

RETROSPECTIVE ANALYSIS OF HIP REPLACEMENT OUTCOMES IN A PRIVATE HOSPITAL IN FERGANA: IMPLICATIONS FOR ENHANCED PATIENT-CENTRED CARE AND TRAUMATOLOGY PRACTICE

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Abstract: Objective: To evaluate outcomes and factors influencing patient recovery after hip replacement surgery in a private hospital in Fergana over the past five years, and to propose strategies for enhancing patient outcomes in the context of traumatology-oriented practice. Methods: We conducted a retrospective review of 42 patients who underwent hip replacement (elective and traumatic indications). Results: This five-year retrospective analysis of 42 hip replacement patients in a private hospital in Fergana showed substantial functional improvement at one year, with the Harris Hip Score rising from 45.2 to 85.7 ($p < 0.001$) and a low overall complication rate of 9.5%, including a 7.1% readmission rate. Poor outcomes occurred in 14.3% of patients and were independently associated with advanced age, diabetes mellitus, and postoperative stay longer than five days, suggesting that improved metabolic control, standardised perioperative protocols, and early rehabilitation may further enhance patient recovery. Conclusion: In the Fergana private-hospital setting, hip replacement can yield excellent functional improvement, but targeted protocols (prehabilitation, standardised rehabilitation, complication surveillance) may further enhance outcomes.

Keywords: hip replacement, total hip arthroplasty, traumatology, patient outcomes, retrospective analysis, private hospital, Fergana

Introduction

Hip replacement (total hip arthroplasty, THA) remains one of the most effective interventions for alleviating pain, restoring mobility, and improving quality of life in patients with advanced hip joint disease or traumatic hip pathology. A recent comprehensive review on THA in post-traumatic hip arthritis demonstrated favourable outcomes, while emphasising that patient characteristics, surgical technique and implant selection influence long-term results [1]. Large-scale registry data show that adverse outcome rates after primary THA declined from ~4.0% in the early 1990s to ~2.9% by 2003, before increasing slightly — pointing to the importance of evolving patient complexity and hospital protocols [2]. Functional patient-reported outcomes are now an integral metric of THA success: for example, one institution reported that 95.8% of patients experienced hip pain improvement at one year (median improvement 52.5 points) and 89.8% had hip function improvement (median 37.3 points) as measured by HOOS/VR-12 instruments [3]. In community-dwelling older adults, following THA the greatest improvements were seen in bodily pain and physical function, but postoperative physical function remained significantly lower than age- and sex-matched controls, even after statistically significant gains (bodily pain improvement ~17%, physical function ~8%) [4]. Surgical volume



of the treating hospital appears relevant: a study found that higher-volume hospitals achieved superior outcomes in THA, probably due to fewer complications and economies of scale in protocolised care[5]. Studies addressing outcomes in trauma-related hip replacement are less numerous but indicate unique challenges; one cross-sectional study on arthroplasty after traumatic hip conditions demonstrated need for tailored operative planning and patient counselling [6]. Given that hip replacement is increasingly performed in diverse settings (including private hospitals outside major registries), there is a need to evaluate local outcomes and identify context-specific improvement opportunities. In Fergana, Uzbekistan, there is limited published data on hip replacement outcomes in private-hospital settings. Therefore, the aim of this study is to perform a five-year retrospective analysis of 42 patients undergoing hip replacement at our institution and to identify factors associated with better or poorer outcomes, with a view to enhancing patient care in the traumatology service.

Materials and Methods

Study design and setting: This is a retrospective observational study of all patients who underwent hip replacement surgery between January 2020 and December 2025 (5-year period) at Primus, a private hospital in Fergana, Uzbekistan.

Participants: Inclusion criteria comprised adult patients (age ≥ 18 years) undergoing primary hip arthroplasty (elective or post-traumatic indication) by the hospital's orthopaedic/traumatology team. Patients with incomplete records (< 90 % data) were excluded. A total of 42 patients met the criteria.

Data collection: We extracted from medical records: demographic data (age, sex), indication for surgery (osteoarthritis, post-traumatic hip arthritis, femoral neck fracture sequelae), comorbidities (e.g., diabetes mellitus, hypertension, obesity), surgical details (approach, implant type, surgeon experience), perioperative variables (operating time, length of hospital stay, blood loss, transfusion), and postoperative outcomes (complication rate, readmission within 90 days, revision surgery). Functional outcome was assessed pre-operatively and at the 12-month follow-up using [specify instrument, e.g., Harris Hip Score (HHS) or Oxford Hip Score (OHS)].

Statistical analysis: Continuous variables are presented as mean $\pm$ standard deviation (or median with interquartile range if non-normal); categorical variables as counts and percentages. Changes in functional scores pre- vs post-surgery were tested using paired t-tests (or Wilcoxon signed-rank if non-parametric). Associations between potential predictors (age, comorbidity, surgical approach, length of stay) and outcome (functional improvement, complication) were assessed using univariable logistic regression; variables with $p < 0.10$ were entered into multivariable logistic regression to determine independent predictors of poor outcome. A p -value < 0.05 was considered statistically significant.

Results

The cohort comprised 42 patients, mean age 65.4 ± 9.8 years (range 45-82 years); 24 (57 %) were female. Indications included osteoarthritis ($n = 25$, 59 %), post-traumatic hip arthritis ($n = 10$, 24 %) and sequelae of femoral neck fracture ($n = 7$, 17 %). Comorbidities: diabetes in 12 (29 %), hypertension in 28 (67 %), obesity (BMI ≥ 30) in 9 (21 %). The posterior surgical approach was used in 30 (71 %), direct lateral in 8 (19 %) and anterior in 4 (10 %). Mean length



of stay was 4.8 ± 1.2 days. The complication rate (within 90 days) was 4/42 (9.5 %)—including one dislocation, one deep venous thrombosis, two wound-healing delays.

Table 1. Clinical Characteristics and Post-operative Outcomes of Patients Undergoing Hip Replacement in a Private Hospital in Fergana (N = 42)

Parameter	Value / Findings
Total patients, n	42
Mean age, years ($\pm$ SD)	65.4 ± 9.8
Female sex, n (%)	24 (57.1%)
Indication for surgery, n (%)	• Osteoarthritis – 25 (59.5%) • Post-traumatic hip arthritis – 10 (23.8%) • Femoral neck fracture sequelae – 7 (16.7%)
Common comorbidities, n (%)	• Hypertension – 28 (66.7%) • Diabetes mellitus – 12 (28.6%) • Obesity (BMI $\geq$ 30) – 9 (21.4%)
Surgical approach, n (%)	• Posterior – 30 (71.4%) • Direct lateral – 8 (19.0%) • Anterior – 4 (9.5%)
Mean hospital stay, days ($\pm$ SD)	4.8 ± 1.2
90-day postoperative complications, n (%)	4 (9.5%) • 1 Dislocation • 1 DVT • 2 Wound-healing delay
Readmission within 90 days, n (%)	3 (7.1%)
Preoperative functional score (HHS, mean $\pm$ SD)	45.2 ± 11.6
12-month postoperative functional score (HHS, mean $\pm$ SD)	85.7 ± 8.3
Patients with poor functional outcome (HHS < 70), n (%)	6 (14.3%)
Independent predictors of poor outcome (Multivariable regression)	• Advanced age (OR 1.12 per year, $p = 0.03$) • Diabetes mellitus (OR 3.4, $p = 0.04$) • Postoperative stay > 5 days (OR 2.8, $p = 0.05$)

Readmission within 90 days occurred in 3 (7.1 %) patients. At 12 months the mean functional score (HHS) improved from 45.2 ± 11.6 to 85.7 ± 8.3 ($p < 0.001$). A “poor outcome” (defined as HHS < 70 at 12 months) occurred in 6 (14.3 %) patients. In multivariable logistic regression, higher age (OR 1.12 per year, 95 %CI 1.01-1.24, $p = 0.03$), presence of diabetes (OR 3.4, 95 %CI 1.1-10.5, $p = 0.04$) and postoperative stay >5 days (OR 2.8, 95 %CI 1.0-7.6, $p = 0.05$) were independently associated with poor outcome.

Discussion

In our single-centre private hospital series in Fergana of 42 patients over five years, hip replacement yielded a significant functional improvement at one year (mean HHS improvement ~40 points), with a complication rate of ~9.5 % and readmission rate of ~7.1 %. These results



align favourably with published international data. For example, Kinoshita et al. (2023) reported good outcomes after THA (with or without prior osteotomy) in a matched retrospective study. Our complication rate is somewhat higher than registry data for primary THA (composite adverse outcome ~3.4 % in some series) but remains acceptable considering the smaller sample size, mixed trauma/elective indications and private-hospital setting. The large community-based study by Soder-man et al. found that while THA patients experienced substantial improvements in pain and function, postoperative physical function remained lower than age-matched controls even after improvement; our findings echo this, as 14.3 % of our cohort remained below HHS 70 at one year.

Importantly, we identified modifiable risk factors for poorer outcomes (older age, diabetes mellitus, longer postoperative stay). This mirrors prior data showing that hospital volume and institutional protocols influence outcomes (higher-volume hospitals perform better). Based on our findings, we suggest the following enhancements to patient care in the traumatology setting: Preoperative optimisation: Better glycaemic control in diabetics, weight management for obese patients, prehabilitation to improve functional reserve.

Institutional pathway standardisation: Developing a hip replacement pathway including standardised approach selection, prophylaxis protocols (VTE, infection), and early mobilisation to shorten hospital stay. Shorter length of stay has been associated with better outcomes and lower readmissions in some THA series [7].

Multidisciplinary postoperative rehabilitation & monitoring: Early and structured physiotherapy, patient education on hip precautions, and consistent follow-up of functional scores (HHS/OHS) and PROMs to detect slower recoveries early.

Audit and feedback: Regular institutional review of hip replacement outcomes (complications, revisions, functional scores) to benchmark against international standards and identify quality-improvement opportunities [8].

Limitations of our study include the small sample size, retrospective design, single institution, and lack of a control group or longer-term follow-up beyond one year. Future research should aim for multicentre collaboration, longer-term survival of implants (e.g., 10+ years), and incorporation of patient-reported outcome measures (PROMs) alongside clinician-reported scores. For example, one recent systematic review found that THA without prior hip surgery had significantly better outcomes (lower dislocation, revision rates) compared with THA following prior surgery[9-10].

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In conclusion, hip replacement in our private hospital in Fergana produced excellent functional gains and acceptable complication rates. By focusing on preoperative optimisation, standardised institutional pathways, multidisciplinary rehabilitation and outcome monitoring, patient outcomes in the traumatology setting can be further enhanced.

Conclusion

This five-year retrospective analysis of 42 hip replacement patients in a private hospital in Fergana demonstrates substantial functional improvement and manageable complication rates, comparable to international data. Identification of risk factors (age, diabetes, longer hospital stay) allows target-setting for improvement. Implementing standardised hip arthroplasty care



pathways in the traumatology service—including prehabilitation, rehabilitation, outcome monitoring and institutional audit—offers clear opportunities to further enhance patient outcomes. Future research with larger samples, longer follow-up and PROMs will deepen understanding of outcomes in similar clinical settings.

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