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Improvement in Harris Hip Score and Patient Satisfaction after Total Hip Replacement-A Prospective Study at a Tertiary Care Hospital

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Abstract: ***Total hip has revolutionized the treatment of patients suffering from various hip pathologies and in various studies has shown superior outcomes in comparison to previous treatment modalities. In this prospective study pre and post operatively 30 patients who underwent total hip replacement were assessed with Harris hip score and radiologically. The mean Harris Hip Score reached 90.6 six months after THR from 66.7 preoperatively and only 2 patients were dissatisfied out of 30. Total hip replacement improves patient life significantly when functions are evaluated one year after the surgery.***

Keywords: Total hip replacement, Harris hip score, radiological outcome, clinical outcome

1. Introduction

Since the publication of the initial studies on THR in the 1960s, THR has evolved into a reliable and suitable surgical procedure to relieve pain and restore function among patients with damaged or degenerated hip joints and chronic pain. [1-5]Indications for hip replacement include radiological evidence of joint damage, persistent pain, and/or functional disability that is not adequately relieved by non-surgical treatment such as analgesics or physical therapy. [2;4;6;7] Patients with deterioration due to primary osteoarthritis, fractures, or rheumatoid arthritis constitute the largest group of patients.[8-10] THR has been described as the greatest achievement in orthopaedic surgery in the twentieth century,[11] and the annual number of THR procedures has risen steadily worldwide during the last decade. The predictability of the results of THR is excellent in the older age groups, whereas the longevity of the implant in young and active patients still remains unsatisfactory, with failure rates ranging from 20% to 42%.[13-17] Restoration of a normal movement patterns of the hip after THR provides better clinical function and reduce wear[18;20,]. The evolution of THR has been aided by information generated from gait analysis studies. Design criteria based on load magnitudes generated during gait have been used for both failure analysis and wear testing of new implants. A key to analysis of function after joint replacement is the ability to identify gait adaptations specific to design features.[27] Several studies have used gait analysis to study functional outcome after THR.[28-39] When the outcomes of THR are evaluated, numerous factors other than the surgery itself should be taken into account. Outcome after THR depends not merely on a successful surgical procedure, but also on adequate postoperative rehabilitation. Multimodal rehabilitation or fast-track surgery has been introduced to reduce the surgical stress response, improve recovery, reduce hospitalization, and improve rehabilitation after surgery.[40-42] However, no current evidence suggests any single measure to improve postoperative rehabilitation afterTHR.[43-44]

Aims and Objectives

Result analysis of total hip arthroplasty in advanced arthritic / diseased hips

Specific Objective of Study

1) Determination of Harris hip score pre and postoperative patients.
2) Comparison of functional, radiological and quality of life between pre and postoperative patient with THR in advanced arthritic hip.

2. Material and Methods

1) Study area- NRS Medical College And Hospital
2) Study period- NOV 2014 TO SEP 2016
3) Sample size- 30
4) Sample design- 30 patient with advanced arthritic hip attending orthopaedic OPD/Emergency.
5) Study design-the study will be prospective and retrospective, nonrandomized, uncontrolled ,interventional study group The study will be performed over a cohort of patient attending orthopaedic OPD /ER with arthritic hip between November 2014 to September 2016

Study Technique

Step 1: Preoperative radiological investigations and clinical examination

Step 2: Operative intervention with posterolateral approach

Step 3: Patients follow up at regular interval to evaluate functional/clinical outcome improvement in quality of life.

Step 4: Comparison between functional/ radiological/ improvement in quality of life preoperative and post operative.

Inclusion Criteria

- Patient with advanced arthritic hip
- Both male and female
- Age 25-80 yrs

Exclusion Criteria

- Patient having infection over hip or any other region.
- Medical illness making patient unfit for anaesthesia

Parameters to be Studied

a) Clinical parameters: according to clinical examinations and modified Harris hip score evaluation.
b) Harris hip score consisting of pain limp, distance walked, stairs climbing, put up shoes or shocks, sitting, enter public transport, leg length deformity, range of motion)
c) Imaging parameters by skiagram, CT SCAN, MRI.

Study Tools

-X RAY -CT SCAN -MRI

Implant

- We used metal-on-polyethylene which is the longest tried and tested bearing. The convex femoral stem is constructed of metal (usually a cobalt chrome alloy) and the concave cup liner is made of a plastic called polyethylene.
- 28 patients undergone uncemented THR and cemented THR done on only two patients

Follow Up

Patients were evaluated clinically and radiologically at 6weeks,3 month and 6 months.
Modified Harris hip score was evaluated at each follow-up.

3. Observations and Results

38 total hip replacements were done on 30 patients and the results are compiled, analysed and data is presented.

Table 1: Age Distribution

Age Group	No. of Patient	% (Percentage)
20-30yrs	8	26.6
30-40yrs	8	26.6
40-50yrs	8	26.6
50-60yrs	0	
60-70yrs	4	13.3
70-80yrs	2	6.6
Total	30	100

The mean age was 41.6 years (Range from 24 to 72 years)

Table 2: Sex Incidence

Sex	No. of Patient	% (Percentage)
Male	22	74
Female	8	26
Total	30	100

76 % male and 26 % female patient.

Table 3: Duration of surgery

Duration	No. of Surgery	%
90-120mints	5	13.1%
120-150 mints	26	68.4%
150-180mints	18.4	20%

Average duration of surgery was 110 min.

Table 4: Limb Length Discrepancy

LLD	No. of Patient	(Percentage) %
Equal	21	70%
Lengthening	3	10%
Shortening	6	20%
Total	30	100

Total 30% patient faces limb length discrepancy. In which 3(10%) patients had lengthening (mean 9.6 mm), 21 (70%) equal and 6 (20%) short (mean −7.8 mm) limbs on the operated side.

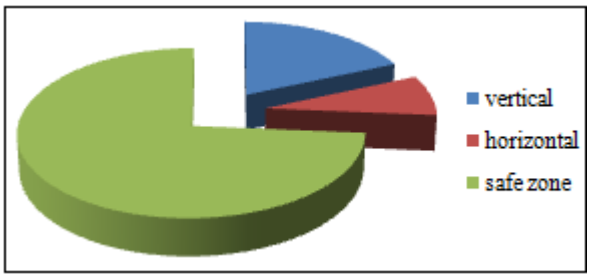
Radiographic Analysis

Inclination and Version

The inclination angle of the cup was defined as the angle formed by the line connecting the two tear drops and the line connecting the upper and lower end of the open plane of the cup on a frontal radiograph. For anteversion measurement the short axis of the projected ellipse is measured and related to the total cross-section of the projected cup along the short axis.

Table 5: Inclination

Inclination	No. of Cups	(Percentage) %
Vertical	7	18.4%
Horizontal	3	7%
Safe Zone	28	73.6%
Total	38	



Lewinnek et al. And McCollum, et al proposed the safe zone as 30–50 degrees for the inclination angle of the cup, and 5–25 degrees for the anteversion angle of the cup.

Vertical	>50 degree
Safe Zone	30-50degree
Horizontal	<30 degree

Table 6: Anteversion

Anteversion	No. of Patient	% (Percentage)
excess (>$25^{0)}$	5	13.20%
safe zone(5-25^{0})	33	86.80%

Table 7: Harris Hip Score

	preoperative	6week	12week	6 month
Harris hip score	67.6	82.8	87.9	90.2

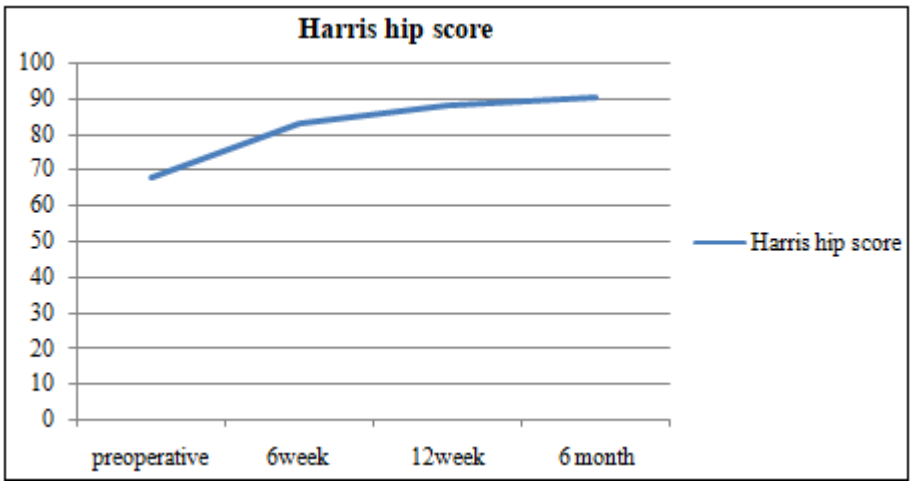


Figure 22

Excellent	>90
Good	80-89
Fair	70-79
Poor	<70

Pre op mean score was 67.6, which at 6 weeks of post operative period goes to 82.8, further increased to 87.9 at 12 weeks which categorize as a good result and at 6 month increases to 90.2 which is an excellent result.

Table 8: Centre of Rotation Vs Offset Discrepancy

COR Superior (mm)	No. of Cups	Mean Offset Discrepancy(mm)
0 to3mm	8	1.8mm
4to 5mm	3	3.6mm
6+	4	7mm

Offset of cup with Centre of rotation superior up to 5 mm are within 6 mm. Cups having 6mm+ superior COR having mean offset difference of 7mm, which is slightly higher than safe range of 6mm

Table 9: Patient Satisfaction

	No. of patient	(Percentage) %
Satisfied	28	93.3%
Unsatisfied	2	6.6%

4. Discussion

In this study mean age was 41.6 yr. Range from 24 to 72 yrs.76% was male and 26% female patient.

Average duration of surgery in our series was 110 min.

To assess the result of our study, pre and post operative Harris hip score were evaluated. Mean Pre op score was 67.6, which at 6 weeks of post operative period goes to 82.8, further increased to 87.9 at 12 weeks which categorize as a good result and at 6 month increases to 90.2 which is an excellent result. Our result was corroborative with Study performed by C. Y. Ng, J in Victoria Hospital, Kirkcaldy Scotland in which HHS goes to 91 from 55.3.[1,2,3]

Two patient one having surgical site infection and other having dislocation remain unsatisfied with the operation.7% to 15% of patients are dissatisfied in 123 patient in study done by Clémence Palazz, Claire Jourdan[4,5]

5. Limitation of our Study

- Lack of control group
- Short follow up
- Relative small population

6. Conclusion

- Total hip arthroplasty has become the treatment of choice for hip-related disorder,leading to arthritis.
- It not only relieves pain but also restores function.
- After operation most of the patients, are better able to perform most activities of daily life.
- Not only elderly patient, THR is excellent option for younger patients too.
- The cementless proximal porous coated stems provided a good option for both young and elderly patients
- Application of allograft gives excellent result in case of acetabular deficiency.
- Better technique of soft tissue repair reduces the risk of dislocation in case of posterolateral approach to hip.
- Incidence of deep infection has declined since the early years of joint replacement surgery, attracting large number of patient to opt for the surgery

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Discussion

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