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Original Research Article

Clinical Outcomes Following Total Hip Replacement

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Abstract: ***Introduction:*** The Harris Hip Score (HHS) is a tool for evaluating the functional outcome of complete hip replacement patients (THR). The goal of this study was to use the Modified Harris hip score to assess the clinical and functional outcomes following total hip replacement. ***Methods:*** The research comprised patients who were admitted to our ward for THR between June 1st, 2021 and May 1st, 2022. All patients had a thorough medical history and physical examination. The Modified HHS was used to score the patients. Details from the pre-operative and post-operative periods were recorded. ***Results:*** In this research, we investigated at 28 hip joints. Preoperatively, the average modified HHS was 27, rising to 59 at six weeks and 85 at six months. The difference between before and after scores was statistically significant. Modified HHS performed well in individuals who began partial and full weight bearing early. ***Conclusions***: Post-operatively, patients who had early partial and complete weight bearing reported good modified HHS. For measuring patients' post-THR functional status, we propose using a modified HHS.

Keywords: Osteoarthritis, Hip arthroplasty, Harris hip score, clinical outcome.

INTRODUCTION

Total hip replacement (THR) is the preferred treatment for severe hip osteoarthritis (OA) [1, 2]. It is one of the most effective orthopedic treatments of the 21st century [3]. Surgery rates are increasing in tandem with the rising prevalence of hip OA due to increased life expectancy [4, 5]. In the United States, a 174 percent rise in primary THR is expected by 2030 [5]. THR is in great demand, but clinical resources are limited, resulting in extended wait periods and possibly a potential supply shortage [6, 7].

Despite all of the technological advancements in THR over the last several decades, there are still some patients who are unsatisfied with the postoperative result due to lingering pain and function limitations [8]. As a result, identifying determinants of favorable outcomes in orthopedic surgery is of tremendous interest. This might make it easier to handle THR indications with care and choose the right individuals for surgery, especially in times of limited resources. The goal of this study was to look at long-term patient outcomes after a unilateral total hip replacement for osteoarthritis. The modified Harris Hip Score was used to evaluate patients both before and after surgery.

MATERIALS AND METHODS

Twenty eight patients participated in the prospective study at Babcock University Teaching Hospital, Ilishan Remo, Nigeria. Institutional review board approval was obtained by the Babcock University Health Research Ethics Committee. This study was carried out between June 1st, 2021 to May 1st, 2022. Only patients diagnosed with unilateral Osteoarthritis of the hip were considered for this study. These surgeries were performed by a total of 3 surgeons at this facility. The procedure gained popularity in the teaching hospital in early 2019 and from then till date, over 60 THAs have been performed with good outcomes.

Hip dysplasia-related arthritis, bilateral instances, posttraumatic hip abnormalities, and prior hip surgery were all ruled out. Of the 70 patients evaluated, 17 did not match the inclusion requirements due to the stringent inclusion criteria. Fifteen patients declined to take part in the study, and ten were ruled out for other reasons (e.g., cancellation of the operation owing to

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elevated inflammatory markers). A signed informed consent was acquired prior to participating in the study.

Surgical procedures

After obtaining consent and preparing the patient, most of them were placed under combined spinal/epidural anesthesia. The patient positioned lateral and then posterior approach used to get access to the hip joint. The short external rotators identified and secured while also protecting the sciatic nerve. The femoral neck osteotomised and the head delivered. Serial reaming done of the acetabulum and the appropriate cup and liner applied and secured with 1 screw. The femur then reamed serially and the appropriate size implant secured with the head in place. After reduction the wound is irrigated and closed in layers. Mobilization is commenced next day on partial weight bearing.

Outcome measures and data collection

The Harris Hip Score (HHS) is a recognized tool for determining an individual's functional capacity, and it has traditionally been the most popular scoring approach used to evaluate the state of a patient with hip pathology before and after surgery [9]. It has already been used in a number of studies to assess THR outcomes [10, 11].

The Harris hip score (HHS) is a joint-specific score that both the clinician and the patient fill out. It consists of ten elements that address pain, function, functional activities, deformity, and hip range of motion. In its usual version, the Harris hip score comprises a physician's physical examination component with a significant inter-observer variability and broad variation across examining surgeons [12]. To reduce this variability, a modified HHS (mHHS) was created, with the clinical evaluation component eliminated (Table 1).

Modified HHS has previously been used to assess THR functional outcome over the phone [13] and to measure functional outcome in non-traumatic THR indications [14]. The mHHS score ranged from 0 (worst functional result and most pain) to 100 (highest functional outcome and least pain) (best functional outcome and least pain). The modified Harris hip score was used to interpret the results in the same way as the original Harris hip score: <70 (poor result), 70–79 (fair result), 80–89 (good result), and >90 (excellent result).

STATISTICAL ANALYSIS

The Statistical Package for the Social Sciences for Windows version 26 was used to analyze the data (SPSS Inc., Chicago, IL, USA). The mean, standard deviation (SD), median were used to express the data. The histogram, Q-Q graph, and Kolmogorov-Smirnov and Shapiro-Wilk tests were used to determine if quantitative values had a normal distribution. The Wilcoxon signed rank test was performed for the paired observations since the variables were not regularly distributed. A statistically significant p value of 0.05 was used.

RESULTS

A total of 28 patients with mean age at 59.61±13.3 years diagnosed of unilateral hip Osteoarthritis and underwent THR were studied. 42 patients did not meet the inclusion criteria. This study had 11 males (39.3%) and 17 females (60.7%) (Figure 1). Depicted in Figure 2, 6(21.4%) of the patients were 40-49 years of age, 10(35.7%) were 70 years and above, 17.9% were 50-59 years and 60-69 years. We also recorded two patients in their late 30's (38 and 39 years). The mean weight and height of the patients were 63.68 ± 6.507years, 74.20 ± 10.56 kg and 1.10 ± 0.32 m respectively. 15 patients had surgery on the Left hip while only 13 had on the Right hip. All patients were followed up for at least 24 weeks post-operatively.

Average pre-operative modified HHS was 27 (poor), which remained poor (59) when measured few weeks postoperatively. Six months post-operatively, average modified HHS was excellent (90 to 100) in six patients and good (80 to 89) in 17 patients. Out of the 11 male patients, 9 and 2 had excellent and good mHHS respectively 24 weeks post-operative. About 7, 6 and 4 female patients had excellent, good and fair mHHS respectively also at 24 weeks after surgery.

Furthermore, modified HHS was excellent in patients who started Physiotherapy early (1-2 weeks) and were placed on weight bearing exercises (partial and full) (Table 3). In the late post-operative period, no patient reported any complications till the end of their follow up. The mHHS post-operative at 24 weeks had a higher mean score of 84.75±5.29 while pre-operative mean was 84.75±5.29 (Table 2).

Pre-Operative and Post-Operative Radiographs

These are some of the Pre-operative, postoperative and follow up radiographs of some of the cases in our study.

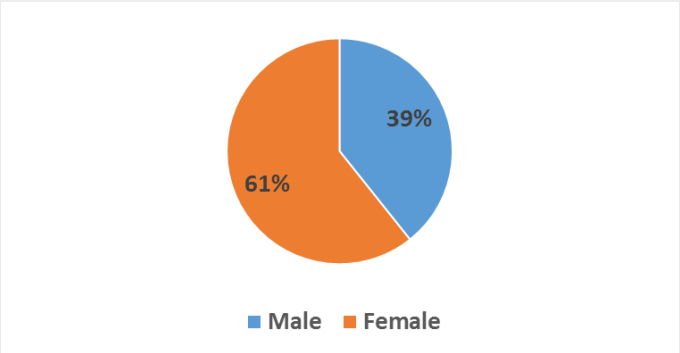

Fig-1: Gender distribution in Pie chart

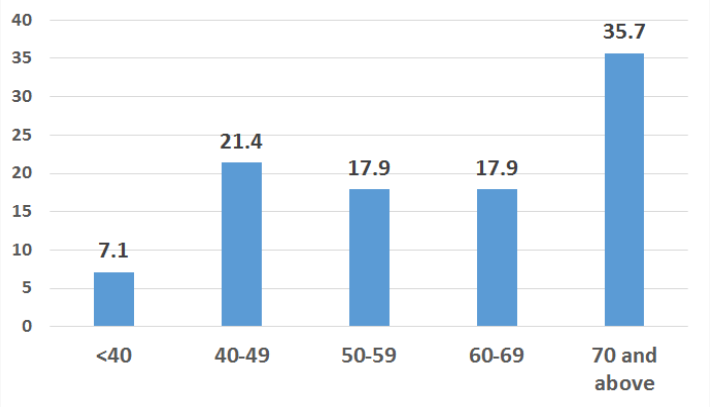

Fig-2: Age distribution in bar chart

Fig-3: X-ray Pre- operative Radiograph

Fig-4: X-ray Post- operative Radiograph

Table-1: Modified Harris hip score

Variable		Points
Pain	None or ignores it	44
	Slight, occasional	40
	Mild pain, rarely moderate	30
	Moderate pain	20
	Marked pain	10
	Totally disabled, pain in bed	0
Function		
Limp	None	11
	Slight	8
	Moderate	5
	Severe	0
Support	None	11
	Cane, long walks	7
	Cane, most of the time	5
	One crutch	3
	Two canes	2
	Two crutches	0
	Not able to walk	0
Distance walked	Unlimited	11
	Six blocks	8
	Two to three blocks	5
	Indoors only	2
	Bed and chair	0
Stairs	Normally without railing	4
	Normally with railing	2
	In any manner	1
	Unable to do	0
Shoes and socks	With ease	4
	With difficulty	2
	Unable	0
Sitting	Ordinary chair for 1 h	5
	High chair for 1 h	3
	Unable to sit in any chair	0
Public transport	Able to use 1	1
	Unable to use	0

Table-2: Modified Harris Hip score at various stages of patient management

	<70 (Poor)	70-79 (Fair)	80-89 (Good)	90-100 (Excellent)	Mean ±SD	P value
Preoperative	0	0	0	0	26.79±13.1	0.000
At 24 weeks	0	5	17	6	84.75±5.29	

Table-3: Description of Modified Harris Hip score according to different patient related variables

		Modified HHS at 24 weeks			
		90-100 (Excellent)	80-89 (Good)	70-79 (Fair)	Less than70 (Poor)
Gender					
	Male	9	2	0	0
	Female	7	6	4	0
Partial weight bearing					
	1-2 weeks	15	4	0	0
	3-4 weeks	7	2	0	0
	5-6 weeks	0	0	0	0
	7-8 weeks	0	0	0	0
Full weight bearing					
	5-6 weeks	20	4	0	0
	7-8 weeks	3	1	0	0

DISCUSSION

The method of total hip replacement is well-known. It improves the quality of life of people with moderate to severe hip arthritis by relieving pain and functional impairment. Only participants with hip osteoarthritis were included in this investigation. Singling out osteoarthritis as an indication of the procedure was not difficult as studies also reported that arthritis was a major indication for THR [15, 16]. In our study, 71.4% of the patients were found to be 50 years and above, with age range from 38 to 77 years and an average of 59.61±13.3. The mean age was higher than studies from Unger *et al*. [17] and Latiful Bari *et al*. [18], where the mean age was 39.9 and 40.50 years respectively.

In this study, we evaluated the functional result using a modified Harris hip score, which is the most extensively used scoring method for assessing hip arthroplasty. Patients who underwent THR at our facility had their mHHS evaluated pre-operatively and 24 weeks thereafter. Preoperatively, the average mHHS was 27, rising to 59 after a few weeks and 85 when the patients were assessed 24 weeks later. This indicates that the procedure resulted in a good to exceptional result. Siwach *et al*. [19] and Latiful Bari [18] revealed comparable findings in their investigations, which are consistent with our one. Gupta *et al*. [20] also observed that following THR, 84% of patients had good outcomes.

These patients were referred to Physiotherapy unit for rehabilitation post-operatively. Partial weight bearing with Zimmer's frame, followed by two axillary crutches was started in 19 cases within 7 to 14 days and the results were excellent in 15 & good in 4 cases. Full weight bearing (FWB) was started at 5 to 6 weeks in 20 patients and the score was more than 59 in 18 of them. It was concluded that the earlier the patient starts FWB, better was the score. In a study by Santori *et al*. [21], all cases were granted full weight bearing immediately with the help of two axillary crutches or a Zimmer frame and with one stick after 2 weeks [21]. Early weight bearing and physical activity increases the fixation of the prosthesis and reduces the frequency of early loosening [22], which benefits the quality of bone tissue.

The clinical examination was done using the Harris Hip Score and the radiological data were checked on a regular basis. In every case, the score was excellent. There was significant difference between mHHS pre-operative (24 weeks) and post-operative (24 weeks) (p0.005). At 24 weeks after surgery, the mHHS had a higher mean score of 84.75±5.29.

CONCLUSION

The patient's functional ability is improved through total hip replacement. It gives a hip joint that is free, sturdy, and mobile. Patients with osteoarthritis have reported a significant improvement in their quality of life as a result of this therapy. Patients with modified HHS were evaluated pre- and post-operatively. Excellent modified HHS scores were seen twenty-four weeks after surgery. Patients who had early partial and complete weight bearing also had good modified HHS 24 weeks after surgery. For assessing patients' post-THR functional status, we suggest using a modified HHS.

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Ethical approval

Ethical approval was sought and obtained from the Babcock University Health Research Ethics Committee (BUHREC).

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