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Original article

Short-Term Outcomes of Primary Total Hip and Knee Replacement on 60 Cases at Al-Bayda Medical Center

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Keywords:
Short-Term Outcomes, Primary Total Hip, Knee Replacement, Al-Bayda Medical Center.

ABSTRACT

Total hip arthroplasty (THA) and total knee arthroplasty (TKA) are widely performed procedures for end-stage joint diseases (arthritis), providing pain relief and functional restoration. This study aimed to evaluate the short-term clinical and functional outcomes of patients undergoing primary total hip and knee replacement at Al-Bayda Medical Center. A prospective study was conducted on 60 patients who underwent primary total hip and knee replacement in 2023 at Al-Bayda Medical Center. Functional outcomes were assessed using standard scoring systems, and complications were recorded over a short-term follow-up period of 3–6 months. The results showed significant improvement in pain and function in most patients, with markedly increased postoperative functional scores and low complication rates. This improvement was statistically significant ($p < 0.001$). In conclusion, total hip and knee replacement are safe and effective procedures with excellent short-term outcomes at our center, consistent with international standards. Keywords: Total Hip Arthroplasty (THA), Total Knee Arthroplasty (TKA), Short-Term Outcomes, Joint Replacement, Al-Bayda Medical Center.

Introduction

Total hip arthroplasty (THA) and total knee arthroplasty (TKA) are among the most commonly performed orthopedic procedures worldwide and are associated with high success rates in relieving pain and restoring function. These surgeries are primarily indicated for patients suffering from end-stage joint disease, most commonly due to osteoarthritis, rheumatoid arthritis, or post-traumatic arthritis [1].

The main goals of THA and TKA are to relieve pain, restore joint function, and improve overall quality of life. With the progressive aging of the global population and the increasing prevalence of degenerative joint diseases, the demand for these procedures has significantly increased [2].

Surgical techniques for both procedures have evolved substantially over time. In total hip arthroplasty, the affected joint is reconstructed using prosthetic components, typically consisting of a femoral head made of metal or ceramic and an acetabular component made of metal or polyethylene. Various surgical approaches, including posterior, lateral, and anterior approaches, are currently used; each with specific advantages and limitations. Similarly, total knee arthroplasty involves resurfacing the diseased joint using prosthetic components and is most commonly performed through medial parapatellar, midvastus, or subvastus approaches. Recent advances such as minimally invasive surgery, computer-assisted navigation, and robotic-assisted techniques have further improved surgical precision, reduced complications, and enhanced postoperative recovery [3, 4].

Methods

Study design and settings

This prospective case series was conducted at Al-Bayda Medical Center, Libya, between January and December 2023.

Study Population

A total of 60 patients undergoing primary total joint arthroplasty were included, comprising both total hip arthroplasty (THA) and total knee arthroplasty (TKA).

Outcome Measures

Functional outcomes were assessed using validated scoring systems. The Harris Hip Score (HHS) was applied to patients undergoing THA, while the Knee Society Score (KSS) was used for patients undergoing TKA.

Surgical Approaches

For THA, multiple surgical approaches were utilized, primarily the posterior and lateral approaches. The choice of approach was determined by surgeon preference, patient anatomy, and intraoperative

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considerations. For TKA, the medial parapatellar approach was the most commonly employed technique. This involved a midline skin incision followed by a medial parapatellar arthrotomy along the medial border of the patella and patellar tendon, providing adequate exposure for accurate implant positioning.

Prosthetic Implants

All patients undergoing TKA received a posterior-stabilized (PS) cemented prosthesis with a cam-and-post mechanism, manufactured by Stryker. Standard primary knee arthroplasty components were used in all cases. For both THA and TKA, prosthetic implants consisted of standard designs and materials selected to optimize joint function and clinical outcomes.

Ethical statement

Ethical approval for this study was obtained from the Institutional Review Board of Omar Al-Mukhtar University and Al-Bayda Medical Center. Written informed consent was obtained from all participants before inclusion in the study.

Eligibility criteria

Patients eligible for enrollment in this study were those diagnosed with primary osteoarthritis, rheumatoid arthritis, or post-traumatic arthritis who were scheduled to undergo primary total hip or knee arthroplasty. These conditions represented the core inclusion criteria, ensuring that the study population reflected individuals requiring first-time joint replacement due to degenerative or post-traumatic pathology. Exclusion criteria were applied to maintain the integrity of the cohort. Patients undergoing revision arthroplasty were not considered, as their outcomes could be influenced by prior surgical interventions. Similarly, individuals with incomplete follow-up data were excluded to avoid bias in outcome assessment. Finally, patients with severe comorbid conditions that significantly impaired mobility were not included, as these factors could independently confound postoperative recovery and functional evaluation.

Figure 1. Preoperative radiographs of both knees demonstrate advanced osteoarthritis.

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Figure 2. Postoperative radiograph of total knee arthroplasty with posterior-stabilized (cam-and-post) prosthesis

Figure 3. Preoperative radiograph of the right hip demonstrating advanced osteoarthritis, and postoperative radiograph following right total hip arthroplasty showing well-positioned prosthetic components with restoration of joint alignment.

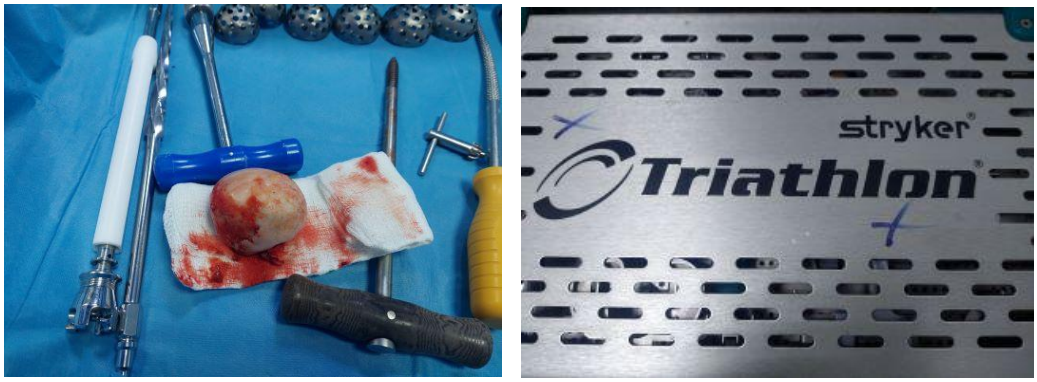

Figure 4. Intraoperative image of total hip arthroplasty preparation with the removed femoral head

Results

Statistical analysis showed significant improvement in functional outcomes. The mean HHS improved from 48.6 ± 9.5 preoperatively to 88.2 ± 6.8 postoperatively ($p < 0.001$). Similarly, KSS improved from 52.1 ± 10.3 to 85.7 ± 7.4 ($p < 0.001$).

A total of 60 patients were included in the study. The mean age was 65.4 ± 8.2 years, with a predominance of female patients (60%). Total knee arthroplasty (TKA) was slightly more common (53.3%) than total hip arthroplasty (THA) (46.7%). Most cases were attributed to osteoarthritis.

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Table 1. Patient Demographics

Variable	Frequency (n=60)	Percentage (%)
Male	24	40.0%
Female	36	60.0%
THA	28	46.7%
TKA	32	53.3%
Age (Mean ± SD)	65.4 ± 8.2	—

There was a statistically significant improvement in functional outcomes following surgery. The mean Harris Hip Score (HHS) improved from 48.6 ± 9.5 preoperatively to 88.2 ± 6.8 postoperatively ($p < 0.001$). The mean Knee Society Score (KSS) improved from 52.1 ± 10.3 to 85.7 ± 7.4 ($p < 0.001$). Postoperative scores for both THA and TKA were within the good-to-excellent range, indicating substantial functional recovery.

Table 2. Functional Outcomes

Variable	Mean	SD	t-value	p-value
Pre-op HHS	48.6	9.5	—	—
Post-op HHS	88.2	6.8	18.45	<0.001
Variable	Mean	SD	t-value	p-value
Pre-op KSS	52.1	10.3	—	—
Post-op KSS	85.7	7.4	16.92	<0.001

The right side was more frequently operated on (56.7%) compared to the left side (43.3%). There was no statistically significant association between the operated side and type of procedure ($x^2 = 0.02$, $p = 0.88$).

Table 3. Operated Side Distribution

Procedure	Right (RT)	Left (LT)	Total
THA	16	12	28
TKA	18	14	32
Total	34	26	60

Pain levels improved significantly after surgery. Mean VAS score decreased from 8.1 ± 1.2 preoperatively to 2.3 ± 0.9 postoperatively ($p < 0.001$). Most patients reported minimal or no pain at follow-up.

Table 4. Pain Outcomes

Variable	Mean	SD	t-value	p-value
Pre-op VAS	8.1	1.2	—	—
Post-op VAS	2.3	0.9	22.15	<0.001

Most patients reported high satisfaction with surgical outcomes. Most patients reported improvement in daily functional activities.

Table 5. Patient Satisfaction

Satisfaction Level	Frequency	Percentage (%)
Very satisfied	38	63.3%
Satisfied	18	30.0%
Unsatisfied	4	6.7%

Discussion

This study demonstrates that total hip and knee arthroplasty performed at Al-Bayda Medical Center provide excellent short-term clinical and functional outcomes. Principal Findings Significant improvements in pain relief and functional scores were observed postoperatively ($p < 0.001$). Both HHS and KSS showed marked increases, indicating substantial recovery in joint function. In addition, VAS scores demonstrated significant pain reduction, highlighting the effectiveness of these procedures. The predominance of right-sided operations may be related to limb dominance or activity patterns; however, no statistically significant association was found between the operated side and the type of procedure.

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Comparison with Literature Patients in this study showed rapid functional improvement, particularly within the first few weeks postoperatively. This finding is consistent with previous literature, which identifies early postoperative recovery as a key indicator of successful arthroplasty outcomes [5]. Functional outcomes and complication rates observed in this study are comparable to international reports. Previous studies have demonstrated that both total hip and knee arthroplasty significantly improve mobility, pain, and quality of life regardless of surgical technique [6]. Furthermore, early functional gains—especially within the first 6–12 weeks—have been consistently reported, supporting the findings of this study.

Conclusion

Total Hip Arthroplasty (THA) and Total Knee Arthroplasty (TKA) are safe and effective surgical procedures in our center, demonstrating excellent short-term clinical and functional outcomes. Significant improvements were observed in pain relief, joint mobility, and overall quality of life, as reflected by the marked increase in functional scores (HHS and KSS) and reduction in VAS pain scores ($p < 0.001$). High levels of patient satisfaction further support the success of these procedures. Overall, our findings confirm that total hip and knee replacement performed at Al-Bayda Medical Center meets acceptable global standards. Further long-term follow-up studies are recommended to evaluate implant durability and long-term functional outcomes.

Conflicts of Interest

Declare conflicts of interest or state

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