMAC), the Knee Society scoring system (KSS), and the range of motion (ROM) of the knee, all of which were assessed preoperatively and at the final follow-up.All the patients were evaluated, and data was summarized into Microsoft excel sheet and were subjected to statistical analysis using SPSS software.

RESULTS

The mean age of the patients of the previous arthroscopy surgery group and previous arthroscopy surgery free group was 60.8 years and 61.7 years respectively. Majority proportion of patients of both the study groups were males. Right side involvement occurred in majority proportion of patients. Both the groups were comparable in terms of BMI. Non-significant results were obtained while comparing VAS, WOMAC, KSS and ROM at final follow-up in between the two study groups.

Table 1: Demographic data

Variable	Previous arthroscopy surgery group (n=25)	Previous arthroscopy surgery free group (n=25)	p-value
Mean age (years)	60.8	61.7	0.82
Males (n)	13	15	0.27
Females (n)	12	10	
Mean BMI (Kg/m^2)	27.4	26.5	0.19
Right side	16	14	0.66
Left side	9	11	

Table 2: Comparison of outcome

Variable		Previous arthroscopy surgery group (n=25)	Previous arthroscopy surgery free group (n=25)	p-value
VAS	**Preoperative**	8.12	8.33	0.45
	Follow-up	1.86	1.55	0.35
WOMAC	**Preoperative**	74.68	72.55	0.88
	Follow-up	16.81	18.46	0.46
KSS	**Preoperative**	36.15	34.28	0.69
	Follow-up	86.15	88.71	0.71
Knee ROM (°)	**Preoperative**	108.3	109.7	0.28
	Follow-up	116.7	116.2	0.33

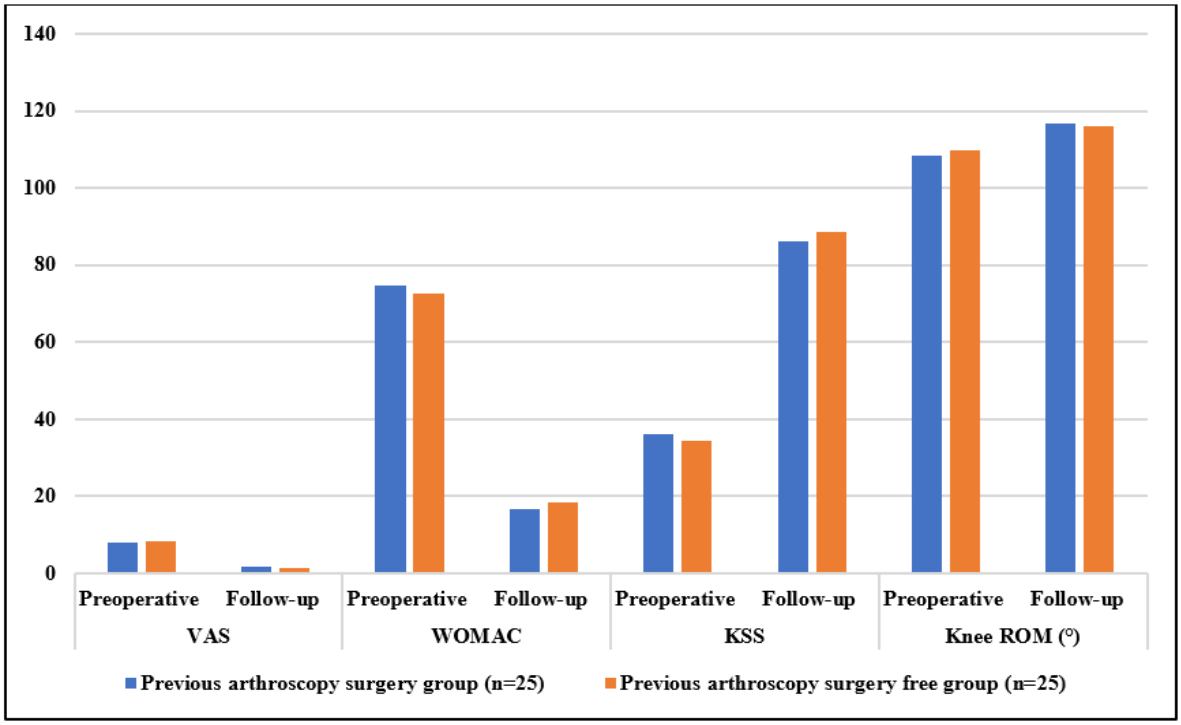

Fig 1: Comparison of outcome

DISCUSSION

Total knee replacement surgery commences with meticulous planning regarding both the incision and the exposure of the joint. These elements are equally important for achieving an optimal outcome as are the selection of the appropriate implant, the positioning of the components, and the balancing of the ligaments. In contemporary practice, many knee procedures are commonly executed using arthroscopic or arthroscopic-assisted techniques. Nevertheless, a comprehensive understanding of open surgical access to the knee remains essential for knee arthroplasty, particularly in situations where arthroscopy is either unfeasible or impractical. Currently, there is ongoing debate regarding the most effective surgical approach for total knee arthroplasty (TKA). The ideal surgical method for total knee replacement has yet to be established, as none of the existing techniques have demonstrated a definitive advantage in prior research.[7- 9] Hence the present study was conducted to evaluate the impact of prior arthroscopic procedures on the outcomes and complication rates of total knee arthroplasty.

The mean age of the patients of Previous arthroscopy surgery group and Previous arthroscopy surgery free group was 60.8 years and 61.7 years respectively. Majority proportion of patients of both the study groups were males. Right side involvement occurred in majority proportion of patients. Both the groups were comparable in terms of BMI. Non-significant results were obtained while comparing VAS, WOMAC, KSS and ROM at final follow-up in between the two study groups. Goyal T et al conducted comprehensive electronic searches for studies published prior to June 2020. They focused on studies where at least one cohort underwent non-ligament knee arthroscopy before primary knee arthroplasty. The methodological quality of the included studies was evaluated using the MINORS (Methodological Index for Non-Randomized Studies) criteria. The systematic review encompassed seven retrospective studies. Among these, there were 138,630 total knee arthroplasties (TKAs) performed without preceding arthroscopies, compared to 4,372 TKAs that followed prior arthroscopy. Of the five studies that assessed functional outcomes, three indicated no significant differences, while two reported poorer outcomes in patients who had undergone prior knee arthroscopy. Additionally, patients with a history of knee arthroscopy exhibited higher rates of prosthetic joint infections and overall complications. Consequently, total knee arthroplasty following knee arthroscopy for osteoarthritis may be associated with an elevated risk of complications, including prosthetic joint infections, revisions, and re-operations.[10]

Piedade et al conducted a study involving 60 patients who received primary total knee arthroplasty (TKA) after undergoing knee arthroscopic debridement. This group was compared to a larger cohort of 1,119 patients who had not experienced any prior surgical intervention. The findings indicated that individuals with a history of arthroscopic surgery exhibited a

greater incidence of postoperative complications and failures. Further investigations by Werner et al and Barton et al corroborated these results, revealing that patients who underwent TKA within six months following ipsilateral knee arthroscopy faced significantly elevated rates of postoperative complications in comparison to control groups.[11- 13] Xu K et al. investigated the impact of prior arthroscopic knee surgery on the outcomes of subsequent total knee arthroplasty (TKA). The study involved 56 patients who had previously undergone arthroscopic treatment on one knee and later received bilateral total knee arthroplasty. Various metrics, including the Knee Society clinical score, functional scores, range of motion (ROM), finger joint size (FJS), and visual analogue scale (VAS) scores, were evaluated both preoperatively and postoperatively. The findings indicated no statistically significant differences in postoperative Knee Society clinical scores and functional scores between the two groups, nor in ROM, FJS, VAS scores, or local complications. Overall, the results suggest that prior knee arthroscopy does not significantly influence postoperative functional recovery or complication rates in patients undergoing total knee arthroplasty.[14]

CONCLUSION

Clinical outcomes and complications were comparable between patients who underwent primary total knee arthroplasty (TKA) and those who had previously received knee arthroscopy.

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