

Prosthesis Dislocation Following Total Hip Arthroplasty; A Comparison of Posterior and Lateral Surgical Approach

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ABSTRACT

Introduction: Joint function and integrity can be restored by various techniques and the surgical approach which is used for this restoration is called as arthroplasty. Principal methods for Total Hip Arthroplasty are Direct and Posterior lateral approaches. The most convenient to perform is posterior approach however, dislocation have been reported in most of cases. The rates of hip dislocation may be decreased by direct lateral approach as it provides cup positioning in better way. Direct lateral approach may be considered widely in future if the results of this study show relative benefits.

Objectives: To compare posterior surgical approach with direct lateral approach in patients undergoing total hip arthroplasty in terms of prosthesis dislocation. **Subjects and Methods:** This prospective study was performed at (Punjab Medical College) PMC and various hospitals for 3 years from 1-07-2014 to 30-06-2017. A total of 46 patients with Hip Osteoarthritis were included in the study. All patients were diagnosed clinically and confirmed with radiographic findings. 23 patients underwent Hip Arthroplasty with posterior approach and lateral approach was used in 23 patients. Outcome in terms of prosthesis dislocation was compared in both the groups. **Results:** In group A, mean age was 55.19 (years) with a standard deviation (Std dev) of 6.705. In group B it was 53.72 ± 8.541 in terms of age. Prosthesis dislocation in group A was 34.7% and 13.4% in group B. P value was 0.001.

Conclusion: Outcome of Direct lateral surgical approach is better than Posterior surgical approach in terms of prosthesis dislocation in patients undergoing Total Hip Arthroplasty.

Keywords: Total Hip Arthroplasty, Surgical Approach, Hemiarthroplasty

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INTRODUCTION

The most successful and common treatment for osteoarthritis of the hip is total hip arthroplasty. In recent decades, demographic tendency in Pakistan suggest that there is a remarkable increase in the demand for total hip replacement surgery.

Joints are affected by a variety of arthritic changes. Osteoarthritis also called joint disease, is cushion in a joint or cartilage loss. Both these changes induce severe pain which is an indication for considering joint replacement. This disorder is more frequent in old age. The treatment of hip arthritis have been attributed to acetyl salicylic acid in the mid 1800s by use of NSAID (non-steroidal anti-inflammatory) drugs.

Arthroplasty, a surgical procedure used to restore the function of a joint is very prominent now a day. In orthopedic surgery, one of the most successful procedures is THA. It improved the life of patients suffering from osteoarthritis of the hip. Principal methods for Total Hip Arthroplasty are Direct and Posterior lateral approaches. The most convenient to perform is posterior approach however, dislocation have been reported in most of cases.¹ The rates of hip dislocation may be decreased by direct lateral approach as it provides cup positioning in better way.² Direct lateral approach may be considered widely in future.

This study is meant to compare posterior surgical approach with lateral approach for total hip arthroplasty in patients with osteoarthritis in terms of post-operative dislocation.

Total hip arthroplasty using lateral approach may be used in future if the results of this study are significant.

OBJECTIVES

To compare the frequency of prosthesis dislocation between posterior surgical approach and direct lateral approach in patients undergoing total hip arthroplasty.

METHODOLOGY

Study Design: Prospective study

Place of Study: Department of Orthopedics and Traumatology Punjab Medical College and Affiliated Hospitals, Faisalabad

Duration of Study: 01-07-2014 to 30-06-2017

This prospective study was held at the Department of Orthopedics and Traumatology Punjab Medical College and Affiliated Hospitals from 01-07-2014 to 30-06-2017. Total of 46 patients participated in this study (23 in each group). Simple random sampling technique was used. Patients 25 years old and above belonging from either sex with osteoarthritis hip (Primary and Secondary) undergoing Hip Arthroplasty were included. Exclusion Criteria were, septic arthritis, failed total hip arthroplasty, neurological injuries around hip.

Data Collection Procedures

After approval from the Institutional Ethical Review Committee, Punjab Medical College Faisalabad, patients above 25 years of age, satisfying inclusion criteria were selected. All the

participants gave written informed consent keeping in view the risks and benefits of this research work. Consultant surgeons performed surgery. Variables were recorded in protocol proforma by trainee researcher. A detailed history, Physical examination was performed. Confirmed the diagnosis by X-ray. All the subjects were operated. At the time of induction, pre-operative antibiotic and third generation cephalosporin's were given. Patients were discharged when deemed fit and followed for 6 weeks to see any signs for prosthesis dislocation. For postoperative management, contact numbers of patients were taken. The collected data was shifted to the proforma designed for research purpose and attached here with.

Statistical Analysis

For analysis of data, computer software SPSS (Latest Version) was used to trace the percentages and frequencies of study variables. Quantitative variables were estimated by knowing its mean \pm SD. For all the quantitative variables like gender and dislocation, percentage was calculated. Chi-square was applied to make comparison of dislocation between two groups. P value less than 0.05 was considered significant.

RESULTS

46 patients (each group having 23) were included in the study period of three years from 1-07-2014 to 30-06-2017. Age limit was 25-60 (years) with a mean of 54.45 years and SD of 7.694 (Table1). Age in group A was 55.19 ± 8.87 . Age of patients in group B was 53.72 ± 8.08 (Table 2). 17.3% of patients in both groups were between 25-34 years. 26.08% of patients in both groups were between 35-44 years. 15.2% of patients in both groups were between 45-54 and 41.3% were above 55 (Table 4). 8 patients in group A had prosthesis dislocation (34.7%) and 3 patients had prosthesis dislocation in group B (13.4%). There was remarkable difference between the two groups ($P=0.001$) (Table 5).

Table 1: Descriptive statistics of age

	N	Minimum	Maximum	Mean	Std. Deviation
patient age	46	30	60	54.45	7.694

Table 2: Descriptive statistics of age in each group

Surgical Approach	N	Minimum	Maximum	Mean	Std. Deviation
Posterior	23	32	60	55.19	6.705
Direct Lateral	23	30	60	53.72	8.541

Table 3: Gender distribution in each group

		Surgical Approach		Total
		Posterior	Direct Lateral	
Sex	Male	17	15	32
		73.91%	65.21%	69.56%
Female		6	8	14
		26.08%	34.7%	30.43%
Total		23	23	46

Chi-square = 0.143, p-value = 0.705

Table 4: Age distribution among two groups

		Surgical Approach		Total
		Posterior	Direct Lateral	
age distribution	25-34 years	3	5	8
		13.04%	21.8%	17.3%
	35-44 years	4	8	12
		17.4%	34.7%	26.08%
45-54 years		5	2	7
		21.8%	8.7%	15.2%
> 55 years		11	8	19
		47.9%	34.8%	41.30%
Total		23	23	46

Chi-square = 2.045, p-value = 0.563

Table 5: Frequency of prosthesis dislocation between two groups

		Surgical Approach		Total
		Posterior	Direct Lateral	
Prosthesis Dislocation	Yes	8	3	11
		34.7%	13.4%	23.9%
No		15	20	35
		65.21%	86.9%	76.08%
Total		23	23	46

Chi-square = 11.407, p-value = 0.001

DISCUSSION

This study was meant to compare posterior surgical approach with lateral approach for total hip arthroplasty in patients with osteoarthritis in terms of post-operative dislocation. There are very few studies done to compare both the approaches and many studies show conflicting results: Bruyere et al. showed dislocation rate of 5.3 % with posterior approach and 2% with lateral approach.³ Pierce et al. displayed dislocation rate of 3.5 % and 1.5% with post and lateral app respectively.⁴ Kim et al. exhibited a dislocation rate of 3 % with post approach and 2.5 % with lateral approach.⁵ Skoldenberg et al. and Ramesh came up with a rate of prosthesis dislocation of 1% in lateral group and 9% in posterior group.⁶⁻⁷

Picado et al. mentioned the damage to the superior gluteal nerve after the Hardinge approach to the hip which was higher as compared to posterior approach.⁸

After total hip replacement, abductor function, trochanteric inflammation affect the patient's hip function. Hemiarthroplasty is better approach for the subjects who have neck fractures. Anterolateral approach had a lower risk of emendation due to dislocation if compared with the posterolateral approach shown by Garellick et al.⁹⁻¹⁰

Out of the 11 patients who were reported with dislocations during this study, 4 were converted to excision arthroplasty, 3 underwent implant revision and 4 patients experienced more dislocations. Because of multiple comorbidities the alternatives for revision surgery on a dislocating hip such as cup revision, stem revision, or changing to a larger articulation is not possible. Therefore, the consequences for the dislocating hip fracture patient can be to live with a seriously affecting excision

arthroplasty or low quality of life due to a series of dislocations described by Enocson et al.¹¹

Kwon et al.¹² described that the dislocation rate in patients with osteoarthritis from 4%-0.5% decreases when repaired the capsule. In patients with a femoral neck fracture, the dislocation rate for posterolateral approach was 9% and 13%, respectively, for Hemiarthroplasty and 12% and 14% for Total Hip Arthroplasty shown by Enocson et al.¹³ Enocson et al.¹⁴ Therefore, the posterior repair offers only a slight protection against dislocation.

All the complications related to this dislocation start within three months after. It was concluded that follow-up time have no influence on present findings.

Conclusively, one of the serious threats to recovery is dislocation. The normal functioning of the patient undergoing hip arthroplasty is directly affected by various associated factors. A unanimous policy must be made for surgical approach of these patients, which will lead to remarkable decline in dislocation rate. There are few restrictions to current study like sample size was fairly small. A large sample size is recommended for such follow up studies.

CONCLUSION

Direct lateral surgical approach is superior to Posterior surgical approach in terms of prosthesis dislocation in patients undergoing Total Hip Arthroplasty.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

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