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Various Approaches in Total Hip Replacement: Evaluation of Functional Outcome

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Abstract

Objectives & Aims: *1) To evaluate best approach for performing primary total hip replacement in view of functional improvement, intra-op minimal trauma, intra-op surgeon's preference, post-op rehabilitation. Various approaches available are Anterior approach, Antero-lateral approach, Lateral approach, Posterior approach, Trans trochanteric approach & Mini incision anterior approach. In our study only anterolateral (4 cases), lateral (12 cases) & posterior (7 cases) have been performed.*

Evaluation of approach was based on Intra-op assessment by surgeon & Post-op assessment that included Subjective assessment by scoring system & Objective assessment by muscle charting.

Material & Methods: *This Prospective study done at department of orthopaedics in M. Y. Hospital & M.G.M. Medical college INDORE from june 2010 to august 2012. All cases irrespective of cause admitted in routine opd for THR were included in study. All surgeries were elective & planned.*

Cases were studied by History, Intra-operative assessment of surgical approach used, implant details, Pre-op & post-op assessment of functional status with help of standard scoring systems.

Conclusion: *I-deal approach for total hip replacement should provide wide exposure, should be extensile, Minimal traumatic, Safe for neurovascular with Accurate Leg length & implant placement, Early & good Post-op rehabilitation, allows good post-op nursing care, Improvement in functional status etcin our study we found anterolateral approach to b superior than lateral & posterior approach*

Keywords: *Approach, Functional Outcome, Oxford Score, Total Score.*

Introduction

Arthroplasty has evolved over a period of some 160 years. There has been advances in various aspects of arthroplasty like implants, techniques, APPROACHES etc. Every approach has advantages and disadvantages. The ideal surgical approach for total hip arthroplasty should provide wide exposure to the acetabulum & proximal femure , address wide array of deformities seen in arthritis of hip & be extensile ,minimal traumatic on surrounding muscles, tendons & ligaments, safe in regards to neurovascular structures. With a good approach Hip replacement could be performed in an efficient manner to lessen the risk of infection & thromboembolism & hasten postoperative

Material & Methods

This Prospective study done at department of orthopaedics in M. Y. Hospital & M.G.M.

Medical College INDORE from June 2010 to august 2012. All cases irrespective of cause admitted in routine opd for THR were included in study. All surgeries were elective & planned.

Cases were studied by History, Intra-operative assessment of surgical approach used, implant details, Pre-op & post-op assessment of functional status with help of standard scoring systems, Review of literature.

Exclusion criteria were < 15 & >65 yr of age; Patients with other systemic diseases; Patient with infection; Patient with spine abnormalities.

On admission general and local examination performed. Blood; urine & radiological investigations done; X-ray PBH, X-ray hip with thigh AP & Lat view & MRI were main concerned. Acceptability criteria for X-ray PBH for pre-op radiological measurements were tip of coccyx seen just behind symphysis pubis & both side tear drop and tip of lesser trochanter seen clearly.

Scoring system used were oxford hip score & total (combo) hip score [WOMAC + Harris Hip Score + Oxford hip score]. Total hip score is new score of 25 questions made in our institution & checked on various patients operated for hip problems. It came out to be as efficient as other hip scores previously available. Patient were kept under regular follow-up since the day of operation; Examined at 15th day, 1 month, 3 month, 6 month, 1 year, 2 year post-operatively. Pre & post-op scores taken & compared. All efforts were kept to minimize confounding factors. Confounding due to variable pre-op score eliminated by taking % improvement as measure of functional improvement rather than taking only post op score as measure of improvement

$$\% \text{ improvement} = \frac{\text{postop score} - \text{preop score}}{\text{max score} - \text{preop score}}$$

Observation & Discussion

Total Average % Improvement by Individual Approach

	oxford	Total Oxford + WOMAC + Harris-hip
ANTEROLATERAL	93.81%	91.74%
LATERAL	83.61%	79.92%
POSTERIOR	75.56%	65.30%

Master Chart

		ANTEROLATERAL	LATERAL	POSTERIOR
1	PAIN IN HIP	92.85%	90.69%	80.95%
2	DISTURBANCE OF SLEEP	92.80%	85.71%	76.47%
3	JERKING PAIN	75.00%	72.22%	100%
4	LIMPING	81.25%	75.00%	60.71%
5	WALKING TIME	100%	93.75%	85.00%
6	UP & DOWN STAIRS	100%	71.05%	71.42%
7	MARKET GOING	100%	78.04%	70.37%
8	WEARING & TAKING OFF SHOES	81.81%	84.61%	72.72%
9	RAISING FROM CHAIR	100%	84.00%	82.35%
10	USE OF VEHICLE	100%	92.85%	80.70%
11	DIFF IN BATHING	100%	87.09%	78.94%
12	DAILY ACTIVITIES	100%	88.23%	75.00%

Result

	Anterio-lateral	Lateral	posterior
LENGTH OF INCISION	17- 18 CM	14 – 15 CM	14 CM
AVG INTRAOP BLOOD LOSS	275 ml	325 ml	420 ml
IMPROVEMENT IN OXFORD HIP SCORE	93.81%	83.61%	75.56%
IMPROVEMENT IN TOTAL HIP SCORE	91.74%	79.92%	65.30%
IMPROVEMENT IN PAIN SCORE	92.85%	90.69%	80.95%
IMPROVEMENT IN GAIT SCORE	81.25%	75.00%	60.71%
IMPROVEMENT IN ROUTINE ACTIVITIES	100%	88.23%	75.00%
IMPROVEMENT IN UP & DOWN STAIRS	100%	71.05%	71.42%
HOSPITAL STAY	3.5 DAYS	5.8 DAYS	7.2 DAYS

Avg length of incision max in posterior & min in lateral approach group. Intraop blood loss max in lateral & min in anterolateral approach group. Exposure [placement of femoral & acetabular component] was max & easy in posterior & min & difficult in anterolateral group. In our study time taken by surgeon was more dependent on surgeon rather than specific approach that was used. Intra-op use of imaging machine was possible only in anterolateral approach so leg length & position of acetabular cup & femoral placement was more confident intra-operatively. Improvement in oxford hip score & total hip score [WOMAC + HHS + OHS] was max in anterolateral group & min in posterior group. Post-op nursing care best in anterolateral & difficult in posterior group [due to scar site]. Improvement in pain score max in anterolateral & min in posterior group. Improvement in gait max in anterolateral & min in posterior group. Improvement in performance of daily routine activities & improvement in up-going & down-going stairs max in anterolateral & min in posterior group. On pre-op & post-op muscle charting there was weakness of abductors seen in lateral approach group & of ext rotators in posterior group. No specific muscle weakness seen in anterolateral group. Minimum avg hospital stay was in anterolateral group & max was in posterior group.

1] antero-lateral approach group:- got average oxford & total score improvement of 93.81% & 91.74%. Average age in this group was 22 year that is younger than any other group may b a confounding factor in assessment. Sex ratio was 3:1 with male predominance.

2] Lateral approach: got average oxford & total score improvement of 83.61% & 79.92%. Average age in this group was 32.66 year. Sex ratio was 10:2 with male predominance.

3] Posterior approach:- got average oxford & total score improvement of 75.56% & 65.30%. Average age in this group was 43.57 year. All were males.

Conclusion

Ideal approach for total hip replacement should provide wide exposure, should be extensile, Minimal traumatic, Safe for neurovascular with Accurate Leg length & implant placement, Early & good Post-op rehabilitation, allows good post-op nursing care, Improvement in functional status etc.

In Our Study we found Anterolateral Approach to B Superior than Lateral & Posterior Approach.

In summery every approach has pros & cons. There are multiple surgical approaches for hip surgery& there r also multiple surgeons who advocate one particular approach over other. Preferable & best these two words r very different. There have been studies proving one approach superior than others but the not a single approach has proved to b best. Preferable surgical approach is very much individualized & differ for every surgeon. & surgeon should go for approach that he used to & learned most.

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