

Total hip arthroplasty in the complex young adult hip

Over view

- Planning
- Congenital dysplasia/dislocation
- Old Perthes/SUFE
- Osteotomies

Planning

- Imaging
 - CT very useful
- Implants
- Technique & approach
- Monitoring



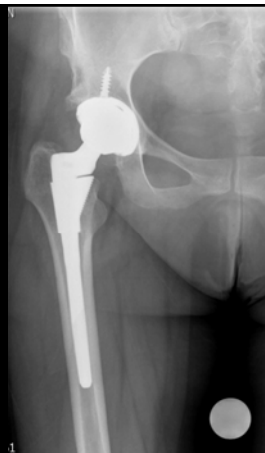
Planning

- Imaging
- Implants
 - Retained metalwork
 - Small sizes, template
 - Modularity
 - Bearing surface
- Technique & approach
- Monitoring



Planning

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Planning

- Imaging
- Implants
- Technique & approach
- Monitoring
- Consider:
 - Previous incisions & approaches
 - Access required- extensile approach
 - Need for osteotomies
 - Need for augmentation of bone

Planning

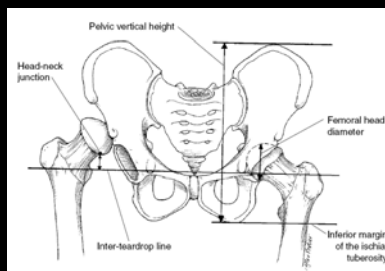
- Imaging
- Implants
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Congenital hip disease

Hip dysplasia/dislocation- Crowe

- Ratio of proximal migration : height of undeformed head
- 1: <50%
- 2: 50-75%
- 3: 75-100%
- 4: 100%+



Congenital hip disease- Hartofilakidis

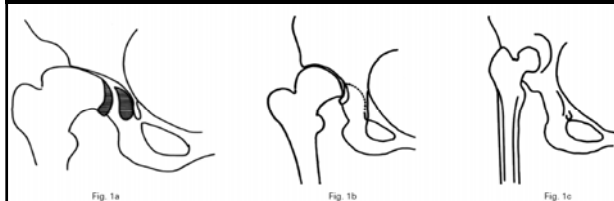


Diagram of the three main types of congenital hip disease in adults showing a) dysplasia, b) low dislocation and c) high dislocation.

Anatomic variation

- Acetabulum:
- Femur:
- Soft tissues:

Anatomic variation

- Acetabulum:
 - Superolateral segmental defect
 - Increased anteversion
 - ?anterior wall defect
 - Shallow with medial osteophyte
- Femur:
- Soft tissues:



Anatomic variation

- Acetabulum:
- Femur:
 - Short femoral neck
 - Increased anteversion
 - Hypoplastic, narrow canal and thin cortices
 - ?residual deformity from previous osteotomies
- Soft tissues:



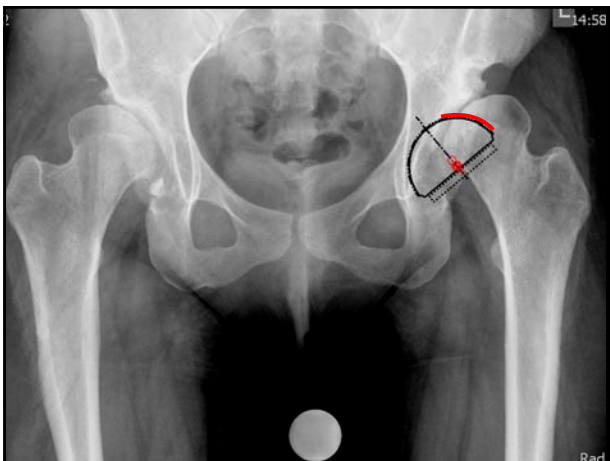
Anatomic variation

- Acetabulum:
- Femur:
- Soft tissues:
 - Thickened capsule
 - Abductors short, transversely orientated
 - Shortening hamstrings, adductors, rectus femoris
 - Femoral & sciatic nerves shortened



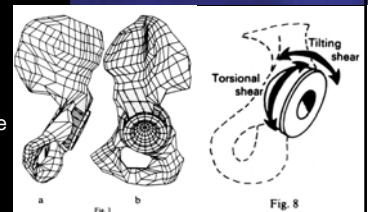
Low dislocation

- Mainly acetabular problem



Low dislocation

- Mainly acetabular problem
- Uncovered cup
 - Lateral column very important
 - High stress
 - Premature failure
 - 60-70% host bone contact



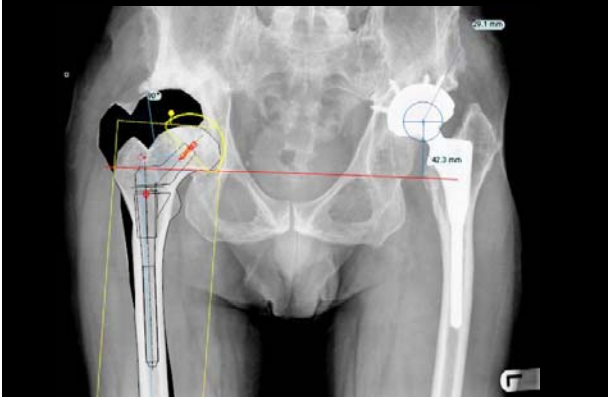
Low dislocation

- Mainly acetabular problem
- Options:
 - High hip centre
 - Cotyloplasty
 - Medialisation of cup
 - 'Flying buttress' graft
 - Sliding iliac graft

High hip centre



High hip centre



High hip centre

The height of the cup was found to have a statistically significant correlation with functional outcome and a high hip centre correlated with a worse outcome score. Patients with a hip centre of less than 3.5 cm above the anatomical level had a statistically better survivorship of the cup than those with centres higher than this. Restoration of the height of the centre of the hip to as near the anatomical position as possible improved functional outcome and survivorship of the cup.

Outcome of revision hip arthroplasty in patients with a previous total hip replacement for developmental dysplasia of the hip

G. Morag,
P. Zalzal,
B. Liberman,
O. Safir,
M. Flint,
A. E. Gross

- Leg length correction
- Abductor dysfunction
- Impingement/dislocation
- Increased JRF

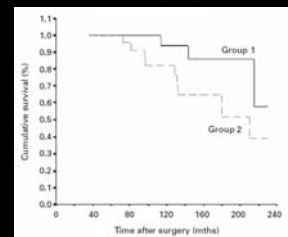


Fig. 2
The Kaplan-Meier survival curves for both groups.

High hip centre



Low dislocation

- Mainly acetabular problem
- Options:
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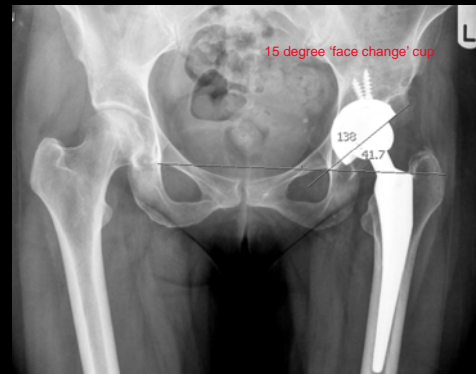


Low dislocation

- Mainly acetabular problem
- Options:
 - High hip centre
 - Cotyloplasty
 - **Medialisation of cup**
 - 'Flying buttress' graft
 - Sliding iliac graft

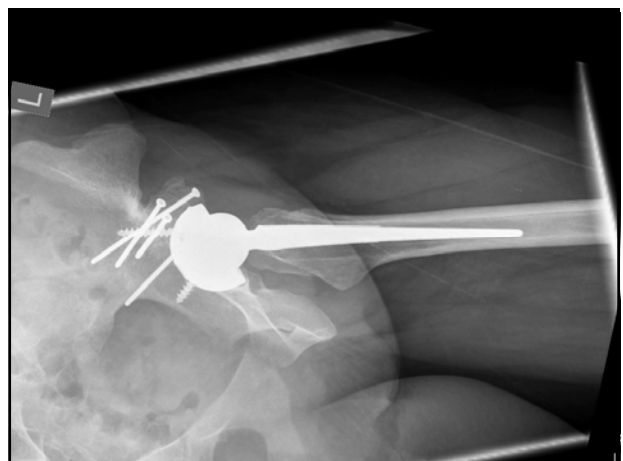
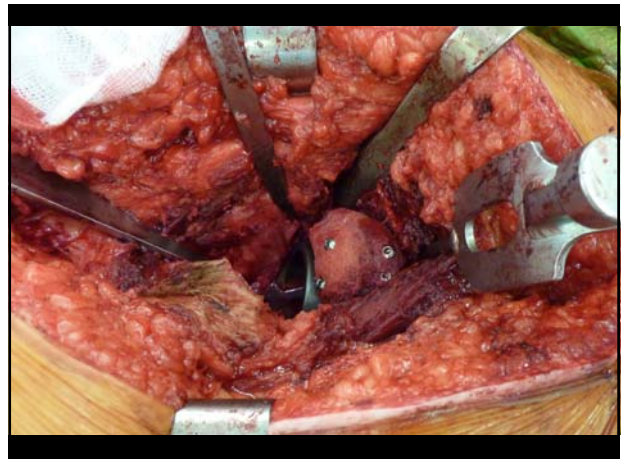


Medialisation of cup



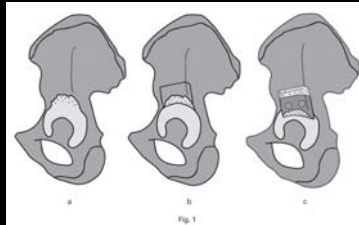
Low dislocation

- Mainly acetabular problem
- Options:
 - High hip centre
 - Cotyloplasty
 - Medialisation of cup
 - **'Flying buttress' graft**
 - Sliding iliac graft



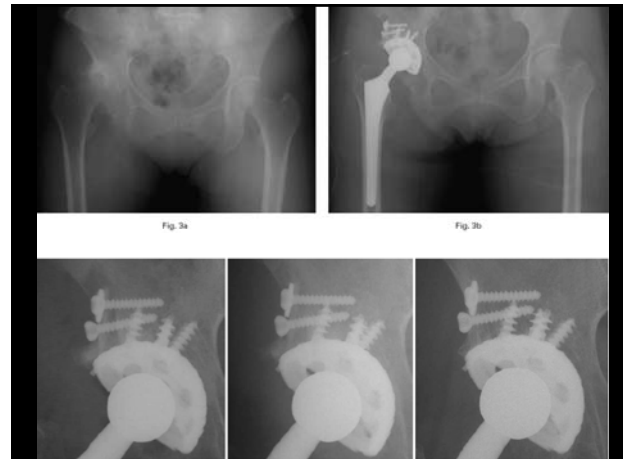
Low dislocation

- Mainly acetabular problem
- Options:
 - High hip centre
 - Cotyloplasty
 - Medialisation of cup
 - 'Flying buttress' graft
 - Sliding iliac graft



Total hip arthroplasty with a sliding iliac graft for acetabular dysplasia

M. Bouché,
T. Kawakami,
K. Kurosaka,
Y. Okamoto,
T. Tani
From Kyoto
University, Kyoto,
Japan



Other options



Other options



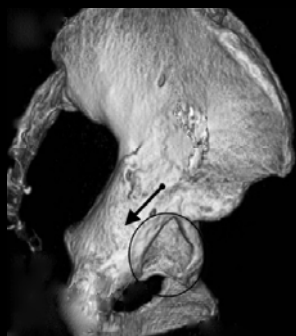
High dislocation

- Acetabulum
- Femur
- Soft tissues



High dislocation

- Acetabulum
 - Small, shallow
 - Triangular
 - Anteverted
 - Narrow opening
 - Best bone posterior
- Femur
- Soft tissues



High dislocation

- Acetabulum
- Femur
 - Hypoplastic
 - Anteverted
 - ?bowed
- Soft tissues



High dislocation

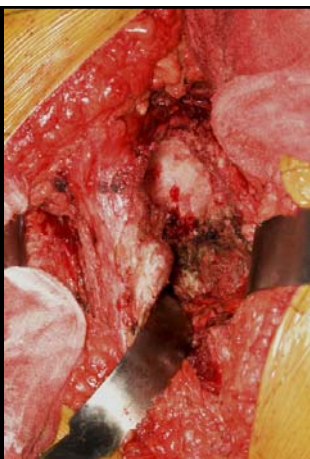
- Acetabulum
- Femur
- Soft tissues
 - Muscles
 - Nerves



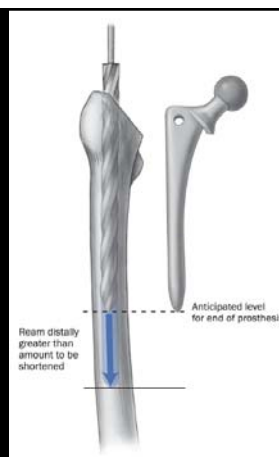
Planning



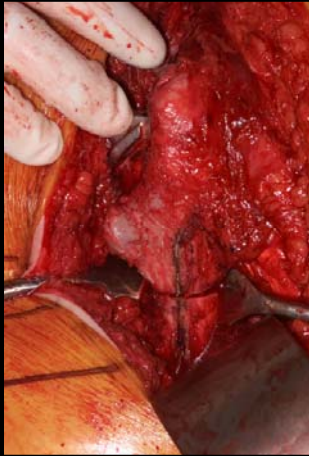
Acetabulum



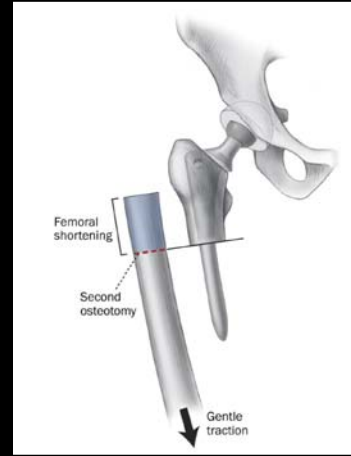
Femur



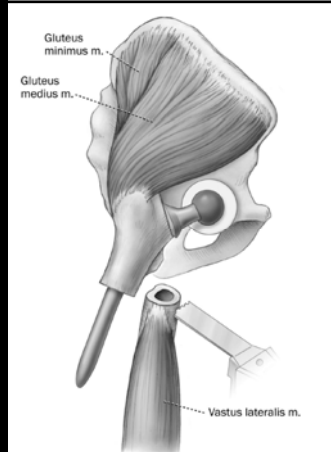
Osteotomy



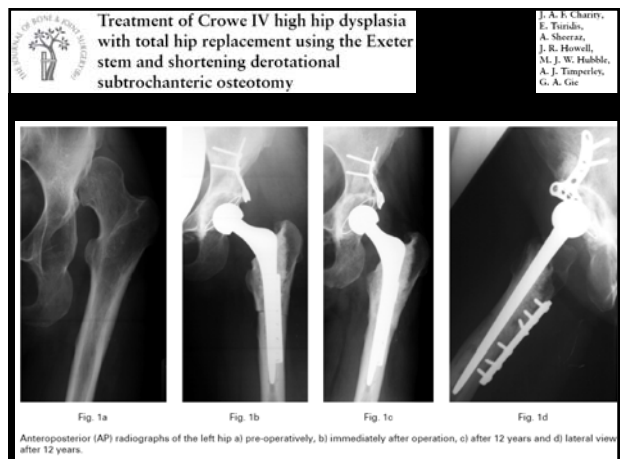
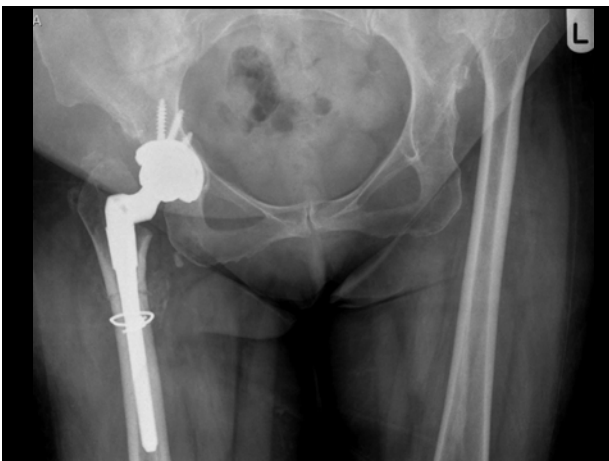
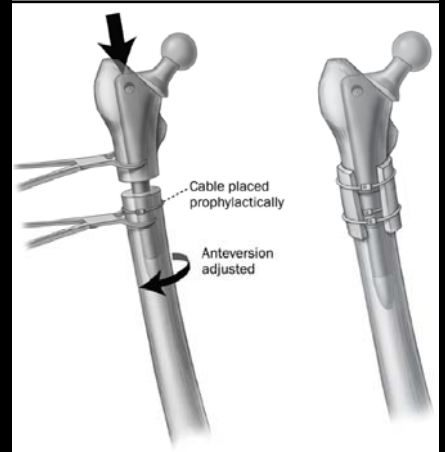
Trial reduction



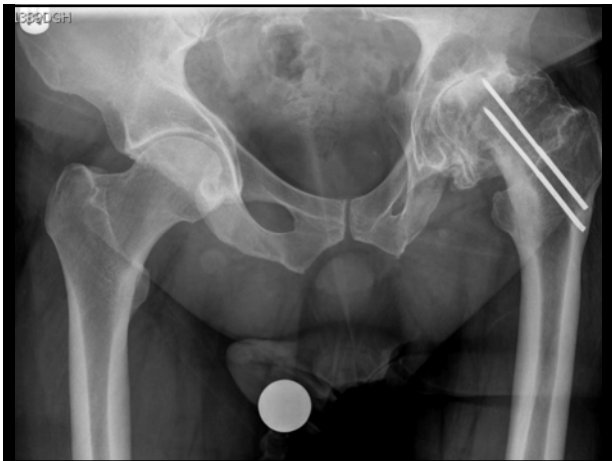
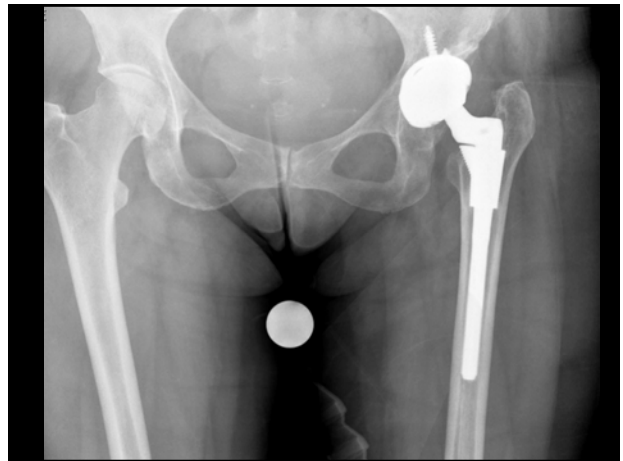
Femoral shortening



Implantation

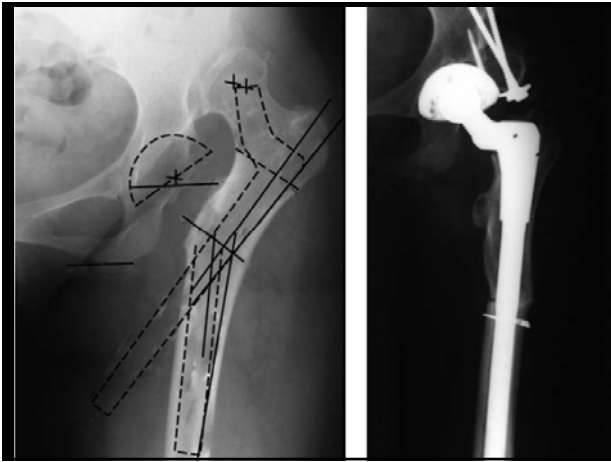


Old Perthes/SUFE



Previous osteotomies





In conclusion:

- Template
- Plan
- Be prepared