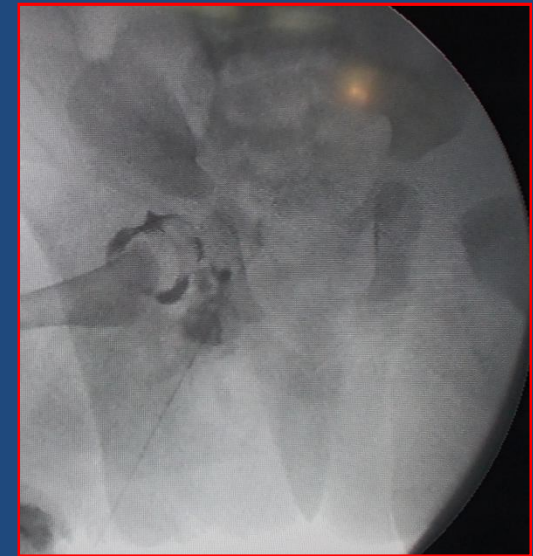
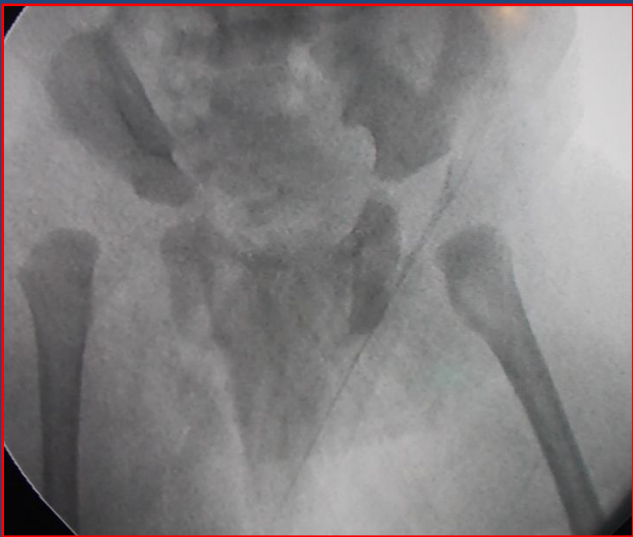


# CLOSED REDUCTION, ARTHROGRAM AND HIP SPICA AS A MODALITY OF TREATMENT OF DDH



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# Materials and Methods

- 22 consecutive children with 34 hips with minimum followup of 1 y.
- Hips with dislocation were included in the study
- USG, X ray

# Materials and Methods

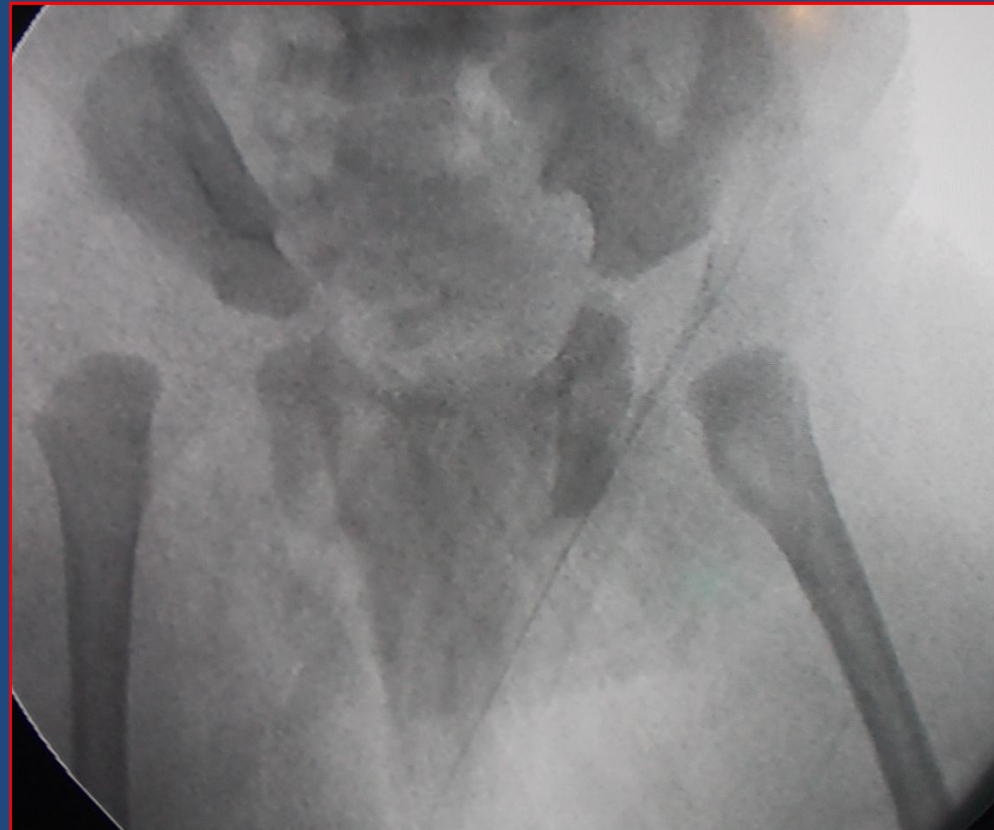
- Pavlik harness for 6-9 month with gradual weaning.
- Follow up- 1 year
- Percutaneous adductor tenotomy was performed under anaesthesia. Arthrogram was done to delineate the head and confirm the adequacy of reduction.
- Hip spica was given for 1.5-3 months depending on the instability noted.

# Procedure

1 month



Radiograph



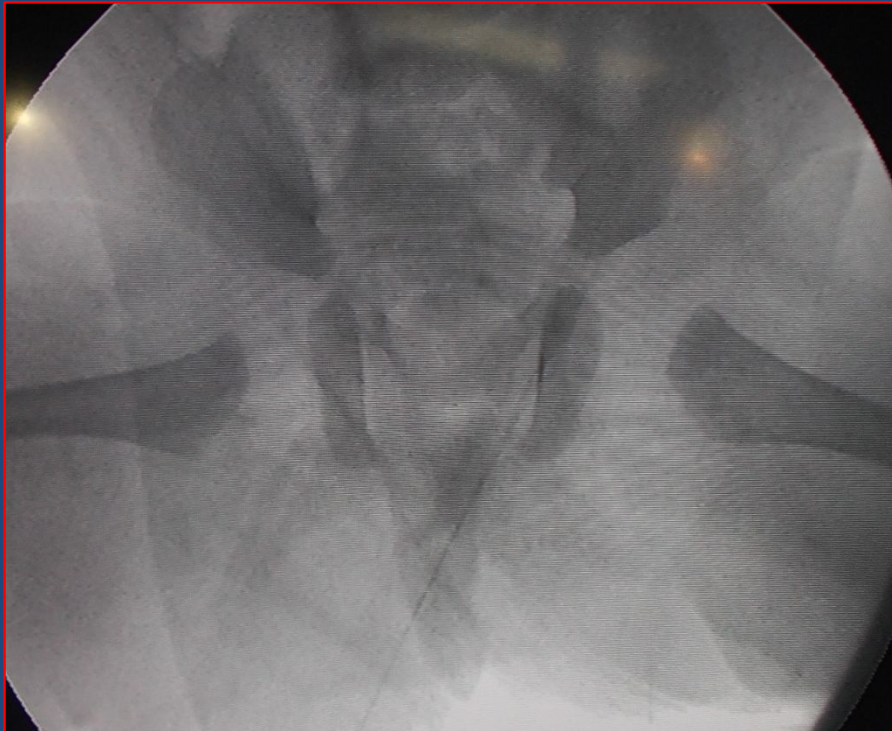
# Adductor and gracilis tenotomy





# Reduction

Abduction view

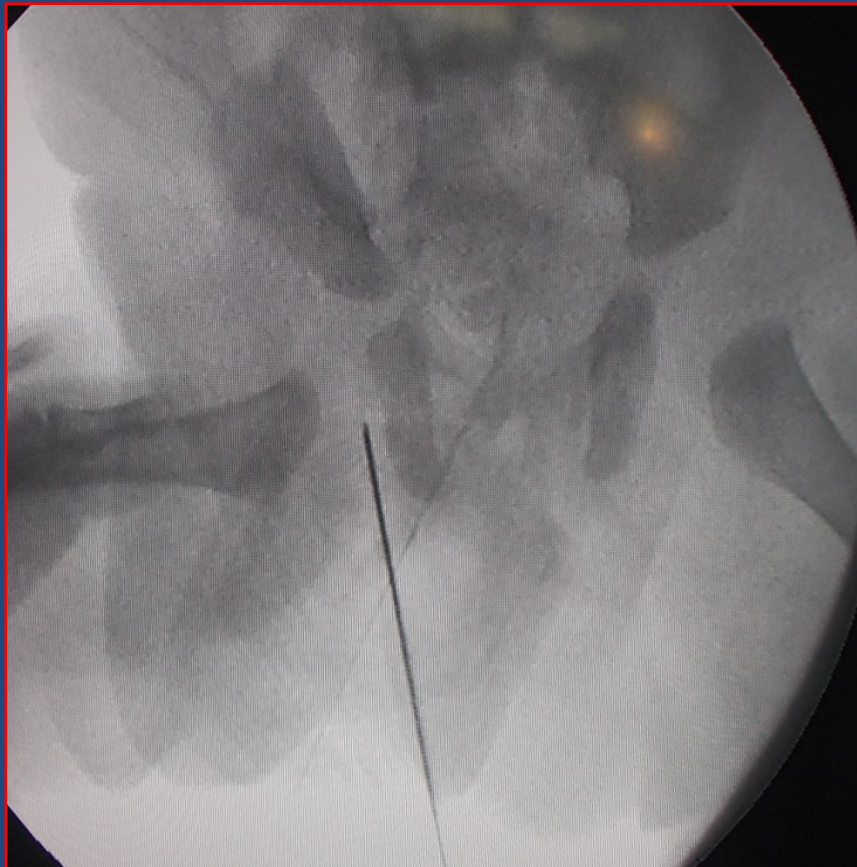


Neutral

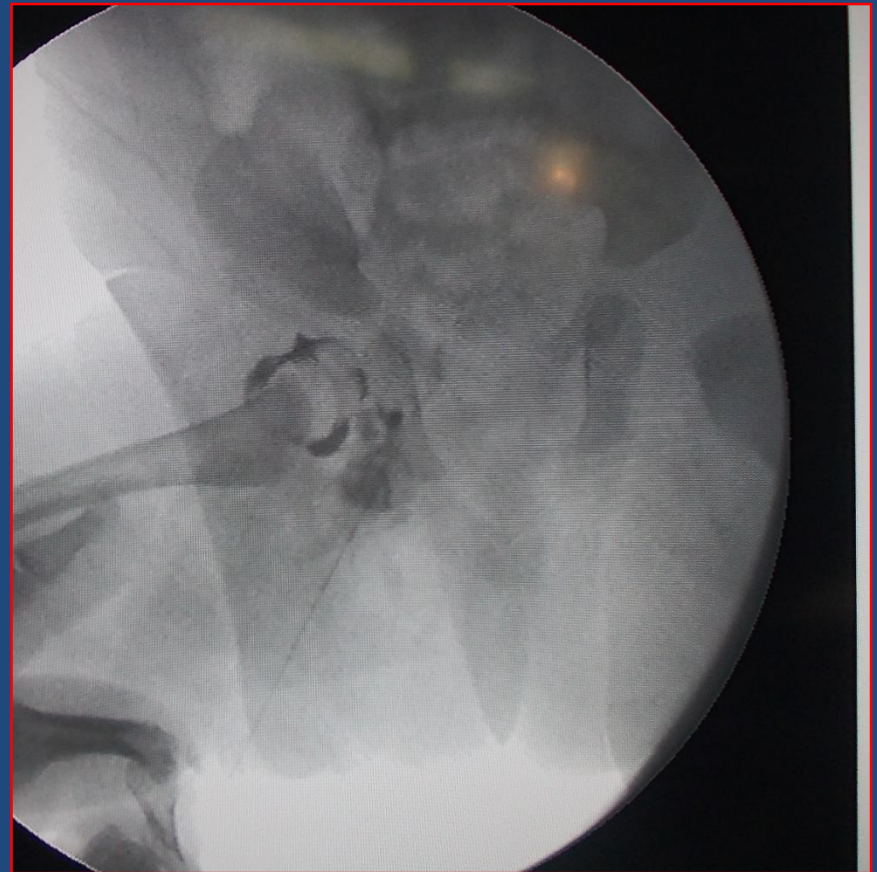


# Arthrogram

Medially placed needle



Arthrogram



Hip Spica



Pavlik harness





# Hip spica



# Pavlik Harness

- Worn for 23 hrs. for 3 months
- Weaning over 6 months



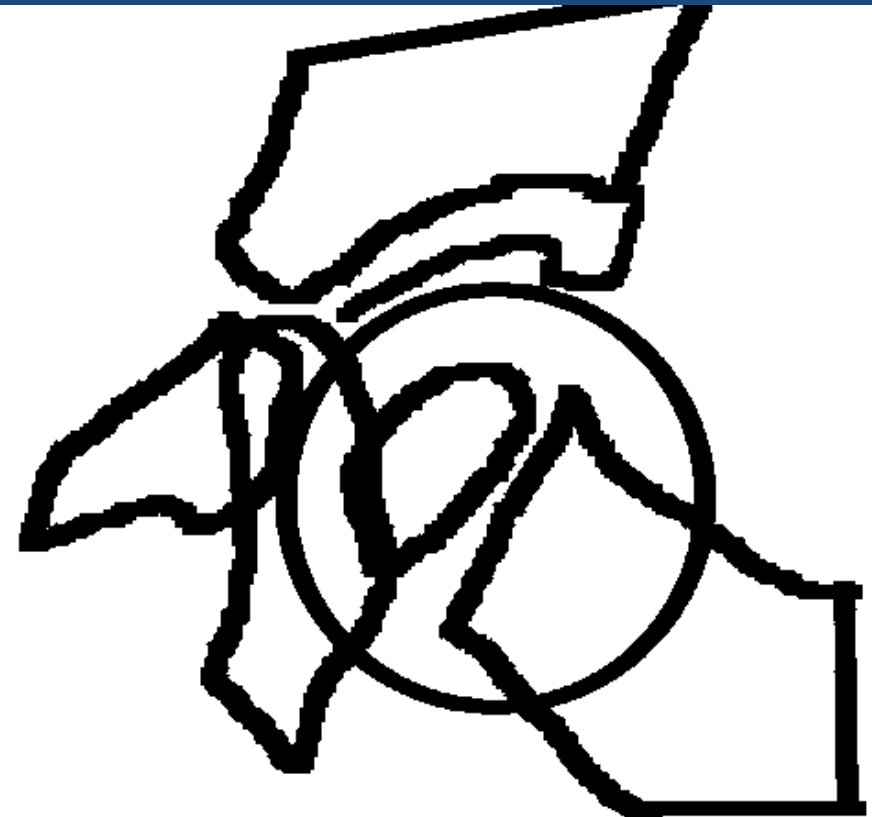
# Arthrogram (Hattori et al JBJS)

No soft tissue interposition

Small folds of soft tissue in lateral part of acetabulum



Type 1



Type 2

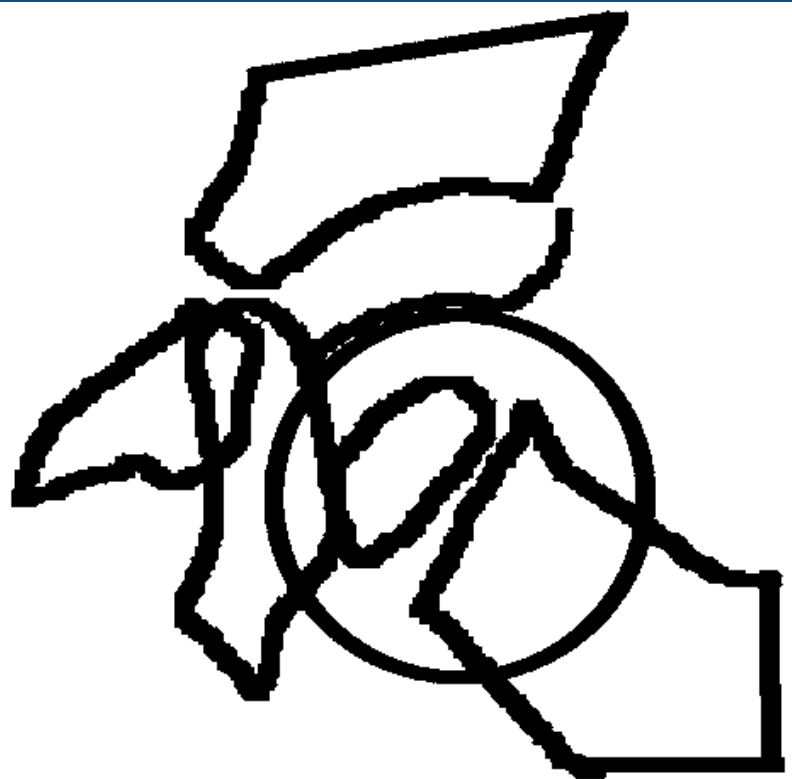
# Arthrogram

Inverted limbus covers  
half of acetabular roof

Thick soft interposition covering  
acetabular roof and floor



Type 3



Type 4



Distance T - between 2 arrows



# Results

- Idiopathic- 10 children with 16 hips
- Non Idiopathic-12 children with 18 hips
- Male : Female 1:2.
- Age at surgery :1-6 months

# Idiopathic

- Positive Ortolani and Barlow in 8 out of 16 hips
- All hips in Type 1 or 2 and distance  $T < 3.5\text{mm}$
- Hips spica was given for 1.5 months
- Pavlik Harness for 6 months

# Idiopathic case 1

10 day old



1.5 yrs





# Idiopathic

1.5 yrs



clinical



# Non idiopathic

- Associated findings were CVT, CDK, CTEV and hand deformities which were treated appropriately.
- Mean duration of plaster was 2.2 months
- 4 of 18 hips were normal at last followup
- 2 out of 18 showed residual acetabular dysplasia
- 4 hips out of 18 dislocated again between 0-3 months of removal of plaster
- 4 hips in 2 children in severe arthrogryposis- could not be reduced.

# Results

- CP was diagnosed in 2 children in 4 hips: Both showed well reduced hips but a delay in appearance of ossific nucleus

# Arthrographic findings

- Type 1: 4
- Type 2: 2
- Type 3: 4
- Type 4: 4
- Not classified: 4 hips (unreduced)

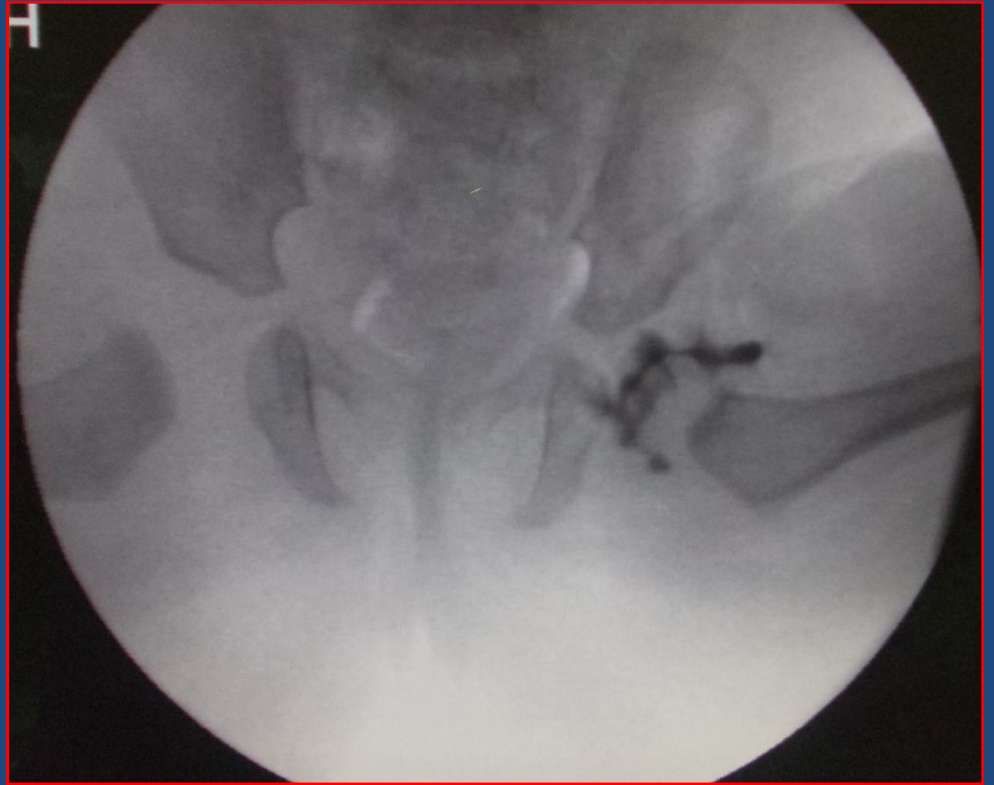


# Arthrogram

Type 2



Type 4



# Distance-T

- **Group A:** 8 hips <3.5mm- stable at last follow up
- **Group B:** 10 hips: >3.5mm-unstable

# DDH with CTEV

Clinical



Radiograph



# Non diopathic

Arthrogram



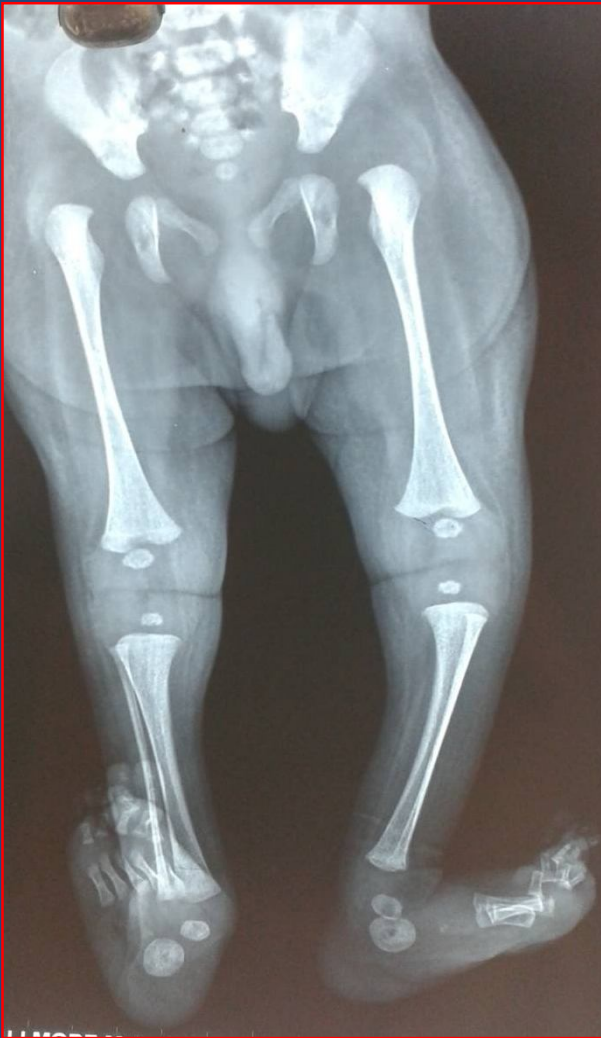
1.8 yr follow up





# DDH with CVT

At birth



After plaster removal



2 yr.

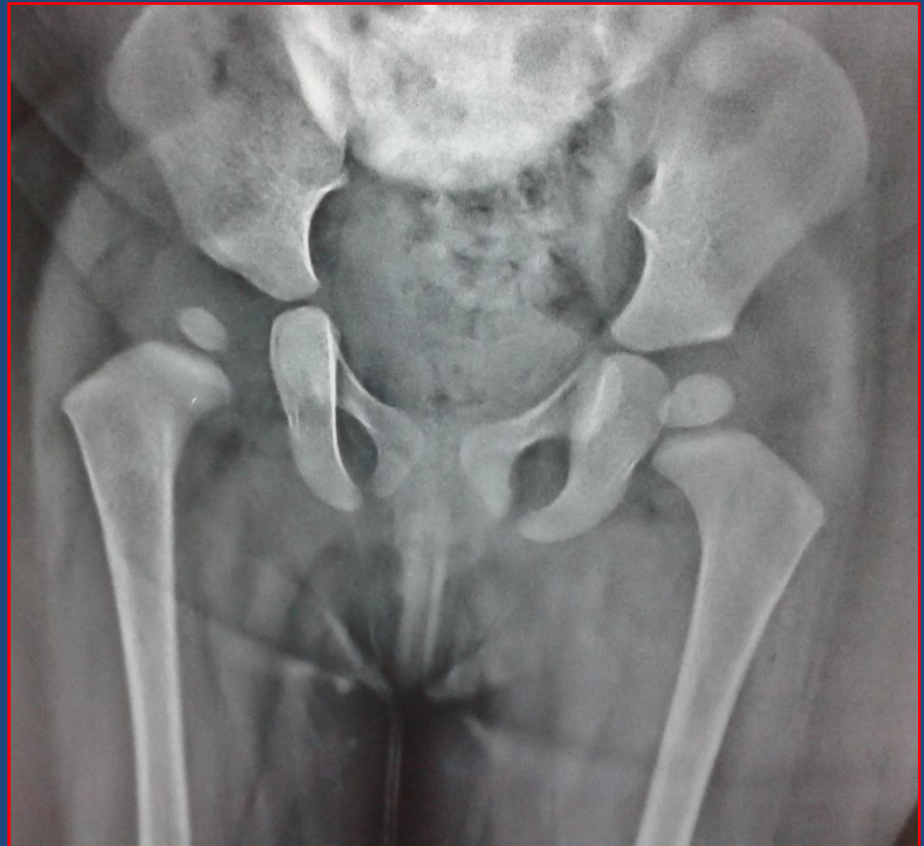


# Acetabular dysplasia

1 month



1.5 yrs.





# AGMC

At birth



At birth





# AGMC

At birth



radiograph





# AGMC

1.5 yrs.



Radiograph



# Cerebral palsy

At 1 month

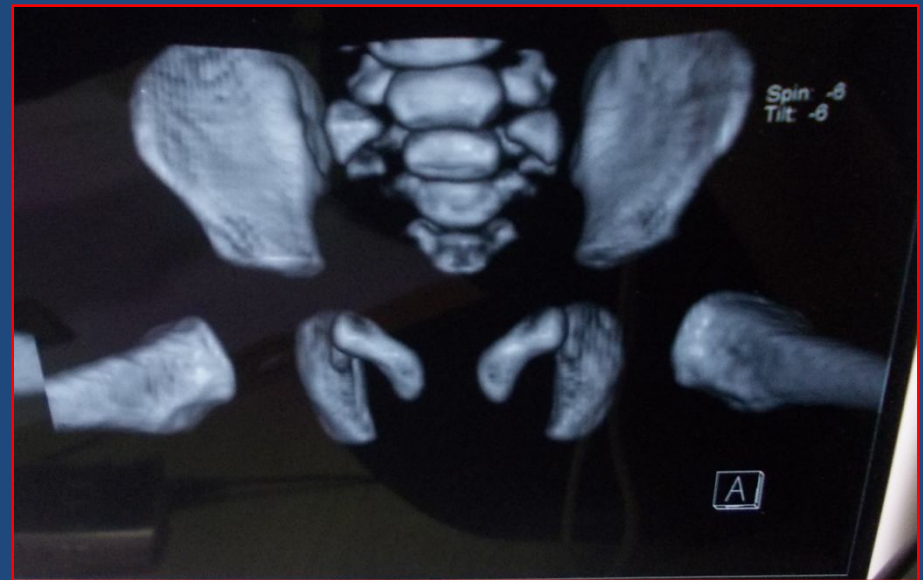
1 yr.

1.8 yrs



# Role of CT scan

- 3 children
- Good tool where diagnosis was still in doubt especially in infants
- Certain parameters like the acetabular index, axial acetabular index, anterior and posterior acetabular angles, acetabular anteversion, and axial reduction index can be used for followup





# Take home message

- Arthrography is a easy and effective tool in management of DDH
- Scoring methods can be used to prognosticate in some hips
- Idiopathic hip did well
- Need for secondary procedures must be explained to parents in non idiopathic group

# Literature review

1. Soft-tissue interposition after closed reduction in developmental dysplasia of the hip. The long-term effect on acetabular development and avascular necrosis. T. Hattori, Y. Ono, T. Kitakoji, S. Takashi, H. Iwata. JBJS (Br) May 1999
2. J Pediatr Orthop B. 1995;4(1):95-9. Imaging strategies in the first 12 months after reduction of developmental dislocation of the hip. MacDonald J1, Barrow S, Carty HM, Taylor JF.
3. J Pediatr Orthop. 1998 Nov-Dec;18(6):794-8. The predictive value of computed tomography in the treatment of developmental dysplasia of the hip. Mandel DM1, Loder RT, Hensinger RN
4. J Pediatr Orthop. 1997 Sep-Oct;17(5):631-6 Postreduction computed tomography in developmental dislocation of the hip: part II: predictive value for outcome. Smith BG1, Millis MB, Hey LA, Jaramillo D, Kasser JR.

Thank you



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