https://doi.org/10.48047/AFJBS.6.6.2024.8127-8134

African Journal of Biological Sciences

Journal homepage: http://www.afjbs.com

Research Paper Open Access

CLINICAL OUTCOMES OF TOTAL HIP REPLACEMENT: INSIGHTS FROM A RETROSPECTIVE COHORT STUDY

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Article History

Volume 6, Issue 6,June 2024

Received: 02 Mar 2024

Accepted: 21 Apr 2024

Published:02 June 2024

doi: 10.48047/AFJBS.6.6.2024.8127-8134

ABSTRACT

Background: Total Hip Replacement (THR) is one of the most common orthopedic procedures that are used to treat various hip disorders that cause pain and limitation of movements. It is usually carried out on patients with osteoarthritis, rheumatoid arthritis and traumatic arthritis and avascular necrosis.

Objectives: The aim of this study is to identify the impact of Total Hip Replacement in 100 patients of MMC Mardan from January 2020 to July 2023 and the issues occurred during this procedure.

Study Design: A retrospective cohort study

Place and duration of study: This retrospective cohort study was conducted on 100 patients at Department of Orthopedic MMC Hospital Mardan from January 2020 to July 2023.

Materials & Methods: A retrospective cohort study was employed on 100 patients who had received THR. The data was retrieved from the patients' records which included; patients' electronic files with details of their age, gender, preoperative diagnosis, details of surgery and the postoperative findings. The HHS was employed to assess the functional status of the patients at six months post the surgery.

Results: The participants were 55 males and 45 females with age between 45 and 80 years. The indications for surgery were OA 60%, RA 15%, traumatic arthritis 10% and AVN 15%. The postoperative complications noted in the study were infection which was reported in 2% of the patients, dislocation which was reported in 3% of the patients, DVT in 1% of the patients and periprosthetic fracture in 1% of the patients. Among all the HHS results obtained in this study, 60% of them were categorized under the excellent group while 25% under the good group, 10% under the fair group and 5% under the poor group. Majority of the patients were content with the treatment, 90 percent of them testified to improved health status.

Conclusion: Total Hip Replacement is effective in the management of pain and improvement of functional status of patients with severe hip diseases with relatively low risk of complications. Concerning the results of the procedure, patients' overall QoL improved, which can be considered evidence of the procedure's efficacy.

Keywords: Total Hip Replacement, Results, Risks, avascular necrosis

INTRODUCTION

THR commonly known as total hip arthroplasty is a surgical procedure that is used to treat patients with severe hip joint pathology with the aim of relieving pain and improving patients' mobility. This operation has been identified to be one of the most commonly performed and effective orthopedic surgeries globally, and this means that the lives of those with severe hip dysfunctions have been significantly improved. The indication for THR is osteoarthritis rheumatoid arthritis, traumatic arthritis and avascular necrosis [1]. Osteoarthritis is the main reason for THR and osteoarthritis is a degenerative and irreversible disease that impacts the cartilage of the joints of bones that are in contact with each other and causes pain, stiffness, and limited joint movement. Rheumatoid arthritis is an auto immune disease that leads to inflammation of the joints, hence has similar symptoms. Traumatic arthritis may develop after a hip fracture has been treated, and avascular necrosis is the death of the bone tissue because of inadequate blood supply and often requires surgery. [2]. THR involves the operation which involves removal of the actual hip joint and replacement by a prosthetic implant that is normally made of metal, ceramic and plastic. The objective of the procedure is to restore the joint's range of motion and reduce the intensity of pain and stiffness. The surgical procedure has not remained static and the process of the surgery and the prosthetic materials used have been improved hence better results and less complication [2]. However, failure is not ruled out after THR surgery, even though the incidence of failure is low. Some of the complications may include infection, dislocation, deep vein thrombosis (DVT) and periprosthetic fractures. Infection is one of the complications that are not very frequent but should be acted on as soon as it is observed. Loosening of the prosthetic joint may lead to instability and this may call for revision surgery. DVT which is a blood clot in the deep veins is a risk factor that may arise at any time after any major surgery. Those that develop around the implant are known as periprosthetic fractures and can be as a result of a blow or poor bone quality [4]. It is important to note that the functional results are often used to evaluate the efficiency of THR with the help of such scores as the Harris Hip Score (HHS). The HHS factors include pain, function, no movement deformity and range of motion which offers an overall appraisal of a patient's hip function after surgery [5]. The objective of this study is to assess the effectiveness and the adverse effects of THR in 100 patients managed in MMC Mardan within the period of 1stJanuary 2020 to 31stJuly2020. Further besides, the purpose of this study is to contribute to the existing literature on the topic of THR and its application in practice, depending on the patient's characteristics, diagnosis, specifics of the surgery, and outcomes.

MATERIALS & METHODS

Study Design: This study was conducted on one hundred patients who underwent THR in the Department of Orthopedic, Mardan Medical College Mardan, during the period January 2020 to July 2023. The type of patients that were included in the study were; patients who were 18 years

old and above, had a diagnosis that required them to undergo THR and those patients who had follow up of at least six months after the surgery.

Data Collection: The data collected from the medical records department of the hospital were the patient demography, past medical history, previous surgical history and characteristics, postoperative complications, and follow-up outcomes. The functional status of the patient was evaluated by the HHS at six months after the surgery.

Statistical Analysis: The collected data was analyzed by using statistical package for social sciences (SPSS) software version 24. For the description of patients' characteristics, frequency distributions were used. The difference of the complication rates and the functional outcomes were compared and the correlation between the preoperative factors and the postoperative outcomes were analyzed by the chi square test or logistic regression.

RESULTS

The participants were 55 males and 45 females who were drawn from the age range of 45 to 80 years. The indication for surgery was OA in 60% of the patients, RA in 15% of the patients, traumatic arthritis in 10% while AVN was in 15% of the patients. Surgical Details a hundred patients were operated of which seventy patients received cemented prostheses and thirty patients received uncemented prostheses. In all surgeries, the approach used was the standard posterior one. Postoperative Complications The infections were 2%, dislocation was 3%, deep vein thrombosis was 1% and periprosthetic fracture was 1%. Other complications were noted in 2% of the patients Functional Outcomes the Harris Hip Score (HHS) was used to evaluate functional outcomes at six months post-surgery: In assessing the functional results at 6 months' follow up, the Harris Hip Score (HHS) was employed. Excellent (90-100): 60% , Good (80-89): 25% , Fair (70-79): 10% , Poor (<70): 5% Patient Satisfaction The patients had also given their perceived satisfaction levels on the received services; 65% highly satisfied, 25% satisfied, 5% neutral and 5% dissatisfied.

Table 1: Patient Demographics and Preoperative Diagnoses

Variable	Frequency (n)	Percentage (%)
Age Range (years)		
45-55	25	25
56-65	35	35
66-75	30	30
76-80	10	10
Gender		

Male	55	55
Female	45	45
Indications for Surgery		
Osteoarthritis	60	60
Rheumatoid Arthritis	15	15
Traumatic Arthritis	10	10
Avascular Necrosis	15	15

Table 2: Surgical Details

Variable	Frequency (n)	Percentage (%)
Type of Prosthesis		
Cemented	70	70
Uncemented	30	30
Surgical Approach		
Posterior	100	100

Table 3: Postoperative Complications and Functional Outcomes

Variable	Frequency (n)	Percentage (%)
Postoperative Complications		
Infection	2	2
Dislocation	3	3
Deep Vein Thrombosis (DVT)	1	1
Periprosthetic Fracture	1	1
Other	2	2
Harris Hip Score (HHS)		
Excellent (90-100)	60	60
Good (80-89)	25	25
Fair (70-79)	10	10
Poor (<70)	5	5
Patient Satisfaction		
Highly Satisfied	65	65
Satisfied	25	25
Neutral	5	5
Dissatisfied	5	5

Table 4: Harris Hip Score Distribution

Harris Hip Score (HHS)	Number of Patients	Percentage (%)
90-100 (Excellent)	60	60
80-89 (Good)	25	25
70-79 (Fair)	10	10
<70 (Poor)	5	5

Table 5: Complication Rates by Age Group

Age Group (years)	Infection	Dislocation	DVT	Periprosthetic Fracture	Other
45-55	0	1	0	0	1
56-65	1	1	0	0	0
66-75	1	1	1	0	1
76-80	0	0	0	1	0

Table 6: Patient Outcome Statistics and Functional Outcomes by Age Group

Age Group (years)	Excellent (90-100)	Good (80-89)	Fair (70-79)	Poor (<70)
45-55	18	5	2	0
56-65	20	10	3	2
66-75	15	8	4	3
76-80	7	2	1	0

DISCUSSION

The outcome of this research corroborates many earlier researches on Total Hip Replacement (THR) and upholds the efficacy of the surgery in the alleviation of pain and enhancement of the functional status of patients with severe hip disorders. The total percentage of the patients with the excellent and good functional outcomes in our series is consistent with the data from other reports [6-8]. For instance, similar observations were made by Learmonth et al where 85% of the patients had excellent or good outcome, as assessed by HHS. Regarding the gender distribution of the patients, this study revealed that 55% of the patients were male, while the female patients comprised 45% of the sample, which is consistent with the findings of other THR studies. Previous research has noted that the outcomes have had concerns of gender differences; as pointed out by some of the studies, the male patients were noted to have better functional status in the aftermath of the surgery [7]. These observations are similar to our study and were further noted to be characterized by a higher percentage of excellent outcomes in the male patients. Based on the findings, the study identifies age as one of the key factors that influence the outcomes of THR. The present study revealed that the patients in the age group of 45-55 had better percentage of excellent outcome than the patients in the age group of 76-80. This is in agreement with other findings which reveal that young patients have better functional outcome and less complications [8-10]. However, it was noted that the treatment is very helpful to the older patients since they equally recorded reduced pain and improved joint flexibility. The complication rates of infection in the present study was 2% this is in agreement with other studies [11-13] while dislocation was 3%, deep vein thrombosis was 1% and periprosthetic fracture was 1%. Infection is one of the severe consequences of THR, although the advances in

surgery and treatment of patients after the operation have minimized the risk of infection [11]. The infection rate of 2% is within the parameters reported in other studies with a 1-3% prevalence [12]. Another complication was the dislocation of the prosthesis which was noted in 3% of the patients. This is within the 2 – 4 % range documented in literature and therefore it can be concluded that the study has acceptable levels of random error [14]. Other reasons include the technique of surgery, the type of implant and the power of the patient's muscles and their ability to follow the postoperative regime [14, 15]. Our study used a standardized posterior approach and though this approach had a slightly higher risk of dislocation compared to the anterior approach [15]. The fact that DVT was diagnosed in only one patient in this study is consistent with other studies with the rates averaging 1-2% [16]. It is recommended that preventive measures like administration of anticoagulants and early mobilization should be employed to minimize the occurrence of DVT after THR [16, 17]. Periprosthetic fractures were observed in 1% of our patients which has been similar to other published studies [18]. Such fractures are associated with injury or poor quality of the bone in the region of the implant and may call for another surgery [18]. In conclusion, this study gives credence to the utilization of THR in the promotion of the quality of life of patients with severe hip disorders. Overall, the majority of the patients in this cohort demonstrated significant improvement in pain relief and functional status, and patients' satisfaction was high. However, as it has been earlier pointed out, complications are inevitable and although the rates may be relatively high, they can be prevented or minimized by good surgical and postoperative care.

CONCLUSION

In light of this, the present paper demonstrates that Total Hip Replacement is a necessary intervention in severe hip disorder to enhance pain and function. Most of the patients experienced a satisfactory outcome with a low complication rate; thus, the study affirms the role of THR in improving the quality of life. Further research with more participants and longer duration of follow-up is suggested to validate these findings and enhance the understanding of THR outcomes.

Future Finding: Future research must remain centered on long-term results of THR especially among elderly patients, to determine more implant durability and effect of aging on outcome. Also, there is a possibility of providing further improvement of the results through the study of other ways of reducing postoperative complications, for example, the use of new, more effective surgical approaches and more effective protocols for rehabilitation of patients.

Acknowledgements: Special thanks to all the members of orthopedic Department of Mardan Medical Complex Mardan for cooperation to conduct this study.

Disclaimer: Nil

Conflict of Interest: There is no conflict of interest.

Funding Disclosure: Nil

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