

COMPARISON OF MOORE'S (POSTERIOR) APPROACH VS. HARDING (LATERAL) APPROACH IN TOTAL HIP ARTHROPLASTY

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Abstract: *The primary objective of this study was to conduct a comparative analysis between Moore's and Harding's approaches for total hip arthroplasty. A randomized controlled trial was undertaken at the esteemed Department of Orthopaedics, Mayo Hospital, Lahore, from 01-06-2020 to 30-06-2022. The study encompassed individuals of both genders, aged 40 years and above, undergoing total hip arthroplasty for various reasons. These participants were divided into two distinct groups: Group A received treatment through the lateral or Harding's approach, while Group B underwent the posterior or Moore's approach. A comprehensive assessment of diverse outcomes was performed. The total cohort for this study consisted of 60 cases, with each Group containing 30 cases. The average age of the participants was 63.57±9.11 years for Group A and 62.79±8.43 years for Group B, revealing no statistically significant difference (p=0.67) between the two groups. The mean duration of the surgical procedure exhibited variance, with Group A recording a time of 77.31±10.91 minutes and Group B with a shorter duration of 64.41±8.19 minutes (p=0.01). Interestingly, the incidence of recurrence displayed a noteworthy contrast between the approaches. The posterior approach yielded a significantly higher recurrence rate, observed in 9 cases (30%), as opposed to the lateral Group, which exhibited recurrence in 3 cases (10%) (p=0.01). Consequently, these findings conclude that the lateral approach boasts a substantial advantage in minimizing recurrence rates. Conversely, the posterior approach achieves a more efficient mean surgical duration. This investigation establishes the superiority of the lateral approach in reducing the recurrence rate while acknowledging the posterior approach's proficiency in achieving a shorter mean surgical duration. This study not only contributes to the advancement of surgical techniques but also provides valuable insights into clinical decision-making in the realm of total hip arthroplasty.*

Keywords: Moore's, Harding's Approach, THA

Introduction

Hip arthritis is a debilitating condition known for significantly hindering everyday activities due to excruciating pain. Total hip arthroplasty (THA) is a prominent surgical intervention recognized for its potential to alleviate pain, reduce disability, and enhance functional capabilities. Among the available surgical strategies for THA, the choice of approach plays a pivotal role in dictating the procedure's success and the associated risk profile (Chang et al., 1996; Learmonth et al., 2007).

Efforts to forecast procedural effectiveness and gauge functional improvements have led to the development of various assessment tools. In Canada, the Harding approach, commonly called the lateral hip approach, garners preference from 60% of surgeons, closely trailed by Moore's approach, or the posterior hip approach, adopted by 34%. In contrast, the anterior approach is embraced by less than 5% of surgeons (Queen et al., 2011; Varin et al., 2013).

The lateral approach necessitates the surgical release and subsequent repair of the abductor musculature. However, this technique could potentially yield adverse effects on gait mechanics, potentially causing a Trendelenburg gait or compensatory pelvic tilt on the contralateral side. On the flip side, the posterior approach involves releasing and repairing short external rotators, thereby introducing changes to rotatory kinetics. The anterior approach employs a

meticulously selected inter-nervous plane between the sartorius and tensor fascia lata muscles to preserve the surrounding hip musculature. This approach holds promise by circumventing the deficits associated with lateral and posterior approaches, making it a favorable option (Meneghini et al., 2008; Mulliken et al., 1998).

The current analysis comprehensively compares outcomes stemming from Moore's approach and Harding's approach in total hip arthroplasty. The study provides valuable insights into the optimal surgical approach for achieving enhanced outcomes and patient well-being by juxtaposing these two techniques.

Methodology

A randomized controlled trial was meticulously executed at the esteemed Department of Orthopaedics, Mayo Hospital in Lahore, from June 1, 2020, to June 30, 2022. The study's scope encompassed individuals of both genders, exceeding the age threshold of 30 years, who were admitted with the intent of undergoing total hip arthroplasty for diverse reasons. Certain exclusion criteria were applied, leading to the omission of end-organ liver or renal failure cases alongside those immobilized in bed and displaying indicators of deep venous thrombosis.

A simple lottery method was employed to ensure balanced allocation, effectively segregating the cases into two equivalently sized groups. Group A, referred to as Harding's (lateral) approach group, received treatment through the specified technique, while Group B underwent the procedure via Moore's (posterior) approach. Both methodologies utilized a conventional operating room table, positioning the patient in the lateral decubitus stance. The posterior approach was meticulously conducted, involving the anatomical reparation of the short external rotators and the joint capsule to the greater trochanter. Subsequently, a comprehensive follow-up was conducted on these cases, scrutinizing various outcomes encompassing surgery duration, pain perception, blood loss, infection incidence, recurrence rates, and neurological deficits.

For data analysis, SPSS version 25.0 was employed. The collected data, spanning quantitative and qualitative facets, were subjected to a thorough comparison utilizing independent sample t-tests and Chi-square tests. A post-stratification p-value threshold of ≤ 0.05 was established to ascertain statistical significance, thereby guiding the interpretation of the study's findings.

Results

The study involved 60 cases, with 30 in each Group. The participants' average age was 63.57 ± 9.11 years in group A and 62.79 ± 8.43 years in group B, with no significant difference between the two groups ($p=0.67$). Similarly, the mean BMI was 25.46 ± 2.23 in Group A and 26.71 ± 3.09 in Group B, with no significant difference between the two groups ($p=0.57$). There were 17 (56.67%) males in Group A and 16 (53.33%) males in Group B, with no significant difference between the two groups ($p=0.93$), as shown in Table I and Figure I. The mean duration of surgery was 77.31 ± 10.91 minutes in group A and 64.41 ± 8.19 minutes in group B, with a statistically significant difference between the two groups ($p=0.01$), as shown in Table II. The two groups had no significant difference in terms of infection and neurological deficit. However, the posterior approach showed a significantly higher recurrence rate, with 9 (30%) cases compared to 3 (10%) cases in the lateral Group ($p=0.01$), as shown in Table III.

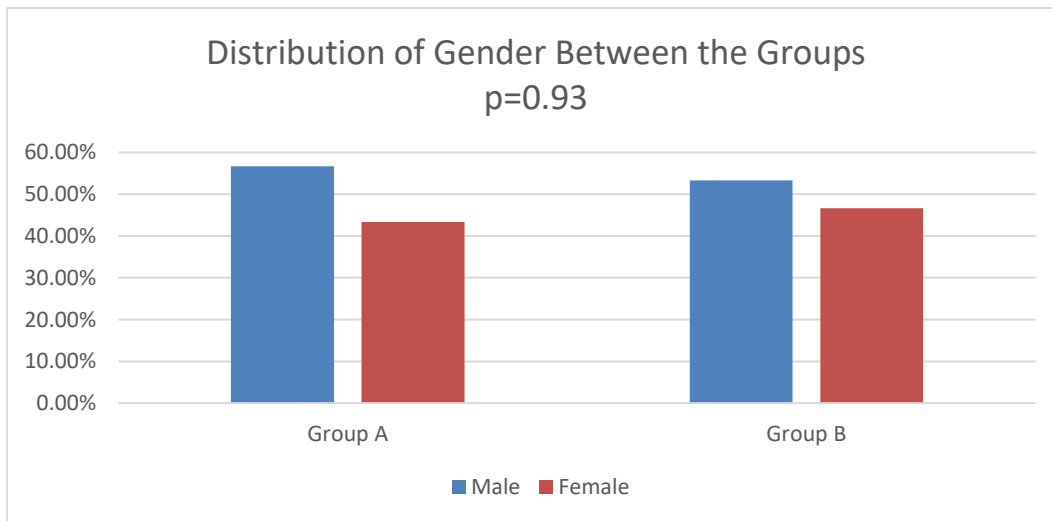


Figure 1: Distribution of genders in the study population

Table I. Study variables (30 each)

Demographics	Group A	Group B	P- Value
	Mean±SD	Mean±SD	
Age	63.57±9.11	62.79±8.43	0.67
Duration of symptoms	2.03±0.56	2.19±0.71	0.73
BMI	25.46±2.23	26.71±3.09	0.57
Male	17 (56.67%)	16 (53.33%)	0.93
Female	13(43.33%)	14 (46.67%)	
Right knee	15 (50%)	14 (46.67%)	1.0
Left knee	15 (50%)	16 (53.33%)	

Table II. Comparison of quantitative outcome variables

Variables	Group		P-Value
	A (Lateral)	B (Posterior)	
Duration of surgery	77.31±10.91	64.41±8.19	0.01
Pain	1.41±0.37	1.19±0.42	0.21
Blood loss	175.21±45.31	159.57±50.41	0.13

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Table III. Comparison of qualitative outcome variables

Variables	Group		P-Value
	A (Lateral)	B (Posterior)	
Surgical site infection	1 (3.33%)	2 (6.67%)	0.46
Neurological compromise	0 (0%)	0 (0%)	-
Recurrence	3 (10%)	9 (30%)	0.01

Discussion

Total Hip Arthroplasty (THA) is a frequent intervention within the elderly demographic, addressing fractures and arthritic changes often associated with osteoporosis-related fractures. This procedure yields substantial functional enhancement and mitigates symptomatology significantly. The posterior and lateral methodologies hold prominent positions among the array of surgical approaches available. However, concerns revolve around procedural complications and recurrence rates, pivotal factors influencing clinical decision-making (Pospischill et al., 2010; Rathod et al., 2014).

In this particular study, both surgical techniques demonstrated commendably low complication rates. Nonetheless, a notable distinction surfaced: the lateral approach necessitated a longer mean surgery duration, while the posterior approach exhibited a heightened recurrence rate. Specifically, the mean surgery duration for the lateral approach was recorded at 77.31 ± 10.91 minutes, contrasting with the 64.41 ± 8.19 minutes recorded for the posterior approach ($p = 0.01$). The recurrence rate followed a similar pattern, with 30% of cases in the lateral approach group encountering recurrence compared to 10% in the posterior approach group ($p = 0.01$).

These findings echo the results of previous investigations. A study by Nachiketani KD and colleagues highlighted the direct lateral approach's accessibility to the hip joint and its effective exposure of the acetabulum and proximal femur (Dore et al., 2017). Furthermore, this study reported a complete absence of recurrence cases in patients subjected to the lateral approach. Similarly, Jian Li and associates observed that the lateral approach enhanced surgical field access and reduced long-term pain (Li et al., 2013).

Oscar Skoogh, et al.'s research investigated long-term outcomes, revealing a significantly higher recurrence risk with the posterior approach than with the lateral Hardinge approach (Skoogh et al., 2019). Another study by Gharanzade et al., which examined 134 patients who underwent primary hip arthroplasty, found that both the lateral and posterolateral approaches yielded similar results. Yet, disparities emerged regarding infections, DVT, proximal femur fractures, and limb length discrepancies (Gharanzade et al., 2016). The overarching conclusion was that both approaches facilitated effective pain reduction and restored function post-total hip arthroplasty.

Conclusion

In conclusion, the Lateral approach is significantly better regarding recurrence rate, while the posterior approach is better for the mean duration of surgery.

Declarations

Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate

Not applicable

Consent for publication

Not applicable

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Not applicable

Conflict of interest

The authors declared an absence of conflict of interest.

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