ISSN (Online) 3134-8831

International Journal of Clinical and Medical Research

Received: September 11, 2024 | Accepted: December 03, 2024 | Published: December 30, 2024

Volume 01, Issue 02, Pages 32-34

DOI https://doi.org/10.66590/ijcmr2024010204

Review Article

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A Narrative Review on the Assessment of Quality of Life in Patients Undergoing Total Hip Arthroplasty

Mohammed Saud M Alfuwis[1*]

[1]College of Medicine, University of Hail, Hail, Saudi Arabia

Author Designation: [1]Assistant Professor

*Corresponding author: Mohammed Saud M Alfuwis (e-mail: mdmohamedsaud@gmail.com).

How to Cite the Article:
M Alfuwis, Mohammed Saud. "A Narrative Review on the Assessment of Quality of Life in Patients Undergoing Total Hip Arthroplasty." *International Journal of Clinical and Medical Research*, vol. 01, no. 02, December 2024, pp. 32-34. https://doi.org/10.66590/ijcmr2024010204

Abstract | Although total hip arthroplasty (THA) is considered one of the most reliable and cost-effective surgical procedures with excellent long-term outcomes, the selection of implants regarding fixation technique, bearing surface, and femoral head size continues to remain a topic of debate, particularly among younger patients. Since its introduction, THA has significantly improved the functional status and overall quality of life of patients across different age groups. This narrative review focuses on the assessment of quality of life in patients undergoing total hip arthroplasty using various standardized evaluation questionnaires and outcome assessment tools.

Key Words: Total Hip Arthroplasty, Hip Fracture, Quality of life, Hip Replacement

INTRODUCTION

Total hip arthroplasty (THA) is an elective surgical procedure that should be carefully evaluated alongside other available treatment options. The decision to proceed with THA requires a thorough assessment of its potential risks and benefits. A clear understanding of the surgical technique and the expected postoperative outcomes is essential for appropriate clinical decision-making. For suitable candidates, THA can be a life-changing intervention that relieves pain, restores mobility, improves functional capacity, and enhances overall quality of life.

However, like all major surgical procedures, THA is associated with certain limitations and complications. Some complications may be severe or life-threatening, while others may appear several years after surgery. In patients with a history of previous hip surgeries, the success rate of each subsequent procedure tends to decline significantly. Therefore, comprehensive preoperative evaluation and adequate patient preparation are essential components of successful primary total hip arthroplasty.

Absolute contraindications to THA include active infection of the hip joint, infections elsewhere in the body, and any medical condition that impairs the patient's ability to tolerate anesthesia, withstand the metabolic stress of surgery, achieve proper wound healing, or participate in the rehabilitation process required for a favorable functional outcome.

Relative contraindications include conditions associated with rapid bone destruction, neuropathic joints, insufficiency of the abductor mechanism, and urinary tract infections, particularly those caused by *Klebsiella* species. Potential complications of THA include neurovascular injury, fractures of the femur or acetabulum, postoperative infection, limb length discrepancy, and hip dislocation. Among the long-term complications, loosening of the femoral and acetabular components remains one of the most significant causes of implant failure [1].

Since its introduction in the 1960s, total hip arthroplasty (THA) has dramatically improved the quality of life of patients across all age groups and has often been referred to as "the surgery of the century" due to its remarkable clinical success. According to a 2010 survey of National Joint Registries (NJRs), approximately 959,000 primary and revision hip arthroplasty procedures were performed annually worldwide,

corresponding to nearly 131 procedures per 100,000 population. The average revision burden was reported to be 12.9%. Notably, 32.9% of the patients undergoing THA were younger than 65 years of age, while females accounted for approximately 57.7% of the cases [2].

From an economic perspective, the global hip replacement market was projected to increase from approximately $4.8 billion in 2014 to nearly $5.9 billion by 2020. THA has consistently demonstrated both substantial clinical benefits and strong cost-effectiveness. A systematic review of economic analyses estimated that THA costs approximately $10,402 per additional quality-adjusted life year (QALY) gained when compared with non-surgical management. Based on the World Health Organization cost-effectiveness threshold of three times the gross domestic product (GDP), estimated at approximately $144,000 according to 2011 United States data, THA is considered a highly cost-effective intervention [3].

Although the long-term survival of hip prostheses has been extensively studied in the general population, evidence suggests that implant survival rates are comparatively lower among younger adults, likely due to higher activity levels and longer life expectancy following surgery [4].

Although the clinical advantages of a THR are widely established, there is still uncertainty in the orthopaedic community regarding the wide range of prosthetic options available for this treatment. Moreover, surgeons have experimented with different bearing surfaces and attachment techniques in an effort to enhance the performance of an existing successful prosthesis, particularly in the younger population.

Despite the abundance of research on this topic, it is challenging to reach a consensus regarding the optimum kind of prosthesis. The answers to these concerns are still complicated due to the wide variety of prostheses on the market, which is further complicated by inconsistent data from numerous registries, publications that have been published, and industry agendas. Additionally, there are a variety of elements to take into account when deciding which prostheses to employ for a certain patient, such as the patient's demographics, the prosthesis' cost, patient-reported outcome metrics, and even training and comfort with the implant. Therefore, the primary goal of this review is to analyse the disagreements in the literature about the optimal fixation technique, the best bearing surface, and the ideal femoral head size.

Quality of life (QoL) assessment is becoming increasingly crucial for determining priorities when allocating resources and quantifying the impact of illnesses, diseases, and their treatment. The World Health Organization (WHO) defines "QOL" as "an individual's view of their place in life in relation to their objectives, aspirations, standards, and worries in the context of the culture and value systems in which they live." Many broad measures have recently been employed to assess QOL in various categories (e.g., patients, workers, population and so on) [1]. Disability has a significant impact on patients' quality of life and interferes with daily living. It is connected with significant direct and indirect expenditures and is a significant burden on the health-care system and society in general. Osteoarthritis is the most common cause of locomotor impairment in the general population (OA). According to CDC data, about one in every three persons (37.6%) with hip arthritis reported limitations in their normal activities [2]. Depression, pain severity, degree of education, BMI, and social contacts are the most important characteristics related with lower limb impairment in individuals suffering from knee or hip osteoarthritis [3].

The Standard Harris Hip Score (HHS) is a recognised and widely used technique for assessing an individual's functional capacity before and after surgery. It has been widely used in several research to assess the functional results of THRs. HHS, on the other hand, contains a component of physical examination, which might differ greatly amongst examining surgeons. To reduce this variability, a modified HHS was designed, with the clinical evaluation portion omitted [4] In the past, modified HHS was used to assess functional result of THR over the phone and to assess functional outcome in non-traumatic symptoms of THR.

THA has been performed by orthopaedic surgeons at Dr Rajendra Prasad Govt. Medical College Tanda for several years. Because of the steep terrain and largely rural background, the patients and their artificial joint are subjected to a wide range of stresses that are completely different and considerably more than those living in non-hilly regions.

Świtoń A *et al* [5]. examined 189 patients who had received unilateral total hip arthroplasty. Utilizing goniometry, the range of motion of both hip joints was determined. Using the Harris Hip Score (HHS) questionnaire, patients' physical ability and pain intensity were evaluated. The evaluation of the lower extremity ranges of motion indicated statistically significant differences in flexion ($p = 0.01$), abduction ($p = 0.01$), adduction ($p = 0.01$), and external rotation ($p = 0.01$) between the operated extremity and the uninjured extremity. External rotation (14°) indicated the highest limitation of motion. About 14% of patients were unable to accomplish this action in their healthy hip joint, whereas 17.5% were unable to do so in their afflicted hip joint. Analysis of HHS data (mean = 79 points) revealed that greater than fifty percent of patients rated their functional ability and quality of life as good or excellent.

It was determined that 54% of patients did not experience discomfort, while 35% reported minimal or mild pain. The subjective clinical evaluation of patients after total hip arthroplasty revealed an improvement in their quality of life. They advised that it was vital to

undertake physiotherapy on both the operative and healthy sides after total hip arthroplasty. Patients undergoing total hip arthroplasty were much more likely to experience exacerbation of pain and reduced activity if they were female.

Verdugo-Meza *et al*. [6] undertook a study to investigate the claudication, quality of life, and functional outcomes of minimally invasive THA in patients with primary coxarthrosis. A prospective longitudinal research was conducted on patients with unilateral primary coxarthrosis post-THA minimally invasive technique. With a one-year follow-up, each patient was evaluated using the Quality of Life instrument (WOMAC), the Functional test for coxarthrosis (HHS), and the Functional test in patients with hip surgery (OHS). They included 21 patients, 17 females and 4 males, accounting for 80.95% and 19.05%, respectively, with an average age of 59.95 years (ED = 9.64), excellent functional outcomes at one year according to HHS and OHS, high quality of life in all cases according to WOMAC, and a claudication rate of 4.76 percent. In the end, they determined that the minimally invasive approach was a reliable surgical technique, with excellent functional outcomes, a low claudication rate, and a great quality of life in postoperative patients with primary ATC after only one year of follow-up.

Ray S. *et al* [7]. did a study to see if increases in quality of life between the preoperative and one-year postoperative periods are related to patient satisfaction. Between 2008 and 2015, the Swedish Hip Arthroplasty Register (SHAR) was told about 69,083 THR surgeries with full data. The Euro-Qol-5D (EQ-5D) and the visual analogue scale (VAS) were used to measure patient satisfaction and health-related quality of life. A multivariable analysis was done to find out how changes in the EQ5D before and after surgery affected patient satisfaction. In patients who reported severe or moderate mobility problems prior to surgery, improvement to no problems was related with statistically greater patient satisfaction (coefficient -18 (95% CI -22 to -14) and -18 (-18 to 17)).

Improvement on the self-care component from severe or moderate issues to none was associated with statistically greater patient satisfaction (-15 (-16 to -14) and -13 (-15 to -11)). When patients went from having a lot of trouble doing everyday tasks to not having any problems, the numbers show that they were happier (-18 (-19 to -17)). This connection was also observed for pain/discomfort relief and anxiety/depression reduction (-16 (-17 to -15) and -15 (-16 to -14)). Their results showed that patient satisfaction with the operated hip was a real patient-reported outcome that changed in several EQ-5D dimensions, and that it should be included in the follow-up of THR patients.

Bahardoust *et al*. [8] investigated, for the first time in the Iranian population, the patient's health-related quality of life (HRQoL) after THA. In case-control research, the HRQoL of 217 patients after THA was evaluated and compared to that of a matched reference population. The 36-item Short Form Health Survey (SF-36) was utilised to assess HRQoL. A multiple linear regression model was utilised to examine the impact of sociodemographic and clinical patient variables on HRQOL. The patients were followed for an average of 27 18 months. The mean total SF-36 score in the case group was 41.4 22.2 while in the control group it was 67.3 26.6 (p = 0.001). The physical component score was considerably lower in the sick group, but not the mental component score (p = 0.001). Except for liveliness and emotional role, the case group scored significantly lower on all other SF-36 subscales. HRQoL after THA was linked with male gender (B = 4.52, p = 0.023), number of comorbidities (p = 0.011), body mass index (p = 0.044), number of post-operative complications (p = 0.001), and adherence to physiotherapy programme (p = 0.014). Despite the fact that THA is one of the most successful orthopaedic procedures, it is related with a significant reduction in HRQoL in the Iranian population compared to the reference population.

CONCLUSIONS

WHO Quality of Life questionnaire is an important and convenient tool for assessing the quality of life in the patients operated with Total Hip Arthroplasty.

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