

To study the MHHS following total hip arthroplasty using an open cohort study

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Abstract

Background: THA is one of the most successful orthopedic procedures performed today. For patients with hip pain due to a variety of conditions, THA can relieve pain, can restore function, and can improve quality of life.

Methods: This was an open cohort, prospective study conducted on patients presenting to the Department of Orthopaedics and undergoing surgical intervention i.e., total hip arthroplasty. (All the procedures were performed by a specific senior surgeon

Result: All patients had poor MHHS during pre-operative and on the day of discharge. 55% had poor and 45% had fair MHHS at 6 weeks. 52.5% had good, 32.5% had fair and 15% had poor MHHS at 3 months followup. 42.5% cases had good, 35% had excellent, 10% fair and

5% had poor MHHS at 4 and half months follow-up. All 19 cases that were followed up for 9 months had excellent MMHS. All 19 cases that were followed-up for 9 months had excellent MMHS. Among all 24 cases which had total 12 months follow-up, 71% had excellent, 16.66% had good, 8% had poor and 4% had fair MHHS. Among all 4 cases who had total 18 months follow-up, 3 cases had excellent and 1 case had good MHHS.

Conclusion: Our study observed a significantly improvement in MHHS score with time in comparison to pre-operative MHHS score (P<0.001).

Keywords: MHNS, THA, Orthopaedics

Introduction

THA is one of the most successful orthopedic procedures performed today. For patients with hip pain

due to a variety of conditions, THA can relieve pain, can restore function, and can improve quality of life. Sir John Charnley, a British orthopedic surgeon, developed the fundamental principles of the artificial hip and is credited as the father of THA. He designed a hip prosthesis in the mid to late 1960s that still sees use today. It is estimated that over 300,000 THAs are performed each year in the United States alone.¹

THA has revolutionized the quality of life of men and women of all ages since the 1960s, earning the title of “the operation of the century.” In 2010, a survey of National Joint Registries (NJR) estimated that around 959,000 annual primary and revision total hip procedures were being performed annually with the average rate at about 131 procedures per 100,000 population, and the average revision burden was found to be 12.9%. Interestingly, 57.7% of the patients were women and 32.9% of patients were under the age of 65 years.² On the financial side, the global market for a hip replacement has been estimated to be around \$4.8 billion in 2014 with an estimated forecast of \$5.9 billion by 2020.³

The clinical benefit and cost-effectiveness of the procedure are well proven. A systematic review of the cost-effectiveness has estimated the cost of a THA compared with no surgery at \$10,402 per quality-adjusted life year gained. Furthermore, if the World Health Organizations' suggested cost-effectiveness threshold of <3 times the gross domestic product, or \$144,000 based on 2011 data for the US, is used, then THA can be considered a highly cost-effective intervention.⁴

Material and method

Study area: Department of orthopedics, Dr. R.P.G.M.C. Kangra at Tanda, Himachal Pradesh

Study design: This was an open cohort, prospective study.

Study population

Patients presenting to the Department of Orthopaedics and undergoing surgical intervention i.e., total hip arthroplasty. (All the procedures were performed by a specific senior surgeon)

Study duration

The patients were recruited for a period of one year. The first case was included in the month of February 2019 and last case on February 2020. The last patient was recruited 1 year from the day of start of study.

All the patients fulfilling the inclusion criteria were recruited and followed-up for maximum 18 months and minimum of 6 months.

Sample size

Forty cases

Inclusion criteria

- Patients undergoing Total hip arthroplasty
- Those gave consent for inclusion in the study

Exclusion criteria

1. Those patients in whom subjective assessment was difficult after surgery like one having compromised neurological functions e.g., in case of Alzheimer's disease, Parkinsonism, cerebral palsy and patients with mental retardation.
2. Those who did not give consent for participation in the study

The study was initiated following approval from Institutional Ethics Committee, Dr. RPGMC Kangra at Tanda. The patients had the rights to withdraw from participation in the study.

Results

Table 1: Distribution on the basis of comparison of mean MHHS score with follow-up

	MHHS	P value
Pre op	28.3±6.5	<0.001
Discharge	38.3±3.3	<0.001
6-weeks	58.8±8.7	<0.001
3 months	70.6±11.0	<0.001
4 and half months	74.4±11.8	<0.001
6 months	79.8±12.2	<0.001
9 months	79.9±11.4	<0.001
12 months	81.6±10.3	<0.001
18 months	87.7±6.5	<0.001

The present study observed a significantly improvement in MHHS score with time in comparison to pre-operative MHHS score (P<0.001).

Table 2: Distribution on the basis of Comparison of MHHS of the cases with follow-up

	Excellent(>81)	Good(71-80)	Fair(61-70)	Poor(<60)
Pre-op	0	0	0	40
Discharge	0	0	0	40
1 and half month	0	0	18(45%)	22(55%)
3-months	0	21(52.5%)	13(32.5%)	6(15%)
4 and half month	14(35%)	17(42.5%)	7(17.5%)	2(5%)
6-months	28 (70%)	6(15%)	4(10%)	2(5%)
9 months	19(100%)	0	0	0
12 months	17(71%)	4(16.66%)	1(4%)	2(8.33%)
18 months	3(75%)	1(25%)	0	0

All cases had poor MHHS during preoperative and on the day of discharge.

Among all 40 cases,55% had poor and 45% had fair MHHS at 6 weeks

52.5% had good, 32.5% had fair and 15% had poor MHHS at 3 months follow-up42.5% cases had good,

35% had excellent, 10% fair and 5% had poor MHHS at 4 and half months.

70 % had excellent,15% had good, 10% had fair and only 5% had poor MHHS at 6 months.

All 19 cases that were followed-up for 9 months had excellent MMHS.

Among all 24 cases which had total 12 months follow-up, 71% had excellent, 16.66% had good, 8% had poor and 4% had fair MHHS.

Among all 4 cases who had total 18 months follow-up, 3 cases had excellent and 1 case had good MHHS.

Table 3: Distribution on the basis of Relation between total follow up of the cases with MHHS

Follow up duration in months	Poor	Fair	Good	Excellent
6 months	0	0	1	6
9 months	0	1	2	5
12 months	2	3	2	14
18 months	0	0	1	3

6 cases out of total 7 cases those who had total follow-up of 6 months had excellent MHHS and 1 case had good MHHS.

Out of total 8 cases, those who had total 9 months follow-up had excellent MHHS, 2 good and 1 had fair MHHS.

Out of total 21 cases those who had total 12 months follow-up, 14 had excellent, 2 good, 3 fair, and 2 had poor MHHS

Out of total 4 cases those who had total 18 months follow-up, 3 had excellent and 1 had good MHHS

Discussion

In the study by Ramisetty et al⁵, modified HHS originally designed by Harris in 1969, the HHS is a 100-point questionnaire with questions in pain, function, range of motion and deformity; there were 91 points for pain and function and nine points for range of motion and deformity. The modified HHS (MHHS) only includes the pain and function components. The maximum score of 91 is multiplied by 1.1 to give a total score out of 100. In the study by Kumar et al⁶ used MHHS and standard HHS both, to assess the outcome in a relatively large group of THR patients and established strong correlation between the two. They gave a similar fair to good functional outcome in the patients. The MHHS had a strong validity for usage in such patients with significant

reliability. The omission of clinical examination part has its own set of advantages especially in Indian scenario. Firstly, a patient-based questionnaire is relatively simple process, to assess the functional status, instead of additionally subjecting the patients to clinical examination of hips; more so in the Indian females having social issues. There is also no need of a medical professional to calculate the score based on this clinical examination and a non-medical trainee can easily get the MHHS. This saves much time and energy on part of the clinical practitioner, who can dedicate the same in his clinical practice in the overloaded OPDs in India. Also, since MHHS involves answering a simple questionnaire, the actual presence of the patient is not needed and this can be done over a phone call or by correspondence. This is especially of significance in our Indian scenario where patient compliance is seldom apt and follow-ups are not streamlined.

The study by Sharma et al⁷, studied the feasibility of telephone interviews to assess hip function in patients who had a total hip replacement. One hundred patients attending the orthopedic clinic for follow-up after undergoing total hip replacement were studied. A modified Harris hip score was used. Since range of motion and deformity cannot be assessed by telephone, only pain and function were assessed and concluded that

telephone interviews are a useful adjunct to clinic visits for routine follow-up of the patients after a primary total hip replacement and could be used for other joint arthroplasties.

Conclusion

Our study observed a significantly improvement in MHHS score with time in comparison to pre-operative MHHS score ($P < 0.001$).

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