

Research Article

Evaluate the results of Noncemented Total Hip Replacement (THR)

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Abstract

Introduction: Total Hip Replacement is one of the most successful orthopaedic procedures performed now-a-days. A British orthopaedic surgeon named Charnley first introduced with this treatment. A noncemented joint prosthesis, sometimes called a press-fit prosthesis, is specially textured to allow the bone to grow onto it and adhere to it over time.

Aim of the study: The study aims to determine the results and the complications associated with non-cemented total hip replacement (THR).

Methods: This cross-sectional study was conducted in the Department of Orthopaedic Surgery, National

Institute of Traumatology and Orthopedic Rehabilitation (NITOR), Dhaka, Bangladesh during the period from February 2016 to February 2018. Sample size was 35. Statistical analysis of the results was done by computer software devised in the statistical packages for social scientist (SPSS-25) and MS excel-16.

Results: In total 35 patients in this cross-sectional study from the total of 35 patients we found most of the patients were male 29(82.86%) and female 6(17.14%). Most of the patients found in 31-40 age group 14(40.00%), then 41-50 and that was 11(31.43%) respectively 5(14.29%) found in 21-30, 11(31.43%) in 41-50 and 4(11.43%) in >61. So most of them found excellent on the score of 90-100, 20(57.14%), then 11(31.4%) was 80-89 score as good, 3(8.6%) found in 70-79 score fair and below <70 score found 1(2.9%) as poor.

Conclusion: There is many reasons that may have caused surgeons in the past to move away from the use of cemented implants have been found to be unwarranted and the evidence does not support the increasing using of noncemented implants. In particular, the risk of mortality in cemented THA has not been found to be higher than noncemented THA.

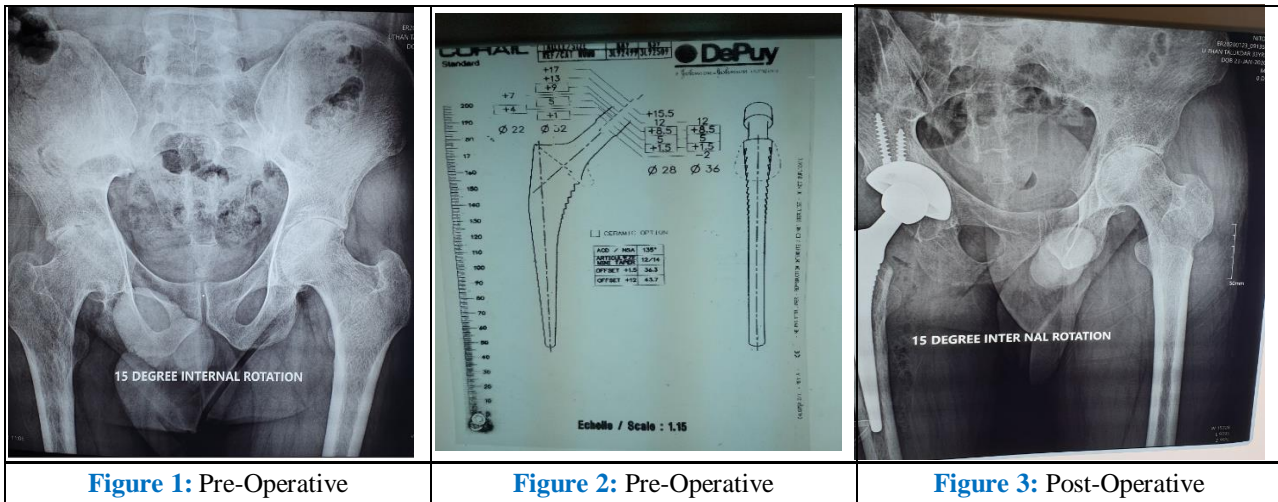
Key words: Noncemented; Orthopaedic procedures; Total hip replacement (THR)

1. Introduction

Total Hip Replacement is one of the most successful orthopaedic procedures performed now-a-days, as a form of treatment for various hip pathologies [1]. Now this is widely considered as “operation of the 20th century” [2]. Sir John Charnley, a British orthopaedic

surgeon, developed the fundamental principles of the artificial hip and is credited as the father of THR [1]. Charnley’s low friction Replacement, acrylic cement became standard for femoral component fixation. Charnley systematically promoted THR, based on the concept of low friction Replacement by: (1) fixation with bone cement; (2) adoption of a 22-mm femoral head; (3) adoption of ultrahigh molecular weight polyethylene (UHMWPE); and (4) preparation of a manual of the surgical procedure [1]. This procedure works as an option for nearly all patients with diseases of the hip that cause chronic discomfort and significant functional impairment. Patient with unremitting pain and irreversibly damaged joint is an ideal candidate for total hip replacement [3, 4]. For a long time, the failures of cemented THR were attributed to bone cement, and were called “cement disease”. This has motivated the orthopaedic surgeons to develop non-cemented THR [5]. Bobyn JD and Galante J first introduced the concepts of noncemented replacement, had press fit and bone integration as forms of fixation between the bone and the implant [6,7]. This mode of fixation is known as biological fixation.

Figures 1-3 have been taken from study population. The development of circumferentially coated non-cemented implants which allow bone to grow into or onto the prosthesis has led to improved implant survival rate and supports their growing use. The advantages of noncemented femoral components include a reduced risk of cement-related cardiovascular and thromboembolic complications, the possibility of biological fixation, the minimisation of stress shielding of the proximal femur and potential of extended implant survival [8-13]. The study aims to determine the results and the complications associated with noncemented total hip replacement (THR).



2. Objectives

The goal was to observe the evaluation of outcome of noncemented total hip replacement (THR). To evaluate the results of long term and short term follow up associated with noncemented THR. To find out the complications associated with THR.

3. Methodology and Materials

This was a cross-sectional study and was conducted in the department of orthopaedic surgery, National Institute of Traumatology and Orthopedic Rehabilitation (NITOR), Dhaka, Bangladesh during the period from February 2016 to January 2019. The included patients were selected based on the history of noncemented total hip replacement operation and came for follow-up after surgery. There selected 35 patients for our study. Patients were in the age of 20 to more than 60 aged. All patients followed for minimum one year and maximum two years. The periodic assessment was defined based on Modified Harris Hip Scoring system and the follow up of the patients were collected radiologically in accordance with X rays at 6 weeks, 3

months, 6 months, 1 year and 2 year follow up data. All the primary data were compiled on a master chart first, then organized by using scientific calculator and standard statistical formula. Percentage was calculated to find out the proportion of the findings. After that statistical analysis of the results was done by computer software devised in the statistical packages for social scientist (SPSS-10) and MS excel-16.

4. Results

In this cross-sectional study from the total of 35 patients we found most of the patients were male 29 (82.86%) and female 6 (17.14%). Most of the patients found in 31-40 age group 14 (40.00%), then 41-50 and that was 11 (31.43%) respectively 5 (14.29%) found in 21-30, 11 (31.43%) in 41-50 and 4 (11.43%) in >61 (Table 1). Based to the distribution of the study patients according to the complications in follow up sessions. Most of the patients Loose acetabular in after 3 months 11 (45.31%) then in Loose stem 19 (54.31%), Unstable 9 (25.71%), Infection 6 (17.14%), Pain 26 (74.29%) and Femoral fracture 13 (37.14%).

After 6 months Loose acetabular 7 (20.00%), Loose stem 2 (5.71%), Unstable 0 (0.00%), Infection 1 (2.86%), Pain 11 (31.43%), and Femoral fracture 3 (8.57%) (Table 2) Then the study from Modified Harris Hip Score. So most of them found excellent on

the score of 90-100, 20 (57.14%), then 11 (31.4%) was 80-89 score as good, 3 (8.6%) found in 70-79 score fair and below <70 score found 1 (2.9%) as poor (Figure 1).

Age	Male		Female	
	n	%	n	%
20-29	5	14.29	0	0
30-39	10	28.57	3	8.57
40-49	9	25.71	2	5.71
50-59	4	11.43	1	2.86
>60	1	2.86	0	0

Table 1: Distribution of the study population by Age and Sex (n=35)

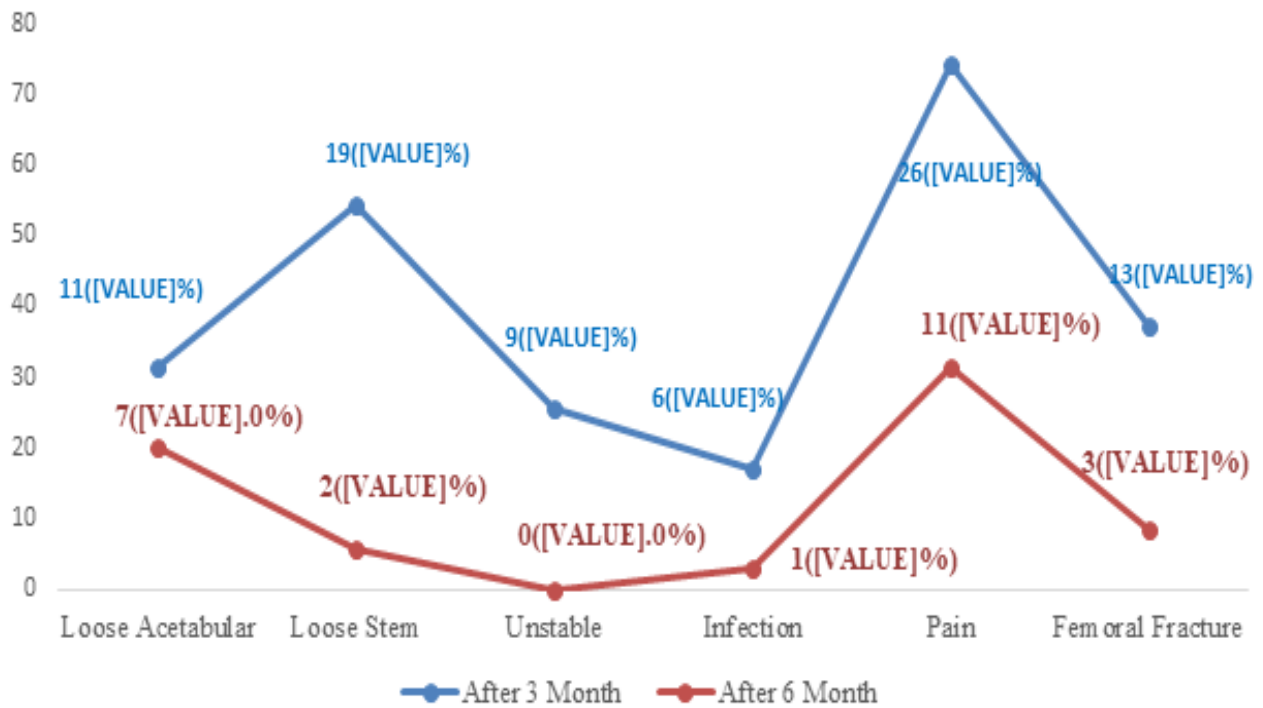


Figure 4: Distribute the study patients according to the complications in follow up sessions (n=35)

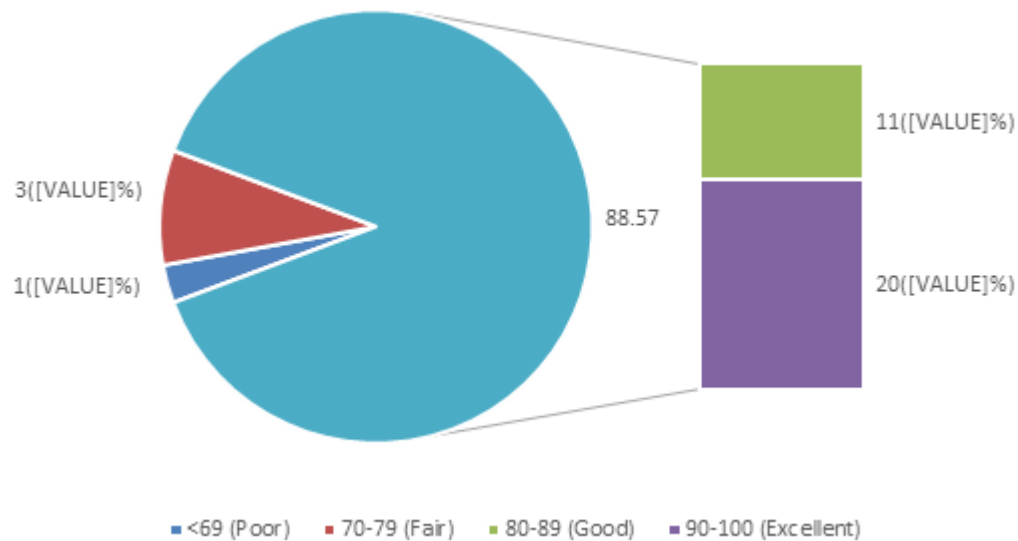


Figure 5: Outcome of the study patients in modified Harris Hip Score (n=35)

5. Discussion

The present study was aimed at evaluating the results of noncemented total hip replacement in Bangladesh population, performed at our hospital involving a controlled preoperative and postoperative follow up. From this study, we have concluded that operative treatment for various hip disorders in the form of noncemented total hip replacement has helped in alleviation of intractable pain, resumption of ambulation and return to functional activity. A Total of 35 patients most of the patients we found were male 29 (82.86%) and female 6 (17.14%). Most of the patients found in 31-40 age group 14 (40.00%), then 41-50 and that was 11 (31.43%) respectively 5 (14.29%) found in 21-30, 11(31.43%) in 41-50 and 4 (11.43%) in >61. In another study there were age varied from 18 to 65 years, with a mean age of 41-50 years. There was male predominance. Male: Female ratio was -2:1. Based to the distribution of the study patients according to the complications in follow up sessions. Most of the patients Loose acetabular in after 3 months 11

(45.31%) then in Loose stem 19 (54.31%), Unstable 9 (25.71%), Infection 6 (17.14%), Pain 26 (74.29%) and Femoral fracture 13 (37.14%). After 6months Loose acetabular 7 (20.00%), Loose stem 2 (5.71%), Unstable 0 (0.00%), Infection 1 (2.86%), Pain 11 (31.43%), and Femoral fracture 3 (8.57%). The New Zealand joint registry has shown a revision rate of 0.89/100 component years (cy) for noncemented THRs in patients under 55 years 0.98/100 cy for those between 55-65 years (P < 0.001). In another study, the reason for revision was analysed the major cause for early revision in noncemented implants was either due to femoral fracture (30%) or dislocation (40%) whereas 75% of early revisions in the cemented group were secondary to dislocation [14]. Femoral fracture with noncemented stems has been identified as an early cause for failure by others [15,16]. The rate of femoral loosening within 90d was significantly higher in noncemented stems (P < 0.009) found in a study. Then the study from Modified Harris Hip Score. So most of them found 20 (57.14%), then 11 (31.4%) was

good, 3 (8.6%) found fair and 1 (2.9%) found poor. Another study showed, final follow-up, 24 (96%) patients had excellent result and 1 (4%) had good result. None of our patients had Fair/Poor results. Preoperative mean modified Harris hip score was 57.50 compared to postoperative score of 97.25.

6. Limitations of the study

Our study wasn't a blinded study so patient bias was present along with observer bias in subjective recording and the study and follow-up period was short in comparison to other studies, small sample size, limited resources and facilities; computer simulation facility was not available properly. So, to make more conclusive results, the following recommendations are proposed for further studies. Importantly in today's economic climate, economic analysis confirms that noncemented THA is a higher cost-effective option than cemented.

7. Conclusion and Recommendations

Noncemented Total Hip Replacement is a procedure with maximum excellent outcome found in our study. This procedure provides a nearly physiological joint and with experience, proper instrumentation, proper selection of implants, its placement in correct version and inclination, excellent results could be achieved with nil or minimal complication rate.

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