Original Article

Comparison of Hospital Stay Length with Day-Of-Surgery Mobilization Versus Control after Cemented Total Hip Arthroplasty

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ABSTRACT

Objective: To compare the length of hospital, stay in patients undergoing cemented total hip arthroplasty who were mobilized on the day of surgery versus those mobilized on the first postoperative day.

Study Design: Randomized controlled trial study

Place and Duration of Study: This study was conducted at the Department of Orthopedic Surgery, Unit I, King Edward Medical University/Mayo Hospital, Lahore, Pakistan, from January 2025 to June 2025.

Methods: A total of 180 patients aged 40–70 years undergoing cemented total hip arthroplasty were randomly allocated into two groups (n=90 each). Group A patients were mobilized on the day of surgery, while Group B patients were mobilized on the first postoperative day. Hospital stay was recorded in hours from surgery to discharge. Data were analyzed using SPSS version 21, and an independent sample t-test was applied.

Results: The mean age was 56.36±8.27 years in the early mobilization group and 55.49±9.17 years in the control group, with females constituting 63.9% of participants. The overall mean hospital stay was 64.52 ± 9.43 hours. Patients mobilized on the day of surgery had a significantly shorter hospital stay (60.82±7.61 hours) compared with the control group (68.21±9.65 hours) (p=0.001).

Conclusion: Day-of-surgery mobilization after cemented total hip arthroplasty significantly reduces hospital length of stay compared with conventional postoperative mobilization.

Key Words: Total hip arthroplasty, Early mobilization, Hospital stay, Rehabilitation

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INTRODUCTION

One of the most successful and widely practiced orthopedic surgeries globally is the total hip arthroplasty (THA), which offers significant benefits in pain relief, mobility, and overall quality of life to patients with advanced hip disease[1,2]. The THA, which has been dubbed the operation of the century, has shown better functional results than non-surgical management[3].

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The prevalence of THA in the world has been on the rise in the past ten years by a wide margin because of aging societies and the continued growth of hip osteoarthritis[4]. Among fixation methods, cemented THA is common, especially in older patients with osteoporotic bone, where cemented femoral stems provide reliable fixation with a reduced incidence of periprosthetic fracture compared with cementless implants[5,6].

Hospital length of stay (LOS) is a valuable outcome that influences healthcare costs and patient recovery after THA[7,8]. One of the major elements of the enhanced recovery after surgery (ERAS) pathways is early mobilization, and it has been suggested that early mobilization after surgery can reduce length of stay without increasing complications[7,9]. Quick rehabilitation programs that begin with mobilization immediately after surgery have been associated with significant decreases in LOS and functional recovery outcomes[2]. A modest yet statistically significant reduction in hospital stay has also been attributed to early physiotherapy intervention, which is consistent with the clinical and economic advantages of day-of-surgery (DOS) mobilization strategies[10].

Although it has been well-proven in several countries for early mobilization following THA, it has not been widely practiced in Pakistan. The Pakistani healthcare system is based on the lack of resources, such as hospital beds, and the high number of patients, which is why long-term hospitalization is especially problematic[2,11].

Because most healthcare expenses are borne directly by patients and their families, reducing inpatient stays is clinically and economically important (6). Demonstrating the effectiveness of DOS mobilization in reducing LOS after cemented THA may therefore contribute to improved perioperative care pathways and more efficient resource utilization in Pakistani hospitals. Thus, this study aimed to compare the length of hospital stay among patients undergoing cemented total hip arthroplasty who were mobilized on the day of surgery with those mobilized on the first postoperative day.

METHODS

This randomized controlled trial was conducted in the Department of Orthopedic Surgery, Unit I, at Mayo Hospital, Lahore, over six months, from January 2025 to June 2025. A total of 180 patients aged 40–70 years, of either gender, undergoing cemented total hip arthroplasty were enrolled using a non-probability, consecutive sampling technique. Patients with open fractures, comminuted fractures on radiography, multiple fractures, bilateral hip involvement, delayed presentation beyond 72 hours, or underlying metabolic bone disorders such as osteoporosis, osteomalacia, osteoarthritis, or rheumatoid arthritis were excluded from the study. All participants provided written informed consent before enrolling in the study, and baseline demographic and clinical variables, such as age, gender, body mass index (BMI), and side of surgery, were collected using a structured data collection form.

All the surgical procedures were conducted by the same orthopedic surgeon in general anesthesia and regular surgical procedures to allow uniformity. The transfer of patients to the orthopedic ward was done to monitor and provide overall care to the patients.

The participants were randomly allocated in two equal groups through the lottery approach. Group A (early mobilization group): patients were mobilized on the day of surgery in case they are medically stable. The mobilization of the Group B (control group) was started on the first postoperative day as a normal postoperative practice. The primary time-based outcome measure was hospital stay, which was measured in hours of surgery to discharge. Both parties were standardized on discharge criteria which included clinical stability, ambulation (assisted) and oral medication tolerance.

Data analysis and entry were done using Statistical Package of Social Sciences (SPSS) version 21. The age, BMI and number of hospital stays are quantitative variables that were presented as standard deviations and means. The categorical variables, including gender and surgical side, were, on the contrary, expressed in frequency and percentages. The independent samples t-test was applied to test the difference of the mean hospital stay of the two groups. Stratified analyses were done to determine the effects of the possible confounders, such as age, gender, BMI category, and surgical side. The p-value of 0.05 was considered as significant.

RESULTS

This randomized controlled trial enrolled 180 patients undergoing cemented total hip arthroplasty (THA). The average age of patients in the early mobilization group was 56.36±8.27, and the average age of the control group was 55.49±9.17. The study was predominantly female, with 63.9% of cases. The two groups showed a similar distribution of body mass index (BMI) and surgical side, indicating similar baseline characteristics. (Table 1)

Table No.1: Baseline Demographic Characteristics of the Study Population

Variable	Early Mobilization (n=90)	Control (n=90)	Total (n=180)
Age (years), Mean ± SD	56.36 ± 8.27	55.49 ± 9.17	—
BMI (kg/m²), Mean ± SD	26.98 ± 4.57	26.98 ± 4.57	—
Male, n (%)	28 (31.1%)	37 (41.1%)	65 (36.1%)
Female, n (%)	62 (68.9%)	53 (58.9%)	115 (63.9%)
Left side surgery, n (%)	51 (56.7%)	51 (56.7%)	102 (56.7%)
Right side surgery, n (%)	39 (43.3%)	39 (43.3%)	78 (43.3%)

The mean total hospital stay was 64.52 hours, with a standard deviation of 9.43 hours, across all participants (48-84 hours). (Table 2)

Table No. 2: Descriptive Statistics of Hospital Stay

Variable	Value
Number of patients	180
Mean hospital stay (hours)	64.52
Standard deviation	9.43
Minimum stay (hours)	48
Maximum stay (hours)	84

A comparison between the study groups demonstrated that patients mobilized on the day of surgery had a shorter hospital stay (60.82±7.61 hours) than those mobilized after the first postoperative day (68.21±9.65 hours). The difference was statistically significant (p=0.001). (Table 3)

Table No. 3: Comparison of Mean Hospital Stay Between Study Groups

Variable	Early Mobilization (n=90)	Control (n=90)	p-value
Hospital stays (hours), Mean ± SD	60.82 ± 7.61	68.21 ± 9.65	0.001

The further stratified analysis revealed that early mobilization was consistently associated with a shorter hospital stay across subgroups of demographics and clinical conditions, including age, gender, surgical side, and body mass index. The decline in hospital stay was statistically significant in the majority of the strata. (Table 4)

Table No.4: Stratified Analysis of Hospital Stay Between Study Groups

Stratification Variable	Category	Early Mobilization (Mean ± SD hours)	Control (Mean ± SD hours)	p-value
Age	≤60 years	60.63 ± 7.81	69.73 ± 9.54	0.001
	>60 years	61.19 ± 7.32	65.32 ± 9.34	0.058
Gender	Male	59.68 ± 6.97	68.41 ± 9.32	0.001
	Female	61.34 ± 7.88	68.08 ± 9.97	0.001
Surgical Side	Left	61.31 ± 7.98	66.14 ± 9.87	0.008
	Right	60.18 ± 7.14	70.92 ± 8.76	0.001
BMI	Normal	60.50 ± 7.97	67.85 ± 10.35	0.002
	Abnormal	61.02 ± 7.44	68.43 ± 9.29	0.001

DISCUSSION

The current randomized controlled trial showed that day-of-surgery (DOS) mobilization was more effective than traditional mobilization procedures, with a reduced hospital length of stay (60.82±7.61 hours vs. 68.21±9.65 hours; p=0.001). The obtained results are consistent with the growing body of international literature supporting early mobilization following joint replacement surgery.

According to Elmoghazy et al., same-day mobilization and fast-track rehabilitation following THA demonstrated a significant reduction in the LOS (4.5 vs. 7.8 days) and enhanced functional outcomes[2]. Likewise, Bristol discovered that patients who ambulated in less than eight hours after surgery stayed in the hospital much shorter in comparison to patients who ambulated late[12]. Yakkanti et al. further found that postoperative mobilization on day 0 reduced LOS and increased the number of home-discharge patients after arthroplasty surgeries[13].

Perioperative pathways based on ERAS place a high priority on early mobilization. According to a report by Wainwright and Immins, ERAS programs have helped decrease LOS in joint replacement surgery without increasing the risk of complications[14]. The ERAS Society recommendation also reinforces the idea of early mobilization as one of the primary interventions that enhances overall recovery and minimizes the negative physiological consequences associated with long-term bed rest[15]. Bontea et al. have also shown that early mobilization significantly reduces LOS after THA[1].

Other studies support the clinical advantages of early postoperative ambulation. According to Stock et al., postoperative day-0 physiotherapy positively influenced ambulation distance and reduced LOS[16]. Siletz et al. found that delayed mobilization was a high-risk factor for complications and increased hospital stay[17], and Fisher et al. found that inability to ambulate immediately after hip surgery was associated with longer hospitalization and adverse outcomes[18].

Systematic reviews and cohort studies also support these. Nursalam et al. found that shortened LOS was the most reliable benefit of early mobilization in postoperative lower-extremity surgery[19]. In contrast, Huang et al. found similar advantages for postoperative recovery with early ambulation[20]. Another study by Romano et al. revealed that fast-track protocols were associated with remarkable increases in early ambulation rates and shortened hospital stays following joint replacement[21]. According to Thwin et al., patients who received physiotherapy within 24 hours of surgery also had shorter LOS[22].

The benefit of DOS mobilization was similar across sex, BMI, and surgical-side subgroups in the present study, suggesting the generalizability of the intervention. This is consistent with the assessment by Rodriguez et al., who found that age, sex, and BMI did not significantly influence early discharge outcomes following THA[23].

The research was carried out at a single tertiary care center, with a relatively short follow-up, which may limit the extent to which the results can be generalized. Moreover, other postoperative outcomes, such as complications, functional recovery, and long-term patient satisfaction, were not considered.

CONCLUSION

Day-of-surgery mobilization after cemented total hip arthroplasty was associated with a significantly shorter hospital stay compared with next-day mobilization, suggesting that early ambulation may improve recovery and hospital efficiency.

Author's Contribution:

Concept & Design or acquisition of analysis or interpretation of data:	Adeel Hameed, Syed Imran Haider, Zahid Hafeez
Drafting or Revising Critically:	Muhammad Ziad, Rehman Azmat, Ali Ammad
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Agreement to accountable for all aspects of work:	All the above authors

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