

Assessing the Long Term Outcomes of Total Joint Replacement Surgeries Such as Hip or Knee Replacement

Outcomes of
Total Joint
Replacement as
Hip or Knee

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ABSTRACT

Objective: To assess the long term outcomes of total joint replacement surgeries such as hip or knee replacement

Study Design: cross sectional study

Place and Duration of Study: This study was conducted at the Department of Orthopaedic Surgery, Mardan Medical Complex from January 2021 to January 2023.

Materials and Methods: Based on WHO sample size calculator, a total of 35 patients were enrolled in our study. All the patients were followed for a period of eighteen months. The range of motion, SF-36 score and Harris Hip Score VAS score was documented for all the patients pre-operatively. All the data analysis was done by using SPSS version 24.

Results: In the current study, totally 35 patients were enrolled. In the total knee arthroplasty group, after following the patients for 18 months by employing the Knee Society Scoring system, the mean Knee score (SD) was 94.12 (± 0.98) whereas the mean Functional score (SD) was 93.83 (± 6.12). The mean preoperative and postoperative (SD) Range of Motion was 97.23 (± 1.92) and 108.11 (± 2.23) respectively. In the total hip replacement group, the mean post-operative function score (SD) was 35.66 (± 6.31), mean SF-36 score (SD) was 68 (± 4.11), mean post-operative pain score (SD) was 42.11 (± 3.01) and the mean post-operative Harris hip score (SD) was 85.22 (± 7.34) points.

Conclusion: Our study concludes that all individuals demonstrated remarkable improvement in terms of the reduction of pain, range of movement, and abnormalities. All of the patients have adapted extremely well to the new way of life that is necessary following a complete hip or total knee replacement.

Key Words: long term outcomes; total joint replacement; surgeries; hip; knee

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INTRODUCTION

The World Health Organization published a report entitled "Aging and health" on October 1, 2022, estimating that by the year 2030, 1 in 6 persons worldwide would be 60 years of age or older and that the percentage of individuals over 60 will almost double from 12-22%.¹ Declining physical capability will dominate the additional years of life due to ageing trends and advanced age.¹ According to a previous WHO research on "Universal Health Coverage and Ageing," the demand for restorative procedures (such as knee and hip replacements) would continue to rise, necessitating a redesign of age-friendly benefit plans to cover the relevant kinds of surgeries and follow-up therapies.²

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Patients who have severe symptomatic arthritis may benefit from surgical treatments known as total joint replacement (TJR), which includes total hip and total knee replacements.³ In the next ten years, it is anticipated that use of these two treatments, which rank amongst the most common operations, would rise.⁴ But in spite of general clinical advancement, up to thirty percent of patients indicate that they are unsatisfied with their treatment as a result of inadequate relief from pain, inappropriate functional progress, or inability to achieve their pre-operative goals.^{5,6} Total hip arthroplasty (THA) is a viable treatment option for hip osteoarthritis, which may cause excruciating pain and impairment.⁷ Research on short- and medium-term THA have shown that participants with OA observed significant gains in hip functioning and general health-associated quality of life.⁸ Currently, 20% of THA procedures are carried out on patients under the age of 60 who have a variety of diseases⁹; the predicted rise in life expectancy will further boost the demand for this treatment. A common issue that results in discomfort and functional restrictions, particularly in the older people, is osteoarthritis of the knee.¹⁰ The common therapy used for osteoarthritis is the usage of medications.¹¹ TKR is required for end-stage osteoarthritis because it recovers mobility while reducing pain and enhancing long-term functioning.

One of the frequently done operations worldwide, the TKR is regarded as being both affordable and having great long-term survivability, with significant regional differences in survival rates.¹² Very limited data is available about the long term outcomes of total joint replacement surgeries. This study was therefore carried out to assess the long term outcomes of total joint replacement surgeries such as hip or knee replacement.

MATERIALS AND METHODS

This cross sectional was carried out at the department of Orthopaedic surgery Mardan Medical Complex. The study duration was three years from January 2021 to January 2023. The study approval was taken from the Institution ethical and research board (IERB) of the hospital. Based on WHO sample size calculator, a total of 35 patients were enrolled in our study. The inclusion criteria were all the patients of the gender, having age 18-60 years, admitted to the hospital for total hip arthroplasty and Total knee arthroplasty and willing to participate in our study. We excluded all the patients with revision total hip arthroplasty and Total knee arthroplasty, patients of inflammatory arthritis, Diabetic patients, cancer patients and patients who were not willing to participate in our study. All the patients were followed for a period of eighteen months. All the patients were examined physically and laboratory investigations were done for all the patients. All the data including, demographics information like age, name, gender, weight, height and co-morbidities were documented for all the participants. All the surgeries were performed by a single expert orthopedic surgeon. The range of motion, SF-36 score and Harris Hip Score, VAS score was documented for all the patients pre-operatively and at the last follow up after 18 months. All the data analysis was done by using SPSS version 24. Variables like age were presented as means and standard deviation while variables such as gender were presented as frequencies and standard deviations.

RESULTS

In the current study, totally 35 patients were enrolled. 20 (57.14%) patients were enrolled for total knee arthroplasty while 15 (42.86%) patients were enrolled for total hip arthroplasty. In the total knee arthroplasty group, there were 8 (40%) males and 12 (60%) females while in the total hip arthroplasty group, there were 7 (46.67%) males and 8 (53.33%) females. The mean age (SD) in the total knee arthroplasty group was 52.11 (8.26) years while in the hip arthroplasty group, mean age (SD) was 53.20 (4.82) years. (Figure 1)

In the total knee arthroplasty group, after following the patients for 18 months by employing the Knee Society Scoring system, the mean Knee score (SD) was 94.12 (± 0.98) whereas the mean Functional score (SD) was 93.83 (± 6.12). The mean preoperative and

postoperative (SD) Range of Motion was 97.23 (± 1.92) and 108.11 (± 2.23) respectively. (Figure 2)

In the total hip replacement group, at the final follow up after 18 months, the mean post-operative function score (SD) was 35.66 (± 6.31). Based on SF-36 score, the mean SF-36 score (SD) at the last follow up was 68 (± 4.11). Based on VAS score, the mean post-operative pain score (SD) was 42.11 (± 3.01). The mean post-operative Harris hip score (SD) was 85.22 (± 7.34) points. (Figure 3)

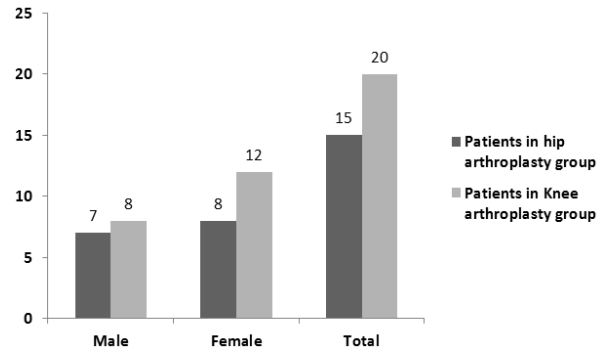


Figure No. 1: Distribution of patients in both the groups

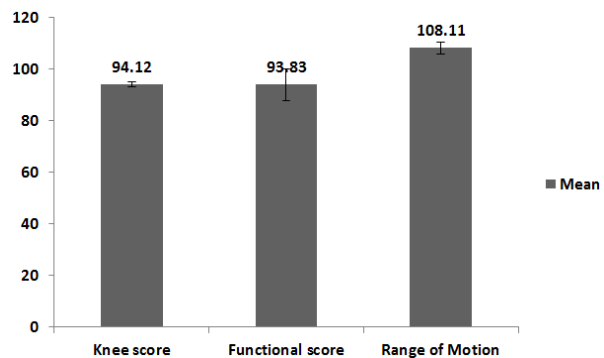


Figure No. 2: Mean postoperative Knee score, functional score and range of motion in total knee replacement group

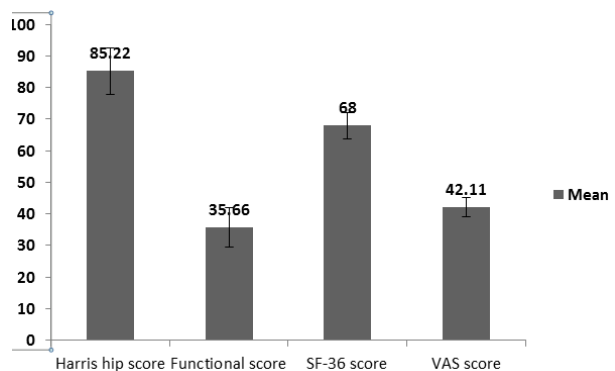


Figure No. 3: Mean postoperative Harris hip score, functional score, SF-36 score and VAS score in total hip replacement group

DISCUSSION

One of the most effective medical interventions for treating individuals with severe osteoarthritis is surgery for total joint replacement, which improves physical function and quality of life for such patients.¹³ Total joint arthroplasty is a successful procedure with few severe negative effects and a low death rate. Total joint arthroplasty has in-hospital mortality rates of less than 1%.¹⁴⁻¹⁶ Older age, initial arthroplasty as opposed to revision, cement usage, underlying cardiopulmonary illness, and simultaneous bilateral total knee arthroplasty are the important risk factors for death after total knee arthroplasty.¹⁶ The risk of dying after total hip replacement is said to be higher among older people, males, people with lower socioeconomic level, people with co-morbid diseases, and those with osteonecrosis.¹⁴

In the current study, totally 35 patients were enrolled. 57.14% patients were enrolled for total knee arthroplasty while 42.86% patients were enrolled for total hip arthroplasty. In the total knee arthroplasty group, there were 40% males and 60% females while in the total hip arthroplasty group, there were 46.67% males and 53.33% females. In accordance with our study, another study carried out by J Cushnaghan et al. reported female predominance in patients for total knee arthroplasty.¹⁷ Another study done by M Naveed et al. reported 79% female and 21% male in their study for total knee replacement.¹⁸ A study done by M Usman et al. reported male predominance in patients for total hip surgery. They reported that 56.67% of their patients were male while 43.33% of their patients were female which is not in accordance with our findings.¹⁹ The mean age (SD) in the total knee arthroplasty group was 52.11 (8.26) years while in the hip arthroplasty group, mean age (SD) was 53.20 (4.82) years.

In the total knee arthroplasty group, after following the patients for 18 months by employing the Knee Society Scoring system, the mean Knee score (SD) was 94.12 (± 0.98) whereas the mean Functional score (SD) was 93.83 (± 6.12). The mean preoperative and postoperative (SD) Range of Motion was 97.23 (± 1.92) and 108.11 (± 2.23) respectively. In accordance with our study, a study done by M Naveed et al. reported the mean knee score of 95, range of motion as 109.35. Which is almost similar with our findings.¹⁸ Another study reported comparable results to our findings. They reported a significant reduction in pain after total knee replacement after long term follow up.¹⁹ A study carried out by Jabalameli M et al. included 14 patients with Rheumatoid Arthritis who had total knee arthroplasty and follow up for four years. The average scores (SD) for the knee and function were respectively 93 (4.49) and 73 (27.99).²⁰

At the final follow up after 18 months, the mean post-operative function score (SD) was 35.66 (± 6.31).

Based on SF-36 score, the mean SF-36 score (SD) at the last follow up was 68 (± 4.11). Based on VAS score, the mean post-operative pain score (SD) was 42.11 (± 3.01). The mean post-operative Harris hip score (SD) was 85.22 (± 7.34) points. In accordance with our study, a previous study done by M Usman et al. reported that the mean (SD) post operative VAS score, Harris hip score and function score was 41.78 (± 2.88), 86.75 (± 9.78) and 35.25 (± 8.49) respectively. These findings are almost similar with our findings.¹⁹ Another study carried out by C. Y. Ng et al. reported a significant improvement in HHS and SF-36 score after five years follow up. These findings are comparable with our findings.²¹ The mean Harris hip score before surgery in a study by Berli et al. increased from 73 to 96 after surgery.²² One hundred thirty-one hips from the original research by Bourne et al. were available for the most recent follow-up assessment. For all 131 hips, the mean (SD) post-operative Harris hip score was 89 (10) points. The current study was single centre study with small number of enrolled patients. Our study recommends performing multicentre studies with large number of samples for better results.

CONCLUSION

Our study concludes that all individuals demonstrated remarkable improvement in terms of the reduction of pain, range of movement, and abnormalities. All of the patients have adapted extremely well to the new way of life that is necessary following a complete hip or total knee replacement. All the enrolled patients were satisfied.

Author's Contribution:

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|----------------------------|---------------------------|
| Concept & Design of Study: | Aimon Zia |
| Drafting: | Haziq Dad Khan |
| Data Analysis: | Zahir Khan |
| Revisiting Critically: | Aimon Zia, Haziq Dad Khan |
| Final Approval of version: | Aimon Zia |

Conflict of Interest: The study has no conflict of interest to declare by any author.

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