

Clinical Evaluation of THA Using modified Harris Hip Scoring (mHHS) And WHO Disability Assessment Scoring System (WHODAS) Among Patients from Geographically Hilly Terrains

¹Dr Lokesh Thakur, Professor, Department of Orthopaedics, Dr. Rajendra Prasad Govt Medical College Kangra, Tanda Himachal Pradesh

²Dr Rajan Singh, Resident, Department of Orthopaedics, Dr. Rajendra Prasad Govt Medical College Kangra, Tanda Himachal Pradesh

³Dr Sunil Raina, Professor & Head, Department of Community Medicine, Dr. Rajendra Prasad Govt Medical College Kangra, Tanda Himachal Pradesh

⁴Dr Bhanu Awasthi, Principal, Professor Department of Orthopaedics, Dr. Rajendra Prasad Govt Medical College Kangra, Tanda Himachal Pradesh

Corresponding Author: Dr Rajan Singh, Resident, Department of Orthopaedics, Dr. Rajendra Prasad Govt Medical College Kangra, Tanda Himachal Pradesh

Citation this Article: Lokesh Thakur, Rajan Singh, Sunil Raina, Bhanu Awasthi, “Clinical Evaluation of THA Using modified Harris Hip Scoring (mHHS) And WHO Disability Assessment Scoring System (WHODAS) Among Patients from Geographically Hilly Terrains”, IJMSIR- July - 2022, Vol – 7, Issue - 4, P. No. 255 – 261.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background: The study was conducted on hilly terrain patients, during study it was observed that, Total hip arthroplasty (THA) or total hip replacement (THR) has proved to be an excellent and reliable treatment procedure for the end stages of hip pathology. Aim: to clinically evaluate the results using modified Harris Hips Scoring and assess the disability using WHO disability assessment scoring system.

Methods: Patients presenting to the Department of Orthopaedics, and undergoing THA were recruited for a period of one year. The patients were examined clinically with the special emphasis on hips, spine and knees. Pre-operative modified Harris Hip Score (mHHS) was used. Prior to surgery, the patients were counselled regarding

rehabilitation programme to be followed subsequent to surgery.

Results: The most common indication for surgery was AVN with secondary OA (60%) followed by ankylosing spondylitis (12.5%). 60% of the patients had no other associated musculoskeletal illness. In post-operative complications, 5% (2 cases) had deep joint (peri-prosthetic) infection, 2.5%(one case) had superficial (extra-articular) infection, and 2.5%(one case) had limb length discrepancy of 1.5 cm. All cases had poor MHHS during preoperative and on 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-up. 42.5% cases had good, 35% had excellent, 10% fair and 5% had poor MHHS at 4 and half months. At 6months 70% had

excellent MHHS, 15% had good MHHS, 10% had fair MHHS and only 5% had poor MHHS. Out of 24 cases who were followed up for complete 12 months 71% had excellent MHHS, 17% had good MHHS, 4% had fair MHHS and 8% had poor MHHS. The present study observed a significant improvement in WHODAS score with time in comparison to pre-operative WHODAS score ($P < 0.0001$).

Conclusion: THA significantly improved functional outcome of the patients.

Keywords: THA, THR, MHHS, WHODAS

Introduction

Hip is one of the largest weight-bearing joint in human body. It consists of two parts namely, a ball (femoral head) at the top of our thighbone (femur) and it fits into a rounded socket (acetabulum) in our pelvis.¹

Total hip arthroplasty (THA) or total hip replacement (THR) has proved to be an excellent and reliable treatment procedure for the end stages of hip pathology, with satisfactory clinical outcomes at 15- to 20-year follow-up.²⁻⁵

Disability has a substantial impact on quality of life of the patients and affects daily living. It is associated with extensive direct and indirect costs and represents a considerable burden for healthcare system and the society in general.

For patients with hip pain due to a variety of conditions, THA can relieve pain, can restore function, can lower the chances of depression and increase socialization along with an overall enhancement of quality of life.

The objective of this open cohort study is to clinically evaluate the results using modified Harris Hip Scoring and assess the disability using WHO disability assessment scoring system in a geographically challenging area.

Patients and Methods

Patients presenting to the Department of Orthopaedics, and undergoing THA were recruited for a period of one year. i.e. from February 2019 to February 2020. The last patient was recruited 1-year from the day of start of study.

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, and those who refused to participate in the study were excluded.

The patients were examined clinically with the special emphasis on hips, spine and knees. Pre-operative modified Harris Hip Score (HHS) was used. Prior to surgery, the patients were counselled regarding rehabilitation programme to be followed subsequent to surgery. The patients were started with chest physiotherapy, static quadriceps, hamstring and gluteal exercise and flexion stretches in fixed flexion deformity. The patients were told about back care and way how to lift themselves for use bedpan. The patients were explained in detail about surgery, its limitation, preoperative and post-operative complications.

Statistical analysis

The data were entered into Microsoft® Excel Workbook 2019 and exported into SPSS software for analysis. Categorical data were expressed as frequency and percentage. Quantitative data were expressed as mean and standard deviation, and compared between different time using Paired t-test. P value < 0.05 was considered statistically significant. Statistical analysis was performed using SPSS v21.0 (IBM, USA).

Results

General characteristics

Mean age of the cases was 46.1 ± 13.6 ranging from 21.0 years to 87 years. Seventy-five percent of the cases were males. 55% cases belong to lower middle class and 27.5% belong to upper middle class family. 37.5% had done higher secondary, 25% were matriculate, 17.5% are graduate and above, 10% each had done primary and middle education. A majority of the patients were Atraumatic (70%) while only 30% patients had history of trauma.

Indication

The most common indication for surgery was AVN with secondary OA (60%) followed by ankylosing spondylitis (12.5%). In one case, there was peri-prosthetic fracture and in one case, there was dislocation and these two patients underwent revision surgeries for the same (Table 2).

2 cases with peri-prosthetic joint infection were CRP negative and off antibiotics for last 3 months; they also underwent revision surgery.

Other musculoskeletal disease

60% of the patients had no other associated musculoskeletal illness. AVN with secondary osteoarthritis (20%) was the most common other musculoskeletal diseases followed by ankylosed another hip (10%).

Post-operative complications

In post-operative complications, 5% had deep (peri-prosthetic joint) infection, 2.5% had superficial (extra-articular) infection, and 2.5% had limb length discrepancy of 1.5 cm.

MHHS score

All cases had poor MHHS during preoperative and on 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-up.

42.5% 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 who had follow-up of 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.

WHODAS score

The present study observed a significantly improvement in WHODAS score with time in comparison to pre-operative WHODAS score ($P < 0.0001$).

Discussion

In our study, cases ranged from 21-87 years of age, 46.1 years being the mean. Study by Capone et al 107 described the clinical results in 32 patients of age younger than 60 years with average age of 51.5 years.⁶ Study by Kim et al average age of surgery was 52.7 years using proximally coated cementless femoral component.⁷ The mean age in our study was lower as we used this stem in young patients having good bone stock for adequate fixation and we wanted to preserve bone stock for anticipated subsequent revisions.

Male to female ratio was 3:1. Seventy-five percent of the patients were males. In our set up predominantly active outdoor life of males who are more actively involved in arranging finances for their family may account for this, alcohol abuse is another major cause of morbidity in males. This is similar to study by Kim, where males outnumbered females (297 males and 174 females).⁷

In our group, 60% of cases were AVN secondary to osteoarthritis of femoral head, 12.5% cases were of ankylosing spondylitis, 10% of cases were of fracture

neck femur, and 5% cases were of post infective sequelae. Kim included patients of osteonecrosis of femoral head in 52.4%, osteoarthritis in 30.8% patients, fracture of femoral neck in 7.7%, osteoarthritis secondary to childhood infection in 3.4%, ankylosing spondylitis in 3.4%, traumatic arthritis in 2.1% and multiple epiphyseal dysplasia in 0.2% patients.⁷ Indications for surgery in our study varied slightly from Kim et al due to hilly terrain, different patient's habits and habitat.

In our study, four patients had complications. Two patients had peri-prosthetic joint infection for which repeated toileting and debridement was done, and final outcome was girdle stone arthroplasty of both the patients. And one patient had superficial infection which was cured with toileting and debridement of wound with antibiotic beads placement, and which was removed after 3 months of placement. One patient with bilateral AVN with OA had limb length discrepancy of 1.5 cm after the patient underwent THR on both sides. Roberts et al observed, four cases of dislocation, three cases of femoral component loosening, one wound infection. There were no wound hematomas and heterotopic ossification.

In our study, average Modified Harris Hip score improved from 28.3 to 87.7. Mean preoperative score was 28.3, increased to 38.3 at discharge, 58.8 at 6 weeks, 70.6 at 3 months, 74.4 at 4 and half-months, 79.8 at 6 months, 79.9 at 9 months, 81.6 at 12 months, and 87.7 at 18 months when the patient last followed-up. With time HHS still continued to increase gradually till last follow up. In the study by Kim et al⁷, mean preoperative Harris hip score was 41 points which improved to a mean of 96 with a mean follow up of 8.8 years. In the study by Richard et al preoperatively, mean HHS was 47 and at last follow-up, mean HHS was 88.⁸

In our study, average WHODAS score improved from 34 to 9.2. Mean preoperative score was 34, increased to 37.1 at discharge, 24.9 at 6 weeks, 16.6 at 3 months, 13.3 at 4 and half months, 11.3 at 6-months, 10.3 at 9 months and 9.2 at 18 months when the patient last followed-up. With time WHODAS still continued to improve gradually till last follow up. WHODAS 2.0 is a PRO that can measure the patient impact of surgical interventions. This study uses WHODAS 2.0 to demonstrate a reduction in patient-reported disability. In the study by Brown et al, the total hip replacement group reported a 30-day-postop non-significant increase in disability with a mean of 27.4 (SD 8.0, p=0.774 compared to baseline). In the study by Ramdass et al, the mean (SD) WHODAS 2.0 summary score was 15.2 (14.3) and the median was 10.4 with a non-normal distribution in disable patients in a community.⁹

Conclusion

This study concludes that the affected hips must undergo THA to improve quality of life and decrease disability post THA as evident from WHODAS.

References

1. Fox KM, Cummings SR, Williams E, Stone K; Study of Osteoporotic Fractures. Femoral neck and intertrochanteric fractures have different risk factors: a prospective study. *Osteoporos Int.* 2000;11(12):1018-23
2. Learmonth ID, Young C, Rorabeck C. The operation of the century: total hip replacement. *Lancet* 2007; 370:1508-1519.
3. Laupacis A, Bourne R, Rorabeck C, et al. The effect of elective total hip replacement on health-related quality of life. *J Bone Joint Surg [Am]* 1993;75-A:1619-1626.

4. Morshed S, Bozic KJ, Ries MD, Malchau H, Colford JM., Jr Comparison of cemented and uncemented fixation in total hip replacement: a meta-analysis. *Acta Orthop* 2007; 78:315-326.
5. Pakvis D, van Hellemond G, de Visser E, Jacobs W, Spruit M. Is there evidence for a superior method of socket fixation in hip arthroplasty? A systematic review. *Int Orthop* 2011; 35:1109-1118
6. Capone A, Bienati F, Torchia S, Podda D, Marongiu G. Short stem total hip arthroplasty for osteonecrosis of the femoral head in patients 60 years or younger: a 3- to 10-year follow-up study. *BMC Musculoskelet Disord.* 2017;18(1):301
7. Kim YH. The results of proximally-coated cementless femoral components in total hip replacement. *J Bone Joint Surgery Br* 2008;90-B:299-305
8. Roberts JM, Fu FH. A Comparison of the Posterolateral & Anterolateral Approaches to Total Hip Arthroplasty. *Clin Orthop Relat Res* 1984; 187:205-21
9. Ramadass S, Rai SK, Gupta SK, Kant S, Wadhwa S, Sood M, Sreenivas V. Prevalence of disability and its association with sociodemographic factors and quality of life in a rural adult population of northern India. *Natl Med J India* 2018; 31:268-73.

Legend Figure and Tables

Table 1: General characteristics

	Frequency	Percent
Sex		
Male	30	75.0
Female	10	25.0
Socio economic status		
Lower middle	22	55.0
Upper lower	7	17.5
Upper middle	11	27.5
Lower middle	22	55.0
Education		
Primary	4	10
Middle	4	10
Matriculation	10	25
Higher secondary	15	37.5
Graduate or above	7	17.5

Table 2: Indication for surgery

Indications	Frequency	Percent
AVN with secondary OA	24	60
Ankylosing spondylitis	5	12.5
Failure of primary osteosynthesis	3	7.5
Prosthesis fracture	1	2.5
Prosthesis dislocation	1	2.5
Post-infection sequelae	2	5
Fracture neck of femur	4	10
Total	40	100.0

AVN: Avascular Necrosis, OA: Osteoarthritis

Table 3: Distribution on the basis of Other musculoskeletal disease

Other Musculoskeletal disease	Frequency	Percent
AVN with secondary OA of other hip	8	20.0
ankylosed other hip	4	10.0
Chronic osteomyelitis of distal tibia other limb	1	2.5
Patella Fracture	1	2.5
Old fracture L3 vertebrae	1	2.5
aseptic prosthetic cup loosening of other hip	1	2.5
No other musculoskeletal illness	24	60.0
Total	40	100.0

AVN: Avascular Necrosis, OA: Osteoarthritis

Table 4: Comparison of mean MHHS score 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

MHHS: Modified Harris Hip Score

Table 5: WHODAS score

	WHODAS	P value
Pre-op	34.0±5.9	
Discharge	37.1±5.5	<0.01
1 and half months	24.9±5.3	<0.01
3 months	16.6±6.9	<0.01
4 and half months	13.3±6.9	<0.01
6 months	11.3±5.9	<0.01
9 months	10.3±6.1	<0.01
12 months	9.2±6.3	<0.01
18 months	8.6±6.3	<0.01

WHODAS: WHO Disability Assessment Schedule Score