ORIGINAL ARTICLE

To See the Outcome of Total Hip Arthroplasty

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ABSTRACT

Aim: To evaluate the functional outcome of total hip arthroplasty in terms of pain relief, functional capacity, range of motion and absence of deformity using Harris hip score.

Methodology: This is a descriptive case series study which includes 30 patients between 25 to 100 years of age. This study was carried out in Orthopaedic Department at Pak Red Crescent Medical & Dental College, Dina Nath, Lahore within six months of period from 01-01-2020 to 01-06-2020. Thirty patients were admitted through A/E and Orthopaedic Outpatient Department who fulfill the inclusion criteria. Preoperative Harris scoring was done and was compared with the postoperative score to find the improvement.

Results: Mean age of patients was 52.53±18.21 years. There were 17 males and 13 females patients. Average pre operative Harris hip score was 23.77±9.50 and post operative score 87.90±10.42.

Conclusion: We concluded that Total Hip Arthroplasty is a safe surgical procedure with promising results in relieving pain, improving movements and upgrading the quality of life.

Keywords: Total Hip Arthroplasty, Harris Hip Score, Osteoarthritis, Ankylosing Spondylitis

INTRODUCTION

The hip joint is a ball and socket joint of synovial variety. The normal hip is the result of intricate balance between a growing acetabulum, a growing proximal femur and the vasculature that accommodates the bony changes.[1] Osteoarthritis is a chronic, progressive articular disorder characterized by pain.[2] Osteoarthritis is by far the most common disease of the hip and has continuous increase in prevalence with increasing age.[3,4] Replacement is the surgical refashioning of a joint, aims to relieve pain and to retain or restore movement. Total hip replacement involves replacing both the acetabulum and the head and neck of femur.[5] Total hip replacement is the most rewarding procedure in Orthopaedics in patient suffering from advanced degenerative disease of hip.[6]

The primary indication for total hip replacement was the alleviation of incapacitating pain in patients with osteoarthritis in whom conservative measures have failed, of secondary importance was the improved function of the hip[7].

Various systems of pre and postoperative assessment of hip are used but the commonly used system is the Harris scoring system[8]. Total hip replacement is frequently performed in our setup. THR is still in stage of infancy in our country because of lack of optimal theatre facilities, properly trained paramedics and high risk of infection. Despite all these hurdles, early result of primary THR are encouraging and comparable to those mentioned in the literature. But the results of revision hip surgery i.e., conversion to total hip replacement are poor.

MATERIALS AND METHODS

This is a descriptive case series study which includes 30 patients between 30 to 100 years of age. This study was carried out in Orthopaedic Department within six months of period. All patients were asked to sign an informed consent form for surgery and using their data in research. A detailed history (pain at hip, decreased movement at hip, shortening of limb and limp), physical examination (flexion contracture, limb length discrepancy and range of motion, deformity and gait analysis) and pre operative Harris scoring was done. This score was compared with the post operative score to find the improvement after replacement. Diagnosis was confirmed with X-ray hip antero-posterior and lateral views. Baseline investigations including CBC, ESR, CRP, BUN, PT, APTT, blood sugar, anti HCV and HBsAg were done. All the patients were operated on elective list. Preoperative antibiotic of 2nd generation cephalosporins was given at the time of induction. Patients were evaluated postoperatively according to Harris hip score along with x-rays of the operated area at 4, 8 and 12 weeks.

Received on 02-07-2020
Accepted on 23-11-2020

RESULTS

Out of 30 patients 17(56.67%) were males and 13(43.33%) were females. There was bilateral involvement of hips in 9 patients and 21 had unilateral involvement Mean age of patients was 48.35±17.12 years. The average pre-operative function score was 7.32±4.48. At the last follow up the average post-operative function score was 35.25±8.49. So the average improvement in function score was 27.14±8.52 (Table 1). The average pre-operative pain score was 9.95±6.10. At the last follow up, the average post-operative pain score was 41.78±2.88. So the average improvement in pain score was 31.79±4.78 (Table 2). The average preoperative Harris hip score was 22.67±8.45 points and at the time of the last follow-up, the average Harris hip score was 86.75±9.78 points, so the average improvement in Harris Hip score was 62.58±12.10 points (Table 3). Mean pre-operative Harris Hip Score in OA was 25.18±12.92, in AVN 23.37±7.42 in failed implant 20.23±9.78 in AS 22.40±11.14 in RA 27.00±0.00 (Table 4). Mean post-operative Harris Hip Score in OA was

95.10±4.35 in AVN 87.83±10.62 in failed implant 88.21±2.48 in AS 69.12±10.13 in RA 98.00±0.00 (Table 5).

Mean improvement in Harris Hip Score in OA was 66.82±15.65 in AVN 62.48±9.76 in failed implant 69.80±9.67 in AS 45.49±1.00 in RA 71.00±0.00 **(**Table 6). Complications included two periprosthetic fractures (6.56%); one (3.29%) failed femoral component evidenced by progressive subsidence and two (6.45%) dislocation. One patient had subcutaneous hematoma (3.29%) which was drained by stitch removal and one (3.26%) had infection. The result was rated as excellent 90-100, good 80-89 fair 70-79 and poor below 70. The result was excellent for 18(60%) of the hips, good for 7(23.33%), fair for 2(6.67%) and poor for 3(10%).

Table 1: Preoperative function score (n=30)

Function score	Minimum	Maximum	Mean±SD
Pre-operative	0	20	7.32±4.48
Post-operative	9	47	35.25±8.49
Improvement	4	43	27.14±8.52

Table 2: Pain score (n=30)

Pain Score	Minimum	Maximum	Mean±SD
Pre-operative	0	20	9.15±6.10
Post-operative	30	48	41.78±2.68
Improvement	20	45	31.79±4.78

Table 3: Harris hip score (n=30)

Harris hip score	Minimum	Maximum	Mean±SD
Pre-operative	3	39	22.67±8.95
Post-operative	63	98	86.75±9.78
Improvement	42	94	62.58±12.10

Table 4: Mean pre- operative Harris hip score in different diseases (n=30)

Diagnosis	Mean±SD
OA	25.18±12.92
AVN	23.37±7.42
Failed Implant	20.23±9.78
A.S	22.40±11.14
RA	27.00

AVN = Avascular Necrosis, AS= Ankylosing Spondylitis, RA=Rheumatoid Arthritis, OA = Osteoarthritis

Table 5: Mean postop Harris hip score in different diseases (n=30)

Diagnosis	Mean Post- Operative Score±SD
OA	95.10±4.35
AVN	87.83±10.62
Failed Implant	88.21±2.48
AS	69.12±10.13
RA	98.00

Table 6: Mean improvement in Harris hip score in different diseases (n=30)

Diagnosis	Mean±SD Improvement
OA	66.82±15.65
AVN	62.48±9.76
Failed Implant	69.80±9.67
AS	45.49±1.00
RA	71.00±0.00

DISCUSSION

In our study the average age of the patients at the time of operation was 48.35±17.12 years (range 30 to 100 years). Patients with AS and AVN presented at relatively younger age as compared to patients with RA and OA. In a study by Shahabud-din et al the average age of the patients at the time of the operation was 34 years (range 19-49 years).[6] In a study by Berli et al the mean age of the patients at surgery was 67.6 years (36 to 89) for the 76 women and 67.3 years (49 to 86) for the 45 men[9]. In a study by Todkar et al the average age of patients at the time of replacement was 65 years (range 50 to 80 years)[7]. In a study by Ghani et al the average age of the patients at the time of the operation was 57 years (range 25-87 years)[10]. So patients in our study underwent replacement (mean age 48.35±17.12 years) almost one decade earlier than the average age of the patients who underwent replacement in western countries[9,11].

In our study 17(56.67%) patients were male and 13 female (43.33%). Patients with AS were male. Three were males and three female with failed implants. Three were female and two males in OA group. In a study by Berli et al 76 women and 45 men[9]. In a study by Shahab-ud-Din et al 9 (47%) were females and 10(53%) males[6]. In a study by Todkar there were forty men and ten women in this series[7].

The average preoperative Harris hip score in the present study was 22.67±8.45 points, with an average pain score of 9.15±6.10 points and an average function score of 7.32±4.48 points. In the present study average postoperative Harris hip score was 86.75±9.78 points with an average pain score of 41.78±2.68 points and an average function score of 35.25±8.49 points. Most of the patients had marked pain on presentation and all of them had significant improvement post operatively. A maximum pain score of 44 (i.e. no pain) was found in 25(83.33%) of all evaluated hips. Pospischill reported the latest mean post-operative Harris hip score 89.2 (32 to 100). At a mean follow-up of 14.4 years, the clinical ratings were graded as excellent and good in 83 (80.1%), fair in eight (7.7%) and poor in 12(11.6%) of all reviewed hips. The mean pain score was 41.6 (10 to 44). A maximum pain score of 44 (i.e. no pain) was found in 89(86.4%) of all evaluated hips[12].

In a study by Berli et al the mean pre-operative Harris hip score improved from 73 (49 to 83) to 96 (72 to 100) post-operatively.[9] In a study by Bourne et al one hundred and thirty-one hips were available for the latest follow-up examination. The mean post operative Harris hip score for all 131 hips was 89±10 points.[13] In present study the average preoperative Harris Hip Score in patients having osteonecrosis of head of femur was 23.37±7.42 and it improved to average score 87.83±10.62 post-operatively. In rheumatoid hips the score improved to 100 from a preoperative value of 28.00. In a study by Todkar et al the average preoperative Harris Hip Score in patients having osteonecrosis of head of femur was 43 and it went up to 88 postoperatively. In rheumatoid hips the score improved to 82 from a preoperative average value of 45. In cases of ankylosing spondylitis the average preoperative score was 49 and the postoperative score was 83. In cases of osteoarthritis the average preoperative score was 47 and it improved to 87 after total hip replacement[7].

Improvement in Harris hip score in our study is comparable to other studies. In patients with failed implants, osteoarthritis, rheumatoid arthritis and

osteonecrosis of head of femur pain was the main and common complaint. There was significant improvement of pain post operatively in all these patients. A maximum post operative pain score of 44 (i.e. no pain) was found in 25 (83.33%) of all evaluated hips. In cases of ankylosing spondylitis chief complaint was inability to sit in chair due to fused hips and difficulty in walking (pre-operative range of motion score was 0 and deformity score also 0). Post-operatively their range of motion score improved to 4 and deformity corrected with score of 4.

Complications that necessitated a revision operation included two patients with periprosthetic fracture (6.67%); one (3.33%) failed femoral component evidenced by progressive subsidence and one (3.33%) dislocation. One dislocation (3.33%) was reduced under sedation in the ward. One patient had subcutaneous hematoma (3.33%) which was drained by stitch removal. One patient had superficial infection (3.33%) which settled with 2 weeks of antibiotic coverage.

The incidence of infection after primary THR is 1%.It is expensive, time consuming to treat and usually results in poor functional outcome[17] patient who may be at increased risk include severe rheumatoid arthritis, on steroids with previous hip surgery and persons with history of infection in and about the hip.[14] ESR is elevated but is non specific especially in immediate post op period.[15] Aspiration and C/S for organisms is frequently diagnostic.[16] In present study 1 patient had superficial infection (3.33%) which settled with 2 weeks of antibiotic coverage. Shahab-ud-din and colleagues in a study of 20 total hip replacements reported infection rate of 5%.[6] In a study by Todkar et al a deep infection had developed in one (2%) of the fifty hips.[7]

The results according to the Harris hip score were categorized as excellent (90 to 100 points), good (80 to 89 points), fair (70 to 79 points), and poor (less than 70 points).[13] The result was excellent for 18 (60%) of the hips, good for 7 (23.33%) fair for 2(6.67%) and poor for 3 (10.00%). Two patients with poor results were of bilateral AVN and till the last follow-up were operated on one side, therefore their functional score was limited to 7 and 12 only. Third case with poor result was of ankylosing spondylitis involving both hips, for which bilateral THA was performed, had left knee flexion contracture of 25º due to surgery in the past for supracondylar fracture left femur.

Bourne et al in a study of one hundred and thirty-one hips reported the result of excellent for seventy-six hips, good for thirty-four, fair for fifteen and poor for six.[13] Shahab-ud-Din and colleagues in a study of 20 total hip replacements reported result as excellent for 5 (25%) of the hips, good for 9 (45%) of the hips, fair for 4 (20%) of the hips, and poor for 2(10%) of the hips.[6] In a study by Pospischill et al mean follow-up of 14.4 years, the clinical ratings were graded as excellent and good in 83 (80.1%), fair in eight (7.7%) and poor in 12(11.6%) of all reviewed hips. The mean pain score was 41.6 (10 to 44) and the mean functional score 47.6 (17 to 56)[12].

CONCLUSION

It is concluded that all patients have shown significant improvement in relief of pain, range of movement and deformities. All the patients are very well adjusted to the changed life style required after total hip replacement. Most of the patients were satisfied.

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