An Audit of Post-Operative Hospital Stay and Complications of Total Hip Replacement in A Tertiarty Care Hospital.

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Authorship and contribution Declaration:
Each author of this article fulfilled ALL 4 Criteria of Authorship:
1. Conception and design or acquisition of data, or analysis & interpretation of data.
2. Drafting the manuscript or revising it critically for important intellectual content.
3. Final approval of the version for publication.
4. All authors agree to be responsible for all aspects of their research work.

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ABSTRACT

Objective: To determine the post operative hospital stay and in-hospital complications of total hip replacement (THR) in Lady Reading Hospital Peshawar.

Methods: This Descriptive study was conducted in Department of Orthopedic and Trauma, Medical Teaching Institute Lady Reading Hospital Peshawar from 21st February 2020 to 21st October 2021. All patients with Osteoarthritis hip fulfilling the inclusion criteria and operated with cemented total hip arthroplasty were included in this study. Risk Assessment and Prediction Tool (RAPT) Score was calculated pre-operatively for every patient and hospital stay was arranged accordingly and documented any in hospital complications. Patients with RAPT score of less than 6 were labelled as high risk,6 to 9 score medium risk and more than 9 score were labelled as low risk for in-hospital rehabilitation.

Results: In this study 39 patients were included**.** Male patients were 26(66.7%) and female were 13(33.3%). The mean age was 63.05± 4.359 years. Left sided hip was operated in 17 (43.6%) patients and right side in 22(56.4%) patients. Pre-operative Risk Assessment and Prediction Tool (RAPT) Score was less than 6 in 3(7.7%) patients, 6 to 9 in 16(41.0%) and more than 9 in 20(51.3%) patients. The mean post operative hospital stay was 4.28±1.65 days(range 2 to 7 days).The mean post operative hospital stay of three days was noted in 11(28.2%) patients, five days in 8(20.5%) and six days in 7(17.9%). There were 2(5.12%) cases of superficial surgical site infection.

Conclusion: The mean post operative hospital stay was short and in-hospital complications were minimum in our series. Preoperative assessment with Risk Assessment and Prediction Tool (RAPT) Score predicted hospital stay accurately in majority of our patients,

Keywords: Arthroplasty, Discharge, Hip, Hospitalization, In-hospital, Length of stay, Risk Assessment and Prediction Tool.

This article may be cited as: Inam M, Khan I, Ihsanullah, Iqbal J, Shabir M. An Audit of Post Operative Hospital Stay and Complications of Total Hip Replacement in A Tertiarty Care Hospital. J Pak Orthop Assoc 2022;34(1): 8-11.

INTRODUCTION

In elderly patients the weight bearing joints get painful due to osteoarthritis and fragility fracture are common due to poor bone quality.[1] In either case the patient needs some intervention to relieve his pain and to regain mobility.[2] Hip fractures can be treated with fixation or with arthroplasty while hip osteoarthritis is treated only with arthroplasty.[3,4] Life style modification is very important for a successful total hip replacement. Failure to comply with post operative instructions can lead to post operative dislocation.[5] To minimize dislocation the operating surgeon must use meticulous surgical technique and appropriate surgical approach.[6] Since dual mobility and constrained artificial joints are expensive therefore conventional prosthesis are more frequently used.[7] Patients strictly following post operative rehabilitation protocols have negligible dislocation rates.[8] Many assessment tools can be used preoperatively to predict post operative hospitalization and thus reduces the complication rate.[9] One such tool is Risk Assessment and

Prediction Tool (RAPT)[4,10] which is scored preoperatively to predict post operative hospital stay and any complication thereafter.

Since THR is a major surgery with expensive implants and without knowing the tentative hospital stay, rehabilitation and complication rate the surgery can be more expensive than expected. In this study we utilized RAPT score to predict hospital stay and a decision tool for discharge home and also determined the in-hospital complications if any in patients operated with cemented THR. The objective of our study was to determine the post operative hospital stay and in-hospital complications of total hip replacement(THR) in Lady Reading Hospital Peshawar.

METHODS

We conducted this Descriptive study in Department of Orthopedic and Trauma Medical Teaching Institute Lady Reading Hospital Peshawar from 21st February 2020 to 21st October 2021.All patients of either gender and age with primary osteoarthritis of the hip diagnosed clinically and confirmed with radiograph of the hip taken in anteroposterior and lateral projection were included. Patients with revision arthroplasty and patients of osteoarthritis hip with other pathologies requiring mandatory surgical interventions were excluded. The study protocols were approved by the ethical Committee of our hospital. Informed written consent was taken from all participants. In the included patients complete history, physical examination and relevant investigations were ordered. Preoperative all the patient were evaluated with Risk Assessment and Prediction Tool (RAPT)[10] and categorized into high risk(Score <6), medium risk(Score 6 to 9) and low risk group(Score>9). RAPT includes age of the patient, gender, gait aid used, pre operative walking distance, helper needed and living alone or with others. Total RAPT score is 12. If the score is less than 6 (High Risk Group) then extended hospitalization is needed, if the score is between 6 to 9(Medium Risk Group) then rehabilitation is needed at home while if the score is more than 9(Low Risk Group) then early discharge without any rehabilitation can be done.

All the patients were operated under spinal or general anaesthesia with direct lateral approach and cemented arthroplasty was performed following uniform standard surgical technique in all cases. Post operatively a pillow was put on the outer side of limb to avoid external rotation and hip flexion for 24 hours. Pre and post operative intravenous antibiotics (Cefoperazone + sulbactum 2 grams)were administered as per hospital protocol. Anterioposterior and lateral radiographs were taken for assessing the position of cup and stem. On first post operative day every patient was mobilized by the physiotherapist and walking was allowed with the help of Zimmer frame to avoid fall. All the patients were instructed to avoid dislocation. Patients were discharged home as per RAPT score.

All the data collected with the help of a proforma and analyzed with SPSS version 23. Quantitative data was presented as frequency and percentages while qualitative data as mean and standard deviation. Data is presented in table where necessary.

RESULTS

We operated 39 patients of osteoarthritis hip with cemented THR. Male patients were 26(66.7%) and female were 13(33.3%). The mean age was 63.05± 4.359 years(range 55 to 70 years). Left sided hip was affected in 17 (43.6%) patients and right side in 22(56.4%) patients. Majority(51.3%,n=20) of our patients were low risk followed by medium risk(41.0%,n=16) and high risk(7.7%,n=3). The mean post operative hospital stay was 4.28±1.65 days(range 2 to 7 days) as shown in table I.

Table I: Length of Post operative hospital stay in our study.

In Hospital stay in Days	Number of patients	Percentage
2	6	15.4%
3	11	28.2%
4	3	7.7%
5	8	20.5%
6	7	17.9%
7	4	10.3%
Total	39	100.0%

The pre operative RAPT score had predicted that 3(7.7%) patients would need prolonged hospital stay while we noted that 4(10.3%) patients had maximum(7 days) length of hospital stay in our study. This was because of the fact that 2(5.12%) patients had superficial surgical site infection and had prolonged hospital stay. The infection was subsided with antibiotics and dressings. The RAPT score predicted that 20(51.3%) patients would have low risk(>9 score) and we also noted that 20(51.3%) patients had hospital stay of 2 to 4 days. Medium risk patients should have been 16(41.0%) as predicted by RAPT score while we recorded hospital stay of 5 to 6 days in 15(38.4%) patients. Overall the predicted

value of RAPT score was 97.4%.No in-hospital mortality was recorded.

DISCUSSION

Risk Assessment and Prediction Tool (RAPT) Score has been utilized by many authors to predict post operative hospital stay of arthroplasty patients in order to planned safe surgery, accurately allocate resources and encourage early discharge of patients from hospital. Hansen[11] studied 3,213 patient of arthroplasties and showed that RAPT score had an accurate prediction for patients discharge disposition. He found that there was 78 % overall predictive accuracy but for hip arthroplasty it was 80%. The predictive accuracy of RAPT was more than 90% of the score of < 6 that had been sent to inpatient rehabilitation center and score > 10 that had been sent to home while it was lowest for scores between 7 and 10.This is comparable to our study. Bozic [12] had compared the hospital cost for primary versus revision arthroplasties in term of in-hospital stay and found that revision arthroplasties had higher cost and in patient stay. He concluded that preoperative risk assessment for arthroplasty can minimize higher resource utilization of the hospital as well as complication rate.

In our study only 7.7% patients needed inpatient rehabilitation. Bozic and Wagie[13] studied 7818 patients and found that 29% of the high risk patients with score of less than six were discharged to inpatient rehabilitation center after surgery. Those patients who were at high high risk and were send to inpatient rehabilitation center had advance age, higher ASA grade, insured patients, and female patients. Another study by Tan *et al* [14] with 569 patients revealed that RAPT score had high significance for predicting the hospital stay following arthroplasty ($R = 0.24$, $P < 0.001$); the shorter inpatient stay had the highest the RAPT score which is comparable to our study. Tan found the predictive accuracy of RAPT was 85% and concluded that those patients who wanted to be discharge home had higher RAPT score. (OR 9.79, 95% CI 5.07 to 18.89, $P < 0.001$). The predictive accuracy of our study was 97.4 %. Coudeyre [15] studied 134 patients of hip replacement for predictive outcome of surgery in which it was found that RAPT score was useful tool in postoperative decision for patient discharge. Dibra[16] retrospectively analyzed the data of 1024 patients of THR and documented that the overall predicative accuracy of RAPT score was 88%. Cohen and Reid[17] analyzed the data of 245 THRs and noted the mean hospital stay of 1.82 days and the predictive accuracy of RAPT was 92%.

Alshahwani and colleagues[18] collected the data of 545 patients of primary hip and knee arthroplasty and noted that average length of stay was ≤3 days in majority of patients irrespective of risk assessment by RAPT score. These authors were of the opinion that RAPT score could predict discharge to home accurately in only 31.9% patients. These authors concluded that RAPT was not an accurate tool for prediction of discharge and alternative tools should be designed.

There were few limitations of our study. The design of our study was descriptive and sample size was small. We included cemented THR done for osteoarthritis only. Further studies addressing these limitation are recommended to confirm our results.

CONCLUSION

The mean post operative hospital stay was short and in-hospital complications were minimum in our series. Preoperative assessment with Risk Assessment and Prediction Tool (RAPT) Score predicted hospital stay accurately in majority of our patients. Accurate preoperative assessment of patients undergoing THR not only reduced the complication rates but also reduced the economic burden on hospital as well as on the patients. Clinical scoring of a patient that undergo THR surgery can allow the patient as well as the surgeon to focus on those aspects that need special attention. The preoperative scoring system allows the patients to undergo safe surgery and achieve appropriate rehabilitation care postoperatively.

Conflict of Interest: None

Grants/Funding: None

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