FUNCTIONAL OUTCOME IN PATIENTS WITH UNCEMENTED TOTAL HIP ARTHROPLASTY IN YOUNG ADULTS USING OXFORD HIP SCORE: A STUDY FROM PUNJAB REGION

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ABSTRACT

Background & objectives: Avascular necrosis (AVN) of the femoral head is one of the primary reasons of painful hip in a young adult. This study aimed to determine functional outcome in patient with uncemented total hip arthroplasty in young adults using oxford hip score. **Methods:** The study was carried out on 30 hips of 30 patients of avascular necrosis, operated with uncemented Total Hip Replacement. Information on the patients was compiled from clinical details, case files and operation theatre records. Who are followed up for the duration of 6 months. **Results:** The mean Oxford Hip Score preoperatively was 18.97 ± 1.79; at 2 weeks, it was 25.37 ±1.56; at 1 month, it was 31.77 ± 2.82; at 3 months, it was 39.93 ± 4.33; and 6 months, it was 51.43 ± 3.29. There was a statistically significant improvement in the mean Oxford Hip Score at 2 weeks compared to preoperative value (P=0.001), at 1 month compared to 2 weeks (P=0.001); at 3 months compared to 1 month (P=0.001); and at 6 months compared to 3 months (P=0.001). **Conclusion:** Total hip Arthroplasty relieves pain and functional disability experienced by patients with moderate to severe arthritis of the hip, secondary to AVN and improving their quality of life.

Key words: Oxford hip score, Total Hip Replacement, functional disability, femoral head

INTRODUCTION

The normal hip joint is subjected to several stresses throughout daily activities conducted by an individual. Since it is one of the major weight bearing joints of the body, its regular function is vital for quiet and enjoyable day-to-day existence. Avascular necrosis (AVN) of the femoral head is one of the primary reasons of painful hip in a young adult. The natural history of this disease is one of relentless progression with eventual collapse of the femoral head, followed by subsequent osteoarthritic alterations in the hip.[1-3]

Evaluation of long-term results of an operational surgery is necessary to assess the long- term effectiveness of treatments like total hip replacement (THR). For

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assessing the improvement in function following surgery, surgeons and clinical researchers are relying more and more on patient-derived outcome scores. It enables a tool to compare the outcomes of various healthcare procedures, which can potentially influence how operations are done and how implants are created.[4-6]

Although hip replacement is one of the most successful surgeries in the clinic, several factors (surgical and nonsurgical) influence the outcomes of the surgery. Based on diverse parameters, we report first on nonsurgical factors and surgical factors. Non-surgical factors include gender, age, the type of prosthesis material, longevity, and body mass index (BMI).[7,8] Surgical considerations include anesthetic, the skill of the surgeon, and the postoperative rehabilitation program. In recent years, factor-related progress has been accomplished in the clinic and published in the literature.[9] If factors are changed in a proper way, they can demonstrate greater expectations for the results of the hip replacement operation.[10,11] This study aimed to determine functional outcome in patient with uncemented total hip arthroplasty in young adults using oxford hip score. To find an association of clinico-demographic profile and grade of avascular necrosis with functional outcome of the study subjects.

MATERIALS AND METHODS

This study was conducted at the Department of Orthopaedics at Adesh Institute for Medical Sciences and Research Centre, Bhatinda during June 2022 to February 2024. The study was carried out on 30 hips of 30 patients of avascular necrosis, operated with uncemented Total Hip Replacement. Information on the patients was compiled from clinical details, case files and operation theatre records who are followed up for the duration of 6 months.

All patients who were diagnosed with stage III or stage IV avascular necrosis of the femoral head were admitted and received a standard clinical and laboratory examination. This evaluation included a brief discussion of each patient's age, sex, address, BMI, clinical history, and regular preoperative tests. Clinical information and Case files were also used to compile data on the patients. Clinical assessments, hospital case sheets, and discharge summaries were used to collect pre-operative ROM, deformities, and their values for the study.

Detailed history and proper clinical examination is essential to find out, Duration of illness, any focus of infection in the body, sensory motor examination, vascularity of limb, ambulatory status of the patient deformities of the hip, ROM of the hip and status of the other joints. Tension and ROM were measured using goniometer. All the patients were assessed using Oxford Hip Score. Preoperative Templating was also done in order to determine the size of prosthesis that will be used during performing Total hip replacement. And they were also counselled pre operatively for strict life style modification pre operatively. Radiogram of the pelvis with both hips with proximal half of shaft of femur AP view was taken for all patients.

At each visit, a medical history is obtained and a physical examination is performed. The deformity and ROM were measured with goniometer and limb length were measured with measuring tape and Gait was recorded and compared from previous follow up. The clinical and functional outcomes were evaluated by Oxford Hip Score. The patients were followed up at 1 month, 3 months and 6 months Patient follow-up period lasts at least 6 months.

RESULTS

The study primarily comprised male participants (83.3%), with only a small portion being female (16.7%). The mean age of participants was 36.87 years, with a standard deviation of 9.87 years. A significant proportion (43.3%) fell within the age range 31-40.

The majority of AVN occurred on the right side (63.3%), with a slightly lower percentage on the left side (36.7%). Gender distribution varied, with males showing a slightly higher percentage on the right side compared to females.

The above table shows the distribution of patients according to age. 7 (23.3%) patients were in the age group of 21-30 years; 13 (43.3%) were in the age group of 31-40 years; 7 (23.3%) were in the age group of 41-50 years; and 3 (10%) were of age more than 50 years. Most of the patients were in the age group of 31-40 years. The mean age of the patients was 36.87 ± 9.87 years (Range: 22 to 57 years). (Table 1)

Table 1: Distribution of patients according to age (N=30)

Age	Number (No.)	Percentage (%)
21-30 years	7	23.3
31-40 years	13	43.3
41-50 years	7	23.3
>50 years	3	10.0
Total	100	100.0

The above table shows the distribution of patients according to duration of disease. The duration of disease was 1 year or less in 9 (30%) patients; it was between 1-2 years in 17 (56.7%) patients; and it was between 2-3 years in 4 (13.3%) patients. (Table 2)

Table 2: Distribution of patients according to duration of disease (N=30)

Duration of disease	Number (No.)	Percentage (%)
<=1 year	9	30.0
1-2 years	17	56.7
2-3 years	4	13.3
Total	30	100.0

The above table shows the distribution of patients according to etiology. Etiology was idiopathic in 21 (70%) patients; steroid intake was the cause in 5 (16.7%) patients; sickle cell anemia was the cause in 3 (10%) patients; and alcohol intake was the cause in 1 (3.3%) patient. (Table 3)

Table 3: Distribution of patients according to etiology (N=30)

Etiology	Number (No.)	Percentage (%)
Idiopathic	21	70.0
Steroid intake	5	16.7
Sickle cell anemia	3	10.0
Alcohol intake	1	3.3
Total	30	100.0

The above table shows the comparison of mean Oxford Hip Score between different time points. The mean Oxford Hip Score preoperatively was 18.97 ± 1.79; at 2 weeks, it was 25.37 ± 1.56; at 1 month, it was 31.77 ± 2.82; at 3 months, it was 39.93 ± 4.33; and 6 months, it was 51.43 ± 3.29. There was a statistically significant improvement in the mean Oxford Hip Score at 2 weeks compared to preoperative value (P=0.001), at 1 month compared to 2 weeks (P=0.001); at 3 months compared to 1 month (P=0.001); and at 6 months compared to 3 months (P=0.001). There was a persistent improvement in the mean Oxford Hip Score from preoperative time point till 6 months. (Table 4)

Table 4: Comparison of mean Oxford Hip Score between different time points (N=30)

Time Points	Number (No.)	Oxford Hip Score [Mean±SD]	't' value, df	P value
Preoperative	30	18.97 ± 1.79	-28.078, df=29	0.001*
2 weeks	30	25.37 ± 1.56		
2 weeks	30	25.37 ± 1.56	-14.024, df=29	0.001*
1 month	30	31.77 ± 2.82		
1 month	30	31.77 ± 2.82	-13.060, df=29	0.001*
3 months	30	39.93 ± 4.33		
3 months	30	39.93 ± 4.33	-18.918, df=29	0.001*
6 months	30	51.43 ± 3.29		
Paired 't' test applied. P value <0.05 was considered as statistically significant				

DISCUSSION

Bourne et al[12] studied the outcomes of total hip replacement with insertion of prosthesis without cement in patients who had advanced osteoarthritis, reported pain in the thigh in 27 percent (twenty-seven) of 101 arthroplasties and more than 2 millimeters of subsidence of the femoral component in twenty-five hips. In our study we did not have any cases of subsidence of the implant.

Another study detected no association between pain in the thigh and position of the stem which shows similar results as seen in a study by Matthew J. Kraay, Victor M. Goldberg et al[13] pain in the thigh occurred in only 5 percent (five) of the total hip arthroplasties and detected no association between pain in the thigh and the size of the stem.

Intra operative peri-prosthetic femoral fractures are becoming increasingly common and are a major complication of total hip replacement (THR). The largest study of intra operative femoral fractures at the time of revision total hip arthroplasty was reported by Meek et al. Of 211 consecutive patients, 64 (30%) sustained an intra operative femoral fracture and 147 did not sustain a fracture. In there study we don‘t came across such complication in any patient.[14]

Konyves and Bannister noted that lengthened limbs were also associated with lower clinical hip scores.[15] Limb-length discrepancy can result from a poor pre operative patient evaluation as well as intraoperative technical errors with regard to the level of resection of the femoral neck, the prosthetic neck length, or the failure to restore offset. In there study 3 (12%) patients had limb length discrepancy of them all 3 had excellent functional outcome.

CONCLUSION

Total hip Arthroplasty is a well-documented surgical procedure. It relieves pain and functional disability experienced by patients with moderate to severe arthritis of the hip, secondary to AVN and improving their quality of life. Excellent results can be expected in patient of younger age and with low BMI & Waist : Hip Ratio, with no comorbidity & shorter Duration of surgery. Restoration of the biomechanics of the hip is important for the good outcome and longevity of the prosthesis.

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