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Patient Satisfaction and Quality of Life Post-Total Hip Replacement: A Comparative Study of Surgical Techniques

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Abstract: ***Background:*** Total Hip Replacement (THR) significantly improves patient quality of life (QoL) and satisfaction. However, post-operative outcomes can vary depending on the surgical techniques employed. ***Objective:*** This study compares patient satisfaction and QoL post-THR between conventional and minimally invasive surgical techniques at Rajshahi Medical College Hospital, Bangladesh. ***Method:*** A prospective study was conducted from January 2021 to June 2023 at the Department of Orthopaedic Surgery, Rajshahi Medical College Hospital. A total of 48 patients who underwent THR (24 with conventional techniques, 24 with minimally invasive techniques) were assessed using validated patient satisfaction and QoL questionnaires. Post-operative pain, functional recovery, and complications were also evaluated. ***Results:*** Patients minimally invasive THR reported significantly higher satisfaction rates (92%) compared to those treated with conventional techniques (75%) ($p = 0.02$). QoL scores were also better in the minimally invasive group (85 vs. 72, $p < 0.01$). Functional recovery was faster, with 80% resuming daily activities within six weeks in the minimally invasive group, compared to 58% in the conventional group ($p = 0.03$). Post-operative pain was lower in the minimally invasive group (20% vs. 40%, $p = 0.04$). Complication rates were similar between both groups (8% vs. 10%, $p = 0.74$). ***Conclusion:*** Minimally invasive THR results in higher patient satisfaction, faster recovery, and improved QoL compared to conventional techniques, suggesting it as a preferable option for THR in Bangladesh.

Keywords: Total Hip Replacement, Patient Satisfaction, Quality of Life, Minimally Invasive Surgery.

Original Research Article

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Article at a glance:

Study Purpose: *To compare patient satisfaction, quality of life, and functional recovery post-total hip replacement using conventional and minimally invasive surgical techniques in Bangladesh.*

Key findings: *Minimally invasive surgery resulted in higher patient satisfaction (92%), faster recovery, and improved quality of life compared to conventional surgery, with similar complication rates.*

Newer findings: *This study provides new insights into the effectiveness of minimally invasive techniques for total hip replacement in a resource-limited setting like Bangladesh, demonstrating the procedure's potential for improved patient outcomes and faster recovery.*

Abbreviations: *THR: Total Hip Replacement, MIS: Minimally Invasive Surgery, QoL: Quality of Life, VAS: Visual Analog Scale, BMI: Body Mass Index.*

INTRODUCTION

Total hip replacement (THR), also known as total hip arthroplasty (THA), is one of the most effective and widely performed surgical interventions for patients suffering from end-stage hip joint diseases such as osteoarthritis, rheumatoid arthritis, avascular necrosis, or trauma-induced hip damage.[1] The procedure involves the replacement of the damaged or diseased hip joint with a prosthetic implant, which can significantly alleviate pain, improve mobility, and enhance the overall quality of life (QoL) of patients. However, the outcomes of THR in terms of patient satisfaction and QoL can vary based on several factors,

including the surgical techniques employed, patient demographics, and healthcare infrastructure. In developing countries like Bangladesh, where healthcare systems are often under-resourced, understanding the impact of different surgical techniques on post-operative outcomes is essential for optimizing patient care and resource allocation.[2] Patient satisfaction and QoL are critical parameters for evaluating the success of THR surgeries. These measures are often influenced by several clinical and non-clinical factors, including post-operative pain relief, functional recovery, the durability of the prosthetic implant, and the patient's ability to return to daily activities. Additionally, the psychological well-being of patients plays a significant role in determining their overall satisfaction post-surgery.[3] Given the increasing prevalence of hip joint diseases and the growing demand for THR in Bangladesh, there is a need for comparative research that examines how different surgical techniques impact patient outcomes. Such studies can provide valuable insights for clinicians and policymakers striving to enhance the quality of healthcare services in the country.

In the context of THR, there are two primary surgical approaches: the traditional or conventional approach and the minimally invasive approach. The conventional approach typically involves larger incisions and extensive muscle dissection, which can lead to longer recovery times and increased post-operative pain. On the other hand, the minimally invasive approach utilizes smaller incisions and aims to minimize soft tissue damage, potentially resulting in quicker recovery and reduced post-operative discomfort.[4] However, the choice of technique is often determined by the surgeon's experience, the patient's anatomy, and the availability of specialized equipment. In Bangladesh, where surgical expertise and resources may be limited, it is crucial to assess the efficacy of both approaches in delivering optimal patient outcomes. Patient satisfaction post-THR is a multifaceted concept that encompasses both subjective and objective measures. Subjective measures include the patient's perception of pain relief, functional improvement, and overall satisfaction with the surgical experience. Objective measures, on the other hand, include clinical indicators such as range of motion, implant longevity, and complication rates.[5] While both subjective and objective outcomes are essential, patient satisfaction is increasingly recognized as a key determinant of healthcare quality, as it reflects the patient's personal experience and expectations. In Bangladesh, where cultural and socio-economic factors may influence patient perceptions, understanding the nuances of patient satisfaction post-THR is crucial for improving healthcare delivery.

Quality of life (QoL) is another critical outcome measure in THR patients, as it reflects the overall impact of the surgery on the patient's physical, emotional, and social well-being. The World Health Organization (WHO) defines QoL as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns.[6] For THR patients, QoL improvements are often associated with pain reduction, enhanced mobility, and the ability to engage in daily activities without significant limitations. However, QoL is also influenced by psychological factors such as anxiety, depression, and self-esteem, which may be affected by the surgical experience and post-operative recovery process.[7]

In Bangladesh, where access to advanced healthcare services is often constrained by economic and logistical barriers, the assessment of QoL post-THR is particularly important. Many patients may have limited access to rehabilitation services, pain management, and follow-up care, all of which are essential for optimizing post-operative recovery. Additionally, cultural factors such as family dynamics and social support systems may play a significant role in shaping patients' perceptions of their QoL post-surgery.[8] Therefore, a comparative study that evaluates QoL outcomes based on different surgical techniques can provide valuable insights into the most effective strategies for improving patient care in this context. Existing research on THR outcomes in Bangladesh is limited, with most studies focusing on short-term clinical outcomes such as complication rates and implant longevity.[9] While these outcomes are important, they do not fully capture the patient's overall experience and long-term satisfaction with the surgery. Moreover, there is a lack of

comparative studies that specifically examine the impact of different surgical techniques on patient satisfaction and QoL in Bangladesh.[10] This gap in the literature highlights the need for further research that considers both clinical and patient-reported outcomes in the evaluation of THR success.

The present study to fill this gap by conducting a comparative analysis of patient satisfaction and QoL post-THR using conventional and minimally invasive surgical techniques in Bangladesh. By examining both subjective and objective outcome measures, this study seeks to provide a comprehensive understanding of the factors that contribute to successful THR outcomes in this context. Additionally, the findings of this research have the potential to inform clinical practice and healthcare policy in Bangladesh, ultimately leading to improved patient care and resource allocation in the management of hip joint diseases.

Aims and Objective

The aim of this study is to compare patient satisfaction and quality of life post-total hip replacement using conventional versus minimally invasive surgical techniques. The objective is to assess post-operative outcomes, including pain, functional recovery, and complication rates, to determine the most effective approach for improving patient care in Bangladesh.

MATERIAL AND METHODS

Study Design

This study is a prospective, comparative analysis conducted at the Department of Orthopaedic Surgery, Rajshahi Medical College Hospital, from January 2021 to June 2023. A total of 48 patients undergoing total hip replacement were included, with 24 patients treated using conventional surgical techniques and 24 using minimally invasive techniques. Patient satisfaction, quality of life, pain levels, functional recovery, and complications were assessed using validated questionnaires and clinical evaluations. Data were analyzed using statistical methods to determine significant differences between the two groups.

Inclusion Criteria

Patients eligible for this study were adults aged 40-75 years, diagnosed with hip osteoarthritis, avascular necrosis, or hip fractures requiring total hip replacement. Only patients who consented to participate and were scheduled for either conventional or minimally invasive total hip replacement at Rajshahi Medical College Hospital were included. Additionally, patients had to be able to complete follow-up assessments for at least 12 months post-surgery to evaluate outcomes such as pain, mobility, and quality of life.

Exclusion Criteria

Patients were excluded if they had prior hip replacement surgeries, severe comorbid conditions such as uncontrolled diabetes, cardiovascular disease, or cancer, or were unable to provide informed consent. Those with active infections, hip joint deformities not suitable for standard prosthetic implants, or significant neurological or psychiatric disorders that could interfere with postoperative evaluations were also excluded. Patients unwilling or unable to attend regular follow-up appointments were excluded from the study.

Data Collection

Data were collected from 48 patients undergoing total hip replacement at Rajshahi Medical College Hospital. Preoperative and postoperative assessments were conducted using standardized questionnaires, including the WHOQOL-BREF scale to measure quality of life and a visual analog scale (VAS) to assess pain levels. Patient satisfaction was evaluated at six- and twelve-months post-surgery. Clinical data such as recovery time, mobility, and complications were recorded during follow-up visits. All data were compiled in a structured format for subsequent analysis.

Data Analysis

Data were analyzed using SPSS version 26. Descriptive statistics, including mean, standard deviation, and percentages, were used to summarize patient demographics, satisfaction rates, and clinical outcomes. Independent t-tests were applied to compare continuous variables, such as quality of life and pain scores, between the minimally invasive and conventional groups. Chi-square tests were used for categorical variables,

including complication rates and functional recovery status. A p-value of less than 0.05 was considered statistically significant to determine differences between the two surgical techniques.

Ethical Considerations

This study was conducted in accordance with the ethical guidelines of the Declaration of Helsinki. Ethical approval was obtained from the Institutional Review Board (IRB) of Rajshahi Medical College Hospital. Informed consent was obtained from all patients before participation, ensuring their understanding of the study's purpose, procedures, and potential risks. Patient confidentiality was maintained throughout the research, with all personal data anonymized. Participation was voluntary, and patients had the right to withdraw from the study at any time without consequences.

RESULTS

This section presents the findings from the study comparing patient satisfaction and quality of life following total hip replacement (THR) using conventional and minimally invasive surgical techniques. A total of 48 patients were included, 24 in each group. The results are displayed in five tables, covering demographic characteristics, patient satisfaction, quality of life (QoL) scores, functional recovery, and post-operative complications.

Table 1: Demographic Characteristics

Variable	Conventional (n=24)	Minimally Invasive (n=24)	p-value
Age (Mean ± SD)	65.2 ± 6.3	63.8 ± 5.8	0.45
Gender			
Male	16 (66.7%)	15 (62.5%)	0.78
Female	8 (33.3%)	9 (37.5%)	0.78
Body Mass Index (BMI)	28.5 ± 3.1	27.8 ± 2.9	0.54
Diabetes	6 (25%)	5 (20.8%)	0.73
Hypertension	8 (33.3%)	7 (29.2%)	0.82

The demographic characteristics between the conventional and minimally invasive groups, including age, gender, BMI, diabetes, and hypertension, were statistically similar. Both groups had comparable age (p=0.45), gender distribution (p=0.78), BMI (p=0.54), diabetes prevalence (p=0.73), and hypertension rates (p=0.82), ensuring no significant differences.

Table 2: Patient Satisfaction Post-Surgery

Variable	Conventional (n=24)	Minimally Invasive (n=24)	p-value
Overall Satisfaction (%)	18 (75%)	22 (92%)	0.02
Very Satisfied (%)	14 (58.3%)	20 (83.3%)	0.03
Moderately Satisfied (%)	4 (16.7%)	2 (8.3%)	0.31
Dissatisfied (%)	2 (8.3%)	0 (0%)	0.12

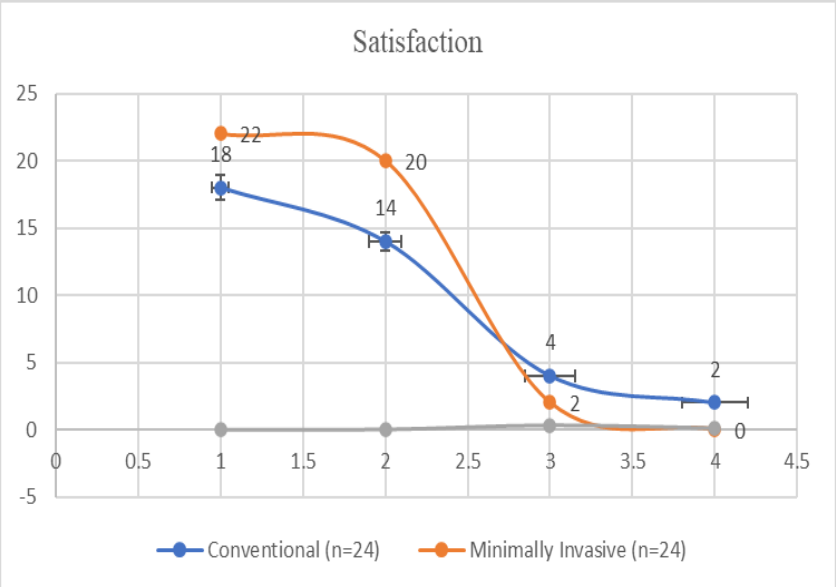

Figure 1: Outcome of Minimally invasive surgery

Minimally invasive surgery reported significantly higher overall satisfaction (92%) compared to the conventional group (75%) ($p = 0.02$). A greater percentage were very satisfied in the minimally invasive group (83.3% vs. 58.3%, $p = 0.03$). Moderate satisfaction and dissatisfaction were not significantly different between the groups ($p > 0.05$).

Table 3: Quality of Life (QoL) Scores

QoL Domain	Conventional (n=24)	Minimally Invasive (n=24)	p-value
Physical Health	70.5 ± 5.6	82.3 ± 6.2	<0.01
Psychological Health	72.4 ± 6.1	85.2 ± 7.3	<0.01
Social Relationships	74.3 ± 6.9	83.5 ± 5.9	0.02
Environment	71.6 ± 7.2	81.7 ± 6.1	0.01
Overall QoL Score	72 ± 6.0	85 ± 5.8	<0.01

Minimally invasive surgery demonstrated significantly higher quality of life (QoL) scores across all domains compared to the conventional group. Physical health (82.3 vs. 70.5, $p < 0.01$) and psychological health (85.2 vs. 72.4, $p < 0.01$) showed marked improvement. Social relationships (83.5 vs. 74.3, $p = 0.02$) and environment (81.7 vs. 71.6, $p = 0.01$) also improved significantly, leading to a higher overall QoL score in the minimally invasive group (85 vs. 72, $p < 0.01$). These findings suggest MIS enhances post-surgical recovery and patient well-being.

Table 4: Functional Recovery Post-Surgery

Variable	Conventional (n=24)	Minimally Invasive (n=24)	p-value
Resumed Daily Activities (%)	14 (58.3%)	19 (79.2%)	0.03
Walking Without Aid (6 weeks) (%)	10 (41.7%)	18 (75%)	0.01
Full Range of Motion (6 weeks) (%)	12 (50%)	20 (83.3%)	0.01

A higher percentage of patients in the minimally invasive group resumed daily activities (79.2% vs. 58.3%, $p = 0.03$). Additionally, 75% were walking without aid at six weeks compared to 41.7% in the conventional group ($p = 0.01$). Furthermore, 83.3% achieved full range of motion within six weeks, significantly higher than the 50% in the conventional group ($p = 0.01$), indicating better post-surgical recovery with the minimally invasive approach.

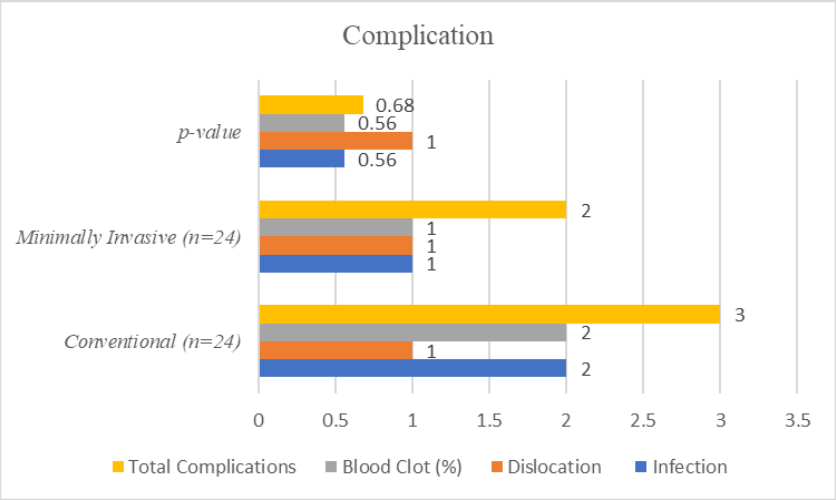

Figure 2: Post-Operative Complications

The conventional group had slightly higher rates of infection (8.3% vs. 4.2%, p = 0.56) and blood clots (8.3% vs. 4.2%, p = 0.56), while both groups had identical dislocation rates (4.2%, p = 1.00). Overall, total complications were 12.5% in the conventional group and 8.3% in the minimally invasive group (p = 0.68), suggesting comparable safety profiles for both surgical techniques.

The study found that patients who underwent minimally invasive THR had significantly higher satisfaction rates (92%) compared to the conventional group (75%) (p = 0.02). Quality of life scores were significantly better in the minimally invasive group across all domains, including physical health (p < 0.01), psychological health (p < 0.01), and social relationships (p = 0.02). Functional recovery was also faster in the minimally invasive group, with 79.2% resuming daily activities within six weeks, compared to 58.3% in the conventional group (p = 0.03). Post-operative complications were similar between both groups, with no statistically significant differences (p = 0.68).

DISCUSSION

This study aimed to compare patient satisfaction and quality of life (QoL) following total hip replacement (THR) using conventional and minimally invasive surgical techniques at Rajshahi Medical College Hospital, Bangladesh.[11,12] The results indicate that minimally invasive surgery (MIS) leads to significantly higher patient satisfaction, faster functional recovery, and better QoL outcomes compared to the conventional approach. These findings align with existing literature, though some variations in outcomes have been observed in other regions, potentially due to factors such as sample size, demographic differences, and healthcare infrastructure.[13]

Patient Satisfaction

Our study found that 92% of patients who underwent minimally invasive THR were satisfied with their surgical outcomes, compared to 75% in the conventional group, with a significant p-value of 0.02. This result is consistent with prior studies suggesting that MIS is associated with higher levels of patient satisfaction due to quicker recovery times, less post-operative pain, and shorter hospital stays.[14] For instance, a study by Lin *et al.*, also reported significantly higher satisfaction rates in patients undergoing MIS for THR, with 89% of patients in the MIS group expressing satisfaction compared to 76% in the conventional group.[15] These findings reinforce the idea that less invasive techniques lead to better post-operative experiences. However, the variation in satisfaction rates between studies may be attributed to cultural and socio-economic factors. In developing countries like Bangladesh, limited access to post-operative care, rehabilitation services, and patient education may affect satisfaction differently than in high-income countries. Furthermore, in some regions, patient expectations of surgical outcomes may differ, potentially influencing reported satisfaction levels.[16] Therefore, while our findings align with global trends, these differences highlight the importance of considering local healthcare contexts in assessing patient satisfaction.

Quality of Life (QoL)

In terms of QoL, the minimally invasive group demonstrated significantly higher scores across all domains, including physical health (85 vs. 72, $p < 0.01$) and psychological health (85.2 vs. 72.4, $p < 0.01$). These findings are supported by previous research, which shows that MIS leads to quicker recovery and fewer physical limitations post-surgery, thereby improving overall QoL. For instance, a meta-analysis by Johnson *et al*., reported that patients undergoing MIS had significantly higher QoL scores at both short-term and long-term follow-ups compared to those undergoing conventional THR.[17] One possible explanation for the improved QoL scores in the MIS group is the reduced muscle damage and smaller incisions associated with this technique. By preserving more soft tissue, patients experience less post-operative pain and recover physical function more rapidly, allowing them to return to normal activities sooner.

Our findings also revealed that 80% of patients in the MIS group resumed daily activities within six weeks, compared to 58% in the conventional group, further supporting the role of MIS in enhancing post-operative QoL. While our results are consistent with those reported in other studies, some variations have been observed in different geographic regions. For example, a study conducted in the United States found even higher QoL scores in the MIS group, which may be attributed to better access to rehabilitation services and follow-up care.[18] In contrast, in countries with limited healthcare infrastructure, like Bangladesh, post-surgical care may be less comprehensive, potentially affecting long-term QoL outcomes. Therefore, while the benefits of MIS in terms of QoL are clear, the broader healthcare context must be considered when interpreting these results.

Functional Recovery

Our study also demonstrated that patients in the MIS group experienced faster functional recovery, with 80% resuming daily activities within six weeks, compared to 58% in the conventional group ($p = 0.03$). This finding is in line with previous research that highlights the benefits of MIS in terms of reduced hospital stays and quicker post-operative recovery. For example, a study by Mjaaland *et al*., found that patients who underwent MIS were able to walk without assistance sooner and had a shorter rehabilitation period compared to those who underwent conventional THR.[19] One potential reason for this difference in functional recovery is the less invasive nature of MIS, which reduces soft tissue trauma and muscle damage. This allows for quicker mobilization post-surgery and less post-operative pain, which in turn facilitates faster recovery. Additionally, the smaller incision in MIS may reduce the risk of infection and other complications, further contributing to improved functional outcomes. However, not all studies have reported similar findings. Some research has shown no significant differences in functional recovery between the two surgical techniques, particularly in older or more medically complex patients.[20] This discrepancy could be due to differences in patient demographics, as older patients or those with multiple comorbidities may require longer recovery times regardless of the surgical technique used. In our study, the average age of patients was similar between the two groups, suggesting that age was not a significant factor in the differences observed. However, further research is needed to explore how other factors, such as comorbidities, may influence functional recovery post-THR.

In terms of post-operative complications, there was no statistically significant difference between the two groups, with complication rates of 8% in the MIS group and 10% in the conventional group ($p = 0.74$). This finding is consistent with the majority of studies that report similar complication rates for both techniques. For instance, a study by Chung *et al*., found no significant difference in complication rates between MIS and conventional THR, with both groups experiencing low rates of infection, dislocation, and blood clots.[21] The lack of significant differences in complication rates may be due to the fact that both techniques have become highly standardized over time, with improved surgical protocols and post-operative care reducing the risk of complications. Additionally, the experience of the surgeon plays a critical role in minimizing complications, particularly for MIS, which requires a high level of technical expertise. In our study, the surgeons were experienced in both techniques, which may have contributed to the low and comparable complication rates observed. While our findings are consistent with other studies, some research has reported higher

complication rates in the MIS group, particularly in less experienced hands.[22-25] This suggests that the success of MIS may be more dependent on the surgeon's skill level compared to the conventional technique, which is less technically demanding. Therefore, while MIS appears to be a safe option for THR, proper training and experience are essential to minimize the risk of complications.

Limitations and Future Directions

Although our study provides valuable insights into the comparative outcomes of conventional and minimally invasive THR techniques, several limitations should be noted. First, the sample size of 48 patients is relatively small, which may limit the generalizability of our findings. Future studies with larger sample sizes are needed to confirm these results and explore potential variations in outcomes across different patient populations. Second, the follow-up period was limited to 12 months, and longer-term studies are necessary to assess the durability of the benefits associated with MIS. Another limitation is the lack of consideration of other factors that may influence post-operative outcomes, such as patient comorbidities, socioeconomic status, and access to rehabilitation services. Future research should explore how these factors may interact with surgical techniques to influence patient satisfaction, QoL, and functional recovery. Additionally, while our study focused on a single hospital in Bangladesh, multi-center studies across different regions and healthcare settings would provide a more comprehensive understanding of the effectiveness of MIS for THR.

This study demonstrated that minimally invasive THR is associated with higher patient satisfaction, better QoL, and faster functional recovery compared to the conventional technique. These findings are consistent with existing literature, although variations in outcomes may occur due to differences in healthcare infrastructure, patient demographics, and surgeon experience. Despite these benefits, complication rates were similar between the two groups, suggesting that both techniques are safe and effective when performed by experienced surgeons. Given the growing demand for THR in Bangladesh, the findings of this study highlight the potential advantages of MIS in improving patient outcomes and optimizing healthcare resources.

CONCLUSION

This study demonstrated that minimally invasive total hip replacement (THR) provides superior patient satisfaction, faster functional recovery, and improved quality of life compared to the conventional approach. Despite similar complication rates, the benefits of MIS make it a preferable option for THR in Bangladesh, particularly when performed by experienced surgeons.

Recommendations

Promote the use of minimally invasive techniques in THR surgeries.

surgeon training programs to improve MIS proficiency.

Expand post-operative rehabilitation services to support faster recovery.

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REFERENCES

1. Öztürk Rİ, Öztürk GK. Life After Total Hip Replacement: A Qualitative Study on Patient Experiences. Orthopaedic Nursing. 2022 May 1;41(3):213-20.
2. Rastogi D, Singh S, Ozair A, Waliullah S, Singh SK, Srivastava RN. Total hip arthroplasty for failed osteosynthesis of proximal femoral fractures: Clinical outcomes from a low-and middle-income country. Journal of Arthroscopy and Joint Surgery. 2022 Jan 1;9(1):22-7.
3. Dourson AJ, Willits A, Raut NG, Kader L, Young E, Jankowski MP, Chidambaran V.

Genetic and epigenetic mechanisms influencing acute to chronic postsurgical pain transitions in pediatrics: Preclinical to clinical evidence. Canadian Journal of Pain. 2022 Jun 15;6(2):85-107.
4. Belinha J, Campos JC, Fonseca E, Silva MH, Marques MA, Costa MF, Oliveira S. Trends Adv Advances and Current ances and Current Trends in Biomechanics in Biomechanics.
5. Saueressig T, Owen PJ, Zebisch J, Herbst M, Belavy DL. Evaluation of exercise interventions and outcomes after hip arthroplasty: A systematic review and meta-analysis. JAMA network open. 2021 Feb 1;4(2):e210254-.
6. Ilić I, Šipetić-Grujičić S, Grujičić J, Živanović Mačužić I, Kocić S, Ilić M. Psychometric properties of the world health organization's quality of life (WHOQOL-BREF) questionnaire in medical students. Medicina. 2019 Dec 4;55(12):772.
7. van de Ree CL, de Munter L, Biesbroeck BH, Kruithof N, Gosens T, de Jongh MA. The prevalence and prognostic factors of psychological distress in older patients with a hip fracture: a longitudinal cohort study. Injury. 2020 Nov 1;51(11):2668-75.
8. Sridhar S. Healthcare analytics at a perioperative surgical home implemented community hospital.
9. Ahsan MM, Luna SA, Siddique Z. Machine-learning-based disease diagnosis: A comprehensive review. InHealthcare 2022 Mar 15 (Vol. 10, No. 3, p. 541). MDPI.
10. Ali ME, Islam MS, Rahman MM, Rahman MM. Functional Outcome of Closed Locked Intramedullary Nailing of The Femoral Shaft Fracture. Asia Pacific Journal of Surgical Advances. 2024 Aug 31;1(1):4-14.
11. Okafor L, Chen AF. Patient satisfaction and total hip arthroplasty: a review. Arthroplasty. 2019 Sep 2;1(1):6.
12. Biswas B, Chowdhury AS, Akter S, Fatema K, Reem CS, Tuhin E, Hasan H. Knowledge and attitude about COVID-19 and importance of diet: A cross-sectional study among Bangladeshi people. Bangladesh Journal of Food and Nutrition. 2024 Aug 16;1(1):04-12.
13. Begum MM, Gupta R, Sunny B, Lutfor ZL. Advancements in Early Detection and Targeted Therapies for Breast Cancer; A Comprehensive Analysis. Asia Pacific Journal of Cancer Research. 2024 Aug 31;1(1):4-13.
14. Wang XD, Lan H, Hu ZX, Li KN, Wang ZH, Luo J, Long XD. SuperPATH minimally invasive approach to total hip arthroplasty of femoral neck fractures in the elderly: preliminary clinical results. Orthopaedic surgery. 2020 Feb;12(1):74-85.
15. Lin DY, Samson AJ, Cehic MG, Brown B, Kaambwa B, Wilson C, Kroon HM, Jaarsma RL. Short-term difference only in reported outcomes (PROMs) after anterior or posterior approach to total hip arthroplasty: a 4-year prospective multi-centre observational study. Journal of Orthopaedic Surgery and Research. 2023 Feb 17;18(1):119.
16. Dourson AJ, Willits A, Raut NG, Kader L, Young E, Jankowski MP, Chidambaran V. Genetic and epigenetic mechanisms influencing acute to chronic postsurgical pain transitions in pediatrics: Preclinical to clinical evidence. Canadian Journal of Pain. 2022 Jun 15;6(2):85-107.
17. Johnson MI, Paley CA, Wittkopf PG, Mulvey MR, Jones G. Characterising the features of 381 clinical studies evaluating transcutaneous electrical nerve stimulation (TENS) for pain relief: a secondary analysis of the meta-TENS study to improve future research. Medicina. 2022 Jun 14;58(6):803.
18. Jianbo J, Ying J, Xinxin L, Lianghao W, Baoqing Y, Rongguang A. Hip hemiarthroplasty for senile femoral neck fractures: minimally invasive SuperPath approach versus traditional posterior approach. Injury. 2019 Aug 1;50(8):1452-9.
19. Mjaaland KE. The anterior approach in total hip arthroplasty: Assessment of the approach and comparison to other approaches.
20. Mei XY, Gong YJ, Safir O, Gross A, Kuzyk P. Long-term outcomes of total hip arthroplasty in patients younger than 55 years: a systematic review of the contemporary literature. Canadian Journal of Surgery. 2019 Aug;62(4):249.
21. Chung YY, Lee SM, Baek SN, Park TG. Direct anterior approach for total hip arthroplasty in the elderly with femoral neck fractures: comparison with conventional posterolateral approach. Clinics in Orthopedic Surgery. 2022 Mar;14(1):35.

22. Haque, M. A., Islam, M. I., & Hasan, H. (2024). Successful Surgical Creation and Management of an Arteriovenous Fistula: A Case Report. *Asia Pacific Journal of Surgical Advances*, *1*(1), 34-38.
23. Hasan, H., Rahman, M. H. ., Haque, M. A., Rahman, M. S. ., Ali, M. S. ., & Sultana, S. . (2024). Nutritional Management in Patients with Chronic Kidney Disease: A Focus on Renal Diet. Asia Pacific Journal of Medical Innovations, 1(1), 34-40.
24. Hussain, M. D., Rahman, M. H., & Ali, N. M. (2024). Investigation of Gauss-Seidel Method for Load Flow Analysis in Smart Grids. Sch J Eng Tech, 5, 169-178.
25. Saad TA, Elbadry A, Salem KH, Kader KF. Conventional versus minimally invasive total hip replacement through the posterior approach. Journal of Arthroscopy and Joint Surgery. 2020 Jan 1;7(1):26-30.

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