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Assessment of Hip Joint Endoprosthesis Treatment Effectiveness and Its Impact on Patients' Quality of Life

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ABSTRACT
Objective*: This study investigates the effectiveness of total hip arthroplasty (THA) in restoring joint function and enhancing the overall quality of life for patients with severe hip joint disorders.* ***Method****: Conducted at the Department of Traumatology and Orthopaedics, Surkhandarya Regional Multidisciplinary Medical Centre, Uzbekistan, the study observed 82 patients who underwent THA between 2022 and 2024. The Harris Hip Score and SF-36 health survey were used to evaluate patients' physical function, pain levels, emotional state, and social well-being before surgery and at 3 and 12 months postoperatively.* ***Results****: Findings demonstrated a significant reduction in pain and substantial improvements in mobility, independence, and physical health indicators. Patients also reported enhanced mood, sleep quality, and life satisfaction, suggesting broad psychosocial benefits beyond physical rehabilitation.* ***Novelty****: Unlike prior studies focused solely on biomechanical outcomes, this research emphasizes the holistic impact of hip endoprosthesis, highlighting THA as not merely a mechanical intervention but a transformative procedure with profound implications for psychological well-being and quality of life. The study advocates for patient-centered orthopaedic care with integrated postoperative support.*

INTRODUCTION

The hip joint is a crucial structure in the human body, responsible for bearing weight and facilitating fundamental movements such as ambulation, sitting, and standing. When its integrity is undermined by degenerative diseases, trauma, or vascular complications, patients frequently endure chronic pain, restricted mobility, and psychological distress. These physical constraints progressively impact several aspects of life, including the capacity to work, self-care, and the preservation of social relationships and emotional health. Gradually, the decline in autonomy and the weight of persistent pain may result in considerable diminutions in quality of life [1].

Total hip arthroplasty is one of the most prevalent and thoroughly documented surgical interventions for advanced hip joint disorders. This procedure entails the surgical substitution of impaired joint elements with prosthetic implants designed to alleviate pain and restore mobility. Due to advancements in biocompatible materials and enhanced surgical methods, this procedure is currently regarded as both safe and very successful for appropriate individuals [2]. Nonetheless, clinical success should not be evaluated solely based on radiological outcomes or the lack of complications. The true criterion of success is the extent to which the technique enhances an individual's daily experience.

To comprehend this wider influence, patient-reported outcomes have become increasingly significant in orthopaedic research. The Harris Hip Score assesses discomfort, range of motion, and ambulation capacity. The SF-36 health questionnaire evaluates a broad range of well-being indicators, encompassing physical functioning, emotional stability, social engagement, and vitality. When utilised in conjunction, these tools can provide a holistic understanding of a patient's recovery, encompassing physical, psychological, and social dimensions [3].

Despite the global prevalence of hip replacement procedures, there remains a paucity of local evidence in countries such as Uzbekistan concerning patient outcomes in the months subsequent to surgery. In the absence of this data, physicians and rehabilitation specialists may find it challenging to formulate care plans that address the specific needs of their population. This study aimed to enhance that knowledge [4]. Through the observation of patients who have undergone hip arthroplasty and the evaluation of their progress via established scoring systems, we want to elucidate the impact of surgical intervention on recovery and quality of life within our clinical setting.

RESEARCH METHOD

This prospective clinical trial was conducted in the Department of Traumatology and Orthopaedics at the Surkhandarya Regional Multidisciplinary Medical Centre from January 2022 to December 2024. The facility, situated in southern Uzbekistan, functions as a principal referral hospital for orthopaedic and trauma cases throughout the region. Patients scheduled for elective total hip arthroplasty due to end-stage hip joint disorders, including primary osteoarthritis, avascular necrosis, and post-traumatic arthritis, were deemed eligible for inclusion [5]. In total, 82 patients, aged 45 to 82 years, fulfilled the criteria and willingly consented to participate in the study after providing written informed consent.

The surgical procedure was conducted by the same team of orthopaedic surgeons specialised in arthroplasty procedures. Based on specific anatomical and clinical observations, either the posterior or lateral surgical technique was employed. Prior to surgery, all patients had standard imaging by pelvic radiography and computed tomography, when required, to assess joint condition and bone quality [6]. The choice between cemented and cementless prosthetic components was determined by the quality of the femoral and acetabular bone stock evaluated during the surgical procedure [7]. Individuals with prior joint replacements, ongoing infections, or significant neurological or mental comorbidities were excluded from the study to maintain uniformity in postoperative rehabilitation results.

We utilised two proven scoring systems, the Harris Hip Score (HHS) and the Short Form-36 (SF-36) questionnaire, to evaluate the procedure's impact. The Harris score was employed to assess joint-specific functionality, encompassing range of motion, discomfort, ambulation, and everyday activities. The SF-36 offered a comprehensive view by assessing eight essential health areas, including physical functioning, bodily discomfort, vitality, emotional roles, and overall health perceptions. Evaluations were performed at three intervals: prior to surgery, three months postoperatively, and twelve months postoperatively. Trained clinical assessors, uninvolved in the surgical procedure, conducted the tests to mitigate observational bias [8].

The rehabilitation protocol was standardised and commenced on the first postoperative day. Patients commenced with supervised bed-based activities and advanced to assisted weight-bearing ambulation. The early mobilisation strategy adhered to global best practices, seeking to diminish the likelihood of deep vein thrombosis and expedite functional recovery. Pain management encompassed nonsteroidal anti-inflammatory medications and opioid analgesics when required. Discharge transpired between postoperative days five and seven, contingent upon patient mobility and the quality of the wound [9]. Upon release, patients were provided with organised home-based physiotherapy guidelines, and follow-up appointments were arranged at consistent intervals. Patients were assessed for functional advancement, complications, and compliance with rehabilitation protocols during follow-up.

The collected data were analysed via IBM SPSS Statistics version 26.0. Descriptive statistics were computed for demographic and clinical factors, with results presented as means accompanied by standard deviations. Comparisons of pre- and postoperative scores were conducted using paired t-tests for normally distributed variables and Wilcoxon signed-rank tests for non-parametric data. A p-value below 0.05 was deemed statistically significant. The sample size was determined based on previous research investigating hip arthroplasty outcomes, ensuring sufficient power to identify clinically significant alterations in both HHS and SF-36 scores [10].

This study adhered to ethical criteria, and the research protocol received approval from the local ethics council of the Surkhandarya Regional Multidisciplinary Medical Centre. All participants were apprised of the study's objectives, the procedures entailed, and their entitlement to withdraw at any point without affecting their clinical care. Patient confidentiality and data security were upheld throughout the research process. This methodological approach sought to encompass both the mechanical efficacy of the hip replacement and the subjective experience of recovery. The study integrates clinical scores with patient-reported outcomes, offering a comprehensive assessment of total hip arthroplasty efficacy in a practical regional healthcare context.

RESULTS AND DISCUSSION

Results

Between 2022 and 2024, a total of 82 patients received total hip arthroplasty at the Department of Traumatology and Orthopaedics at the Surkhandarya Regional Multidisciplinary Medical Centre. The study cohort comprised 48 women and 34 men, aged 45 to 82 years, with a mean age of 63.2 years. All subjects successfully completed the comprehensive surgical follow-up and rehabilitation regimen. The clinical and functional results were evaluated utilising the Harris Hip Score (HHS) and the SF-36 quality-of-life questionnaire at three intervals: preoperatively, at 3 months, and at 12 months post-surgery [11].

In Table 1. illustrates functional outcomes shown substantial enhancement over time. The average Harris Hip Score was 42.5 before to surgery, signifying significant joint impairment, discomfort, and restrictions in movement. At the 3-month follow-up, the score rose to 75.3, indicating significant enhancement in ambulation, analgesia, and mobility range. At the 12-month interval, the score increased to 86.7, signifying that the majority of patients had achieved a level of function deemed good to exceptional.

Table 1. Progression of harris hip score over time

Time Point	Harris Hip Score (Mean)
Preoperative	42.5
3 Months Post-op	75.3
12 Months Post-op	86.7

In Table 2. illustrates trend indicates that the operation facilitated swift short-term healing within the initial three months, succeeded by ongoing but more gradual enhancement. Patients indicated an increased capacity to traverse greater distances, ascend stairs, and experience pain-free sleep. These results underscore the effectiveness of early rehabilitation and appropriate postoperative surveillance. Concurrent enhancements were noted in health-related quality of life, as assessed by the SF-36 questionnaire [12]. The pretreatment mean score was 38.2, indicating constraints in everyday activities, vitality, and emotional health. At three months, this rose to 65.5, and by twelve months, it attained 78.4, signifying significant improvements in physical functioning, mood, social engagement, and overall health perception.

Table 2. Changes in SF-36 Total Score (Quality of Life)

Time Point	SF-36 Total Score (Mean)
Preoperative	38.2
3 Months Post-op	65.5
12 Months Post-op	78.4

In Table 3. illustrates the improvements in quality of life reflected the functional outcomes, indicating that patients not only regained mobility but also attained psychological and emotional relief. The one-year outcomes indicate enduring well-being, implying that hip arthroplasty offers long-term advantages beyond mere mechanical restoration [13]. An analysis of surgical indications was conducted to comprehend the clinical context of these procedures. The predominant diagnosis necessitating surgery was primary osteoarthritis (56.1% of patients), succeeded by avascular necrosis (29.3%) and post-traumatic arthritis (14.6%).

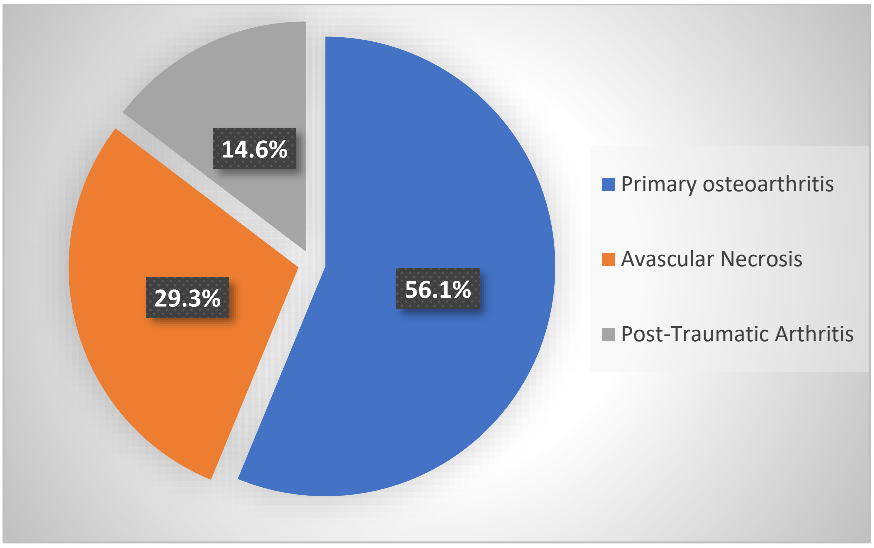

Figure 3. Distribution of Surgical Indications for Hip Arthroplasty

This distribution aligns with global trends in hip joint deterioration. Primary osteoarthritis is prevalent in elderly folks, however avascular necrosis frequently impacts younger individuals with risk factors such as steroid usage. The significant incidence of post-traumatic arthritis indicates a necessity for enhanced trauma management and prompt orthopaedic intervention in the area. Collectively, these findings indicate that total hip arthroplasty markedly enhances joint functionality and overall quality of life [14]. The steady advancement in all evaluated areas underscores the significance of organised rehabilitation and prolonged monitoring in attaining enduring results. The data underscore the necessity for prompt surgical intervention in advanced joint illness and highlight the significance of early diagnosis in situations such as avascular necrosis to avert permanent harm.

Discussion

This study demonstrates that total hip arthroplasty provides not only mechanical repair of the joint but also substantial enhancements in the daily lives of patients who previously had pain, restricted mobility, and diminished independence. The ongoing improvement in functional scores and quality-of-life metrics indicates that the advantages of the surgery are enduring and intensify over time. Patients who commenced the therapy with mobility limitations and emotional distress not only regained their capacity to walk but also restored their confidence, stability, and social involvement [15]. An very promising trend was observed in the initial three months post-surgery. Throughout this period, patients exhibited a swift reduction in pain, enhanced ambulation, and increased autonomy in daily tasks. This underscores the significance of prompt rehabilitation and organised postoperative management. The enhancements observed in Harris Hip Scores corroborate patients' anecdotal reports that even slight increases in independence were perceived as revolutionary. Community-based studies corroborate these data, revealing that patients regularly reported enhanced emotional well-being, increased sleep, and recovered everyday functionality post-total joint replacement [16]. The gains persisted in rising from the third to the twelfth month, albeit at a diminished rate. This prolonged enhancement underscores the significance of continuous physiotherapy and subsequent consultations. The concurrent rise in SF-36 scores substantiates the notion that hip arthroplasty influences factors beyond mere joint mechanics. It affects the individual holistically, influencing their body image, interpersonal interactions, and daily activities. These findings align with evidence indicating that enhancements in mental health and social functioning constitute some of the most significant benefits for patients post-surgery. A noteworthy facet of the study was the distribution of diagnosis necessitating surgical intervention. Although primary osteoarthritis was predictably the most prevalent, the incidence of patients with avascular necrosis was significantly elevated. This practice is gaining global prevalence, with forecasts indicating that hip arthroplasty will be increasingly conducted in younger persons. Factors such as steroid use, vascular disorders, and alcohol-induced bone deterioration may be contributing to premature joint failure, necessitating more urgent preventive measures. The incidence of post-traumatic arthritis within the cohort underscores the necessity for more systematic trauma follow-up and prompt orthopaedic management to avert long-term consequences.

A significant component of the data is that they were obtained in a regional medical centre. This indicates that superior outcomes can be achieved even outside major urban institutions when clinical protocols are consistently implemented and when surgical and rehabilitation teams work in close collaboration. Patients derived advantages from individualised care, prompt mobilisation, and consistent follow-up, all of which facilitated their gradual recovery. The most notable aspect was the distinct change in patients' sense of their health. Numerous individuals reported a sense of reclaiming some aspect of themselves that had gradually diminished due to pain and limitation.

Although the study provides valuable insights, it is crucial to recognise that it was performed at a single centre, and while the employed techniques were internationally validated, supplementary qualitative comments could enhance future research. This study reinforces the perspective that the efficacy of hip arthroplasty should not be evaluated solely through radiographic assessments or range of motion metrics. Success also include a patient's ability to stroll to the market, stand confidently, partake in family gatherings, and get uninterrupted sleep. This study affirms that the most significant benefits are attainable with appropriate surgical intervention, rehabilitation, and subsequent follow-up.

CONCLUSION

Fundamental Finding : This study confirms that total hip arthroplasty is a highly effective intervention for restoring physical function and significantly improving the quality of life in patients with advanced hip joint diseases, as evidenced by progressive improvements in Harris Hip Scores and SF-36 outcomes over a twelve-month period. **Implication** : These results highlight the importance of integrating structured postoperative rehabilitation, early mobilisation, and multidisciplinary support to ensure not only physical recovery but also psychological well-being and social reintegration. Additionally, the increasing occurrence of avascular necrosis among younger patients emphasizes the need for earlier diagnostic efforts and targeted preventive strategies. **Limitation** : The study's single-center scope limits the generalizability of its findings across diverse healthcare settings, and broader multicenter investigations are necessary for wider validation. **Future Research** : Future studies should explore long-term functional and psychosocial outcomes beyond one year and assess the effectiveness of patient-centered care models in enhancing recovery, particularly in under-resourced regions where access to comprehensive orthopaedic services remains limited.

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