

# Clinico-radiological correlation and functional outcome after surgery in developmental dysplasia of hip

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## INTRODUCTION

- MRI – three dimensional assessment - no additional radiation hazard.
- Assess various acetabular and femoral head parameters preoperatively/ postoperatively
- Few previous studies in literature - MRI to quantify dysplasia and predict the procedure required and outcome.
- No defined conclusive criteria.

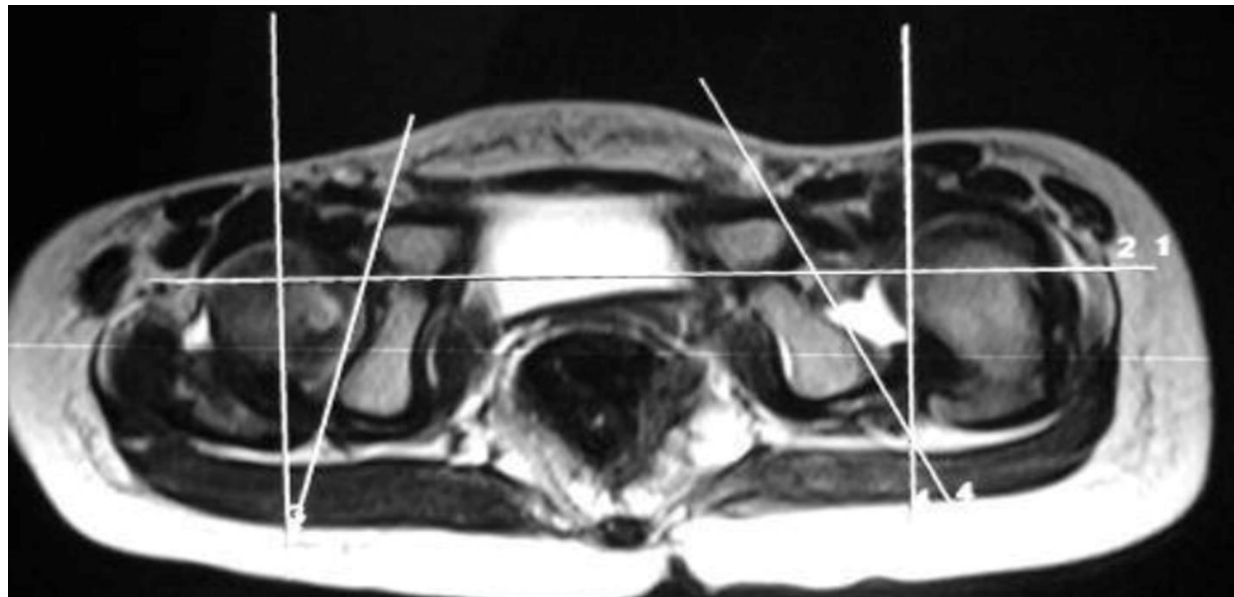
## AIMS AND OBJECTIVES

- Primary Objective: Evaluate preoperative predictive accuracy of MRI – containment surgery.
- Secondary Objectives:
  - 1) Evaluate acetabular and femoral parameters and comparison with normal side.
  - 2) Postoperative assessment of adequacy of reduction.

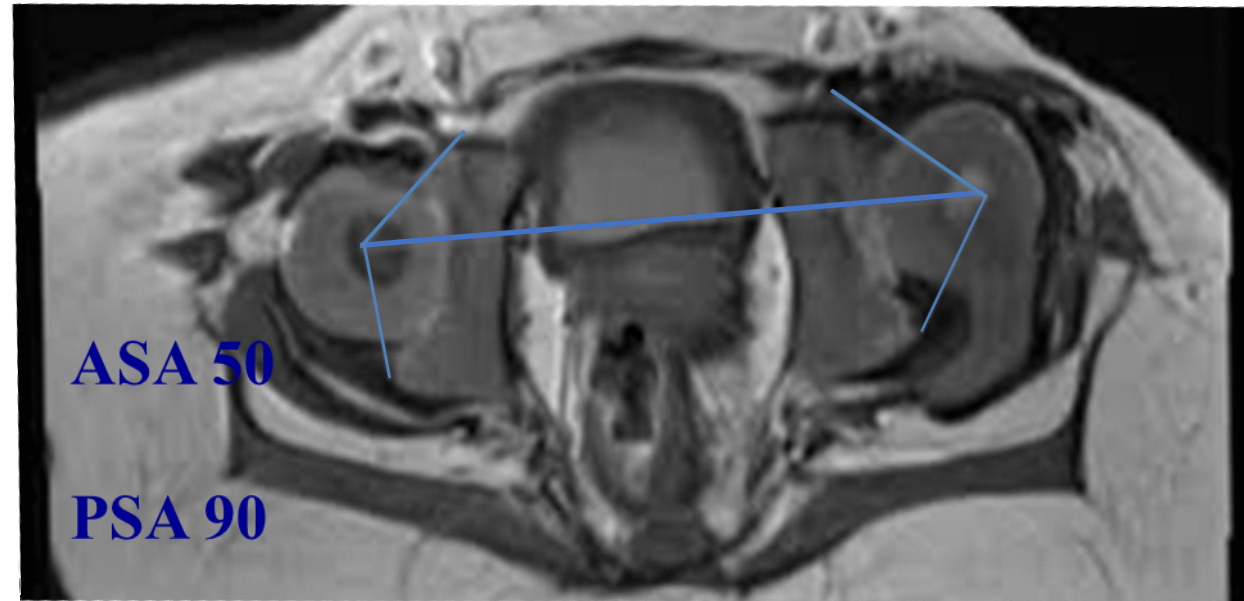
## MATERIALS AND METHODS

- Study Design: Prospective cohort study for a period of one year.
- Patients – Clinically and radiographically diagnosed patients of DDH in 1- 4 years planned for surgery.
- IEC approval obtained before the study.
- We measured femoral and acetabular anteversion (FA & AA), acetabular index (AI), anterior and posterior sector angle (ASA&PSA) and percentage of femoral head coverage (PFHA) pre-op and 6 month post operatively.

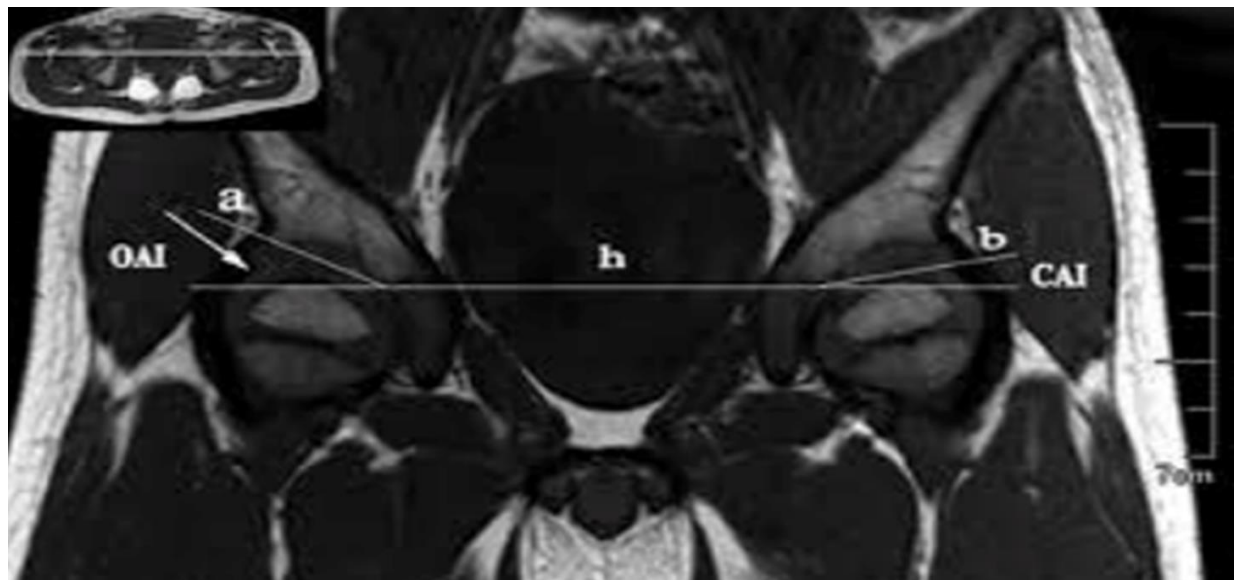
## ACETABULAR ANTEVERSION (AA)



## Anterior Sectoral Angle (ASA) and Posterior Sectoral Angle (PSA)



## ACETABULAR INDEX (AI)



## FOLLOW UP EVALUATION

- Clinical Evaluation – 3 months and 6 months
  - Stability of hip and maintenance of reduction,
  - Range of motion of affected hip,
  - Pain and length discrepancy of limbs.
- Follow up MRI – at six months post operatively.
- McKay's Criteria used for post operative clinical evaluation.

## RESULTS

- Total cases: 15/ female
- Side: Right (8)/Left (&)
- Mean age:  $30.87 \pm 8.13$  months
- Open reduction (OR) only: 7 (mean age  $25 \pm 3.51$ )
- OR + Salter's osteotomy: 8 (mean age  $37.14 \pm 7.94$ )

## Pre-op OR (open reduction) with Salters osteotomy

	Control side	Involved side
FA	$39.250 \pm 8.224$	$37.500 \pm 5.888$
AA	$22.188 \pm 5.343$	$23.600 \pm 5.050$
AI	$22.545 \pm 4.404$	$43.0 \pm 10.29$
ASA	$56.625 \pm 3.5832$	NA
PSA	$70.875 \pm 19.24$	NA
PFHA	$81.000 \pm 21.565$	NA

## Pre-op OR (open reduction) only Group

	Control side	Involved side
FA	$33.571 \pm 9.501$	$33.143 \pm 12.721$
AA	$22.714 \pm 12.543$	$24.000 \pm 10.409$
AI	$21.714 \pm 3.543$	$42.571 \pm 10.357$
ASA	$58.429 \pm 7.871$	NA
PSA	$68.714 \pm 20.254$	NA
PFHA	$84.714 \pm 7.43$	NA

## Post-OP

	OR(open reduction) only group	OR + Salter's group
AA	$19.100 \pm 12.973$	$16.825 \pm 5.472$
AI	$25.572 \pm 6.1334$	$20.925 \pm 7.868$
ASA	$57.286 \pm 14.772$	$59.000 \pm 15.344$
PSA	$70.429 \pm 11.956$	$66.250 \pm 13.495$
PFHA	$76.286 \pm 18.936$	$81.625 \pm 13.421$

## DISCUSSION

- Based on AI and AA - OR + Salter's osteotomy in all cases.
- Intraoperative stability test precluded Salter's in 7 cases.
- Only significant factor that differed - age at surgery
- PFHA and ASA better in OR + Salter's group than OR only, but not statistically significant.
- All in OR + Salter's – clinical outcome - McKay 1.
- 3 were McKay 2 in the OR only group.
- ASA, PFHA correlated with better outcome.

## CONCLUSION

- Salter osteotomy group - better clinical outcome than OR only group due to better coverage.
- Even in cases where intraoperative stability (based on Zadeh et al.) is good – pelvic osteotomy provides better coverage and leads to satisfactory outcome.

## LIMITATIONS

- Small sample size
- Short term follow-up
- No population specific defined normal parameters

