City Hospitals Sunderland NHS
NHS Foundation Trust

Total hip arthroplasty in the complex young adult hip

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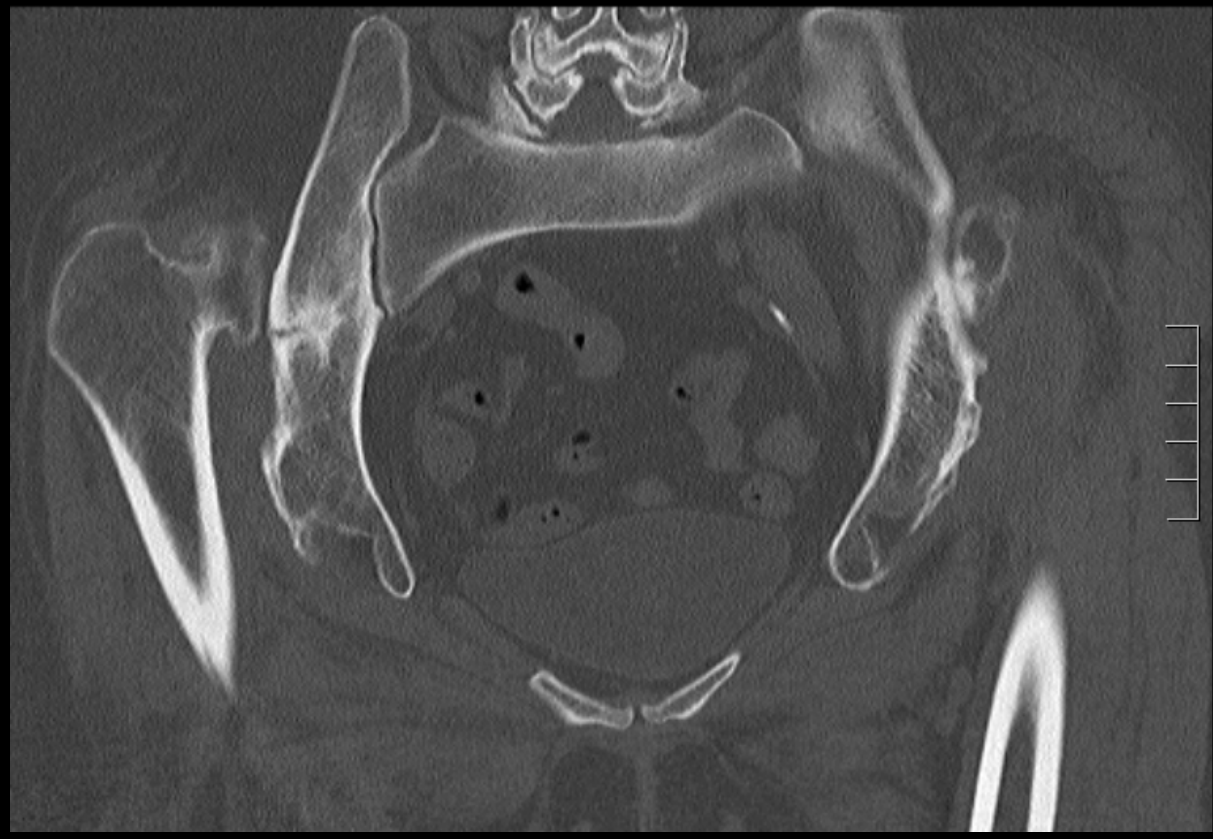
Over view

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

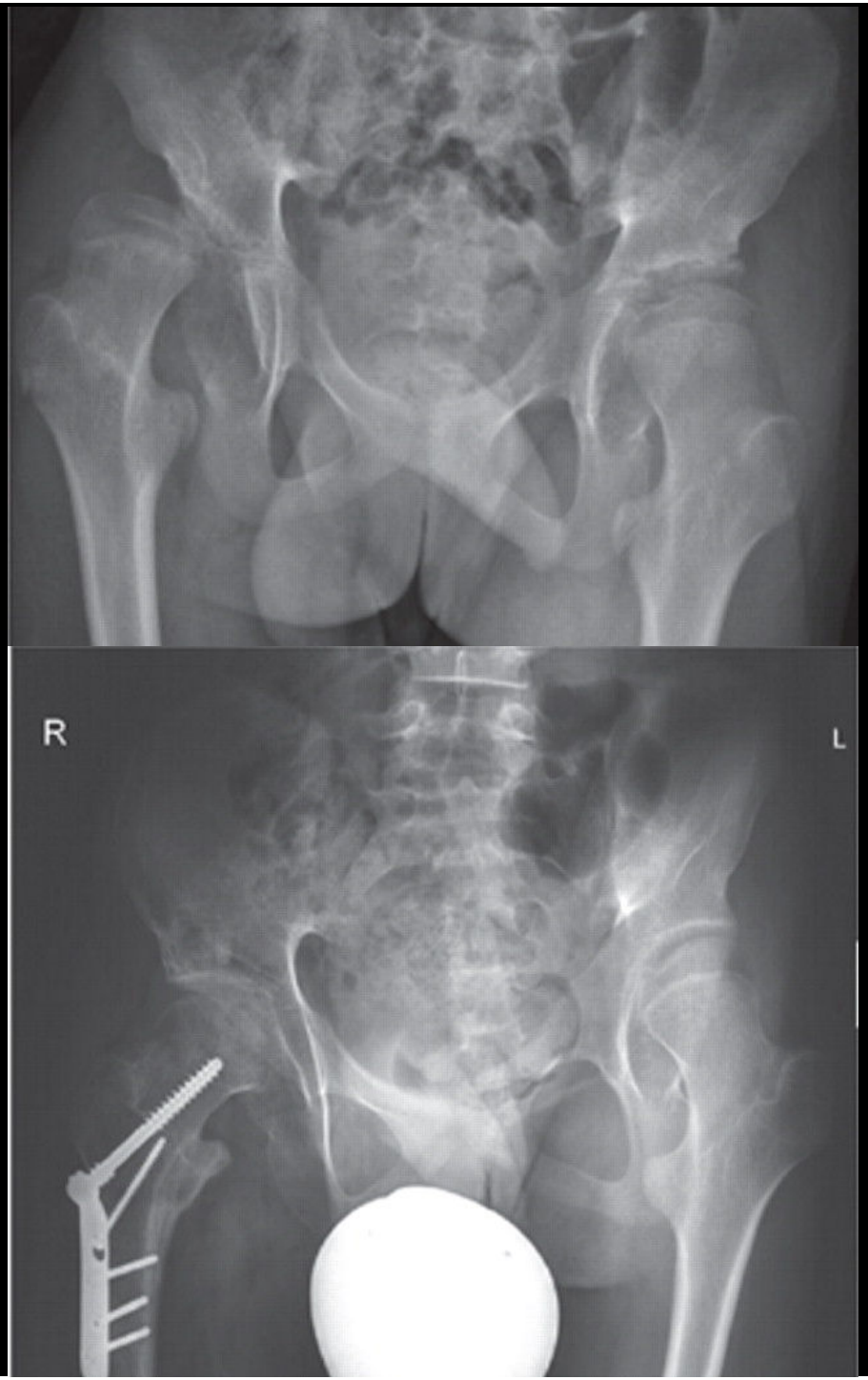
Planning

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



Planning

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



Planning

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

Planning

- Imaging
- Implants
- Technique & approach
- Monitoring

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

Planning

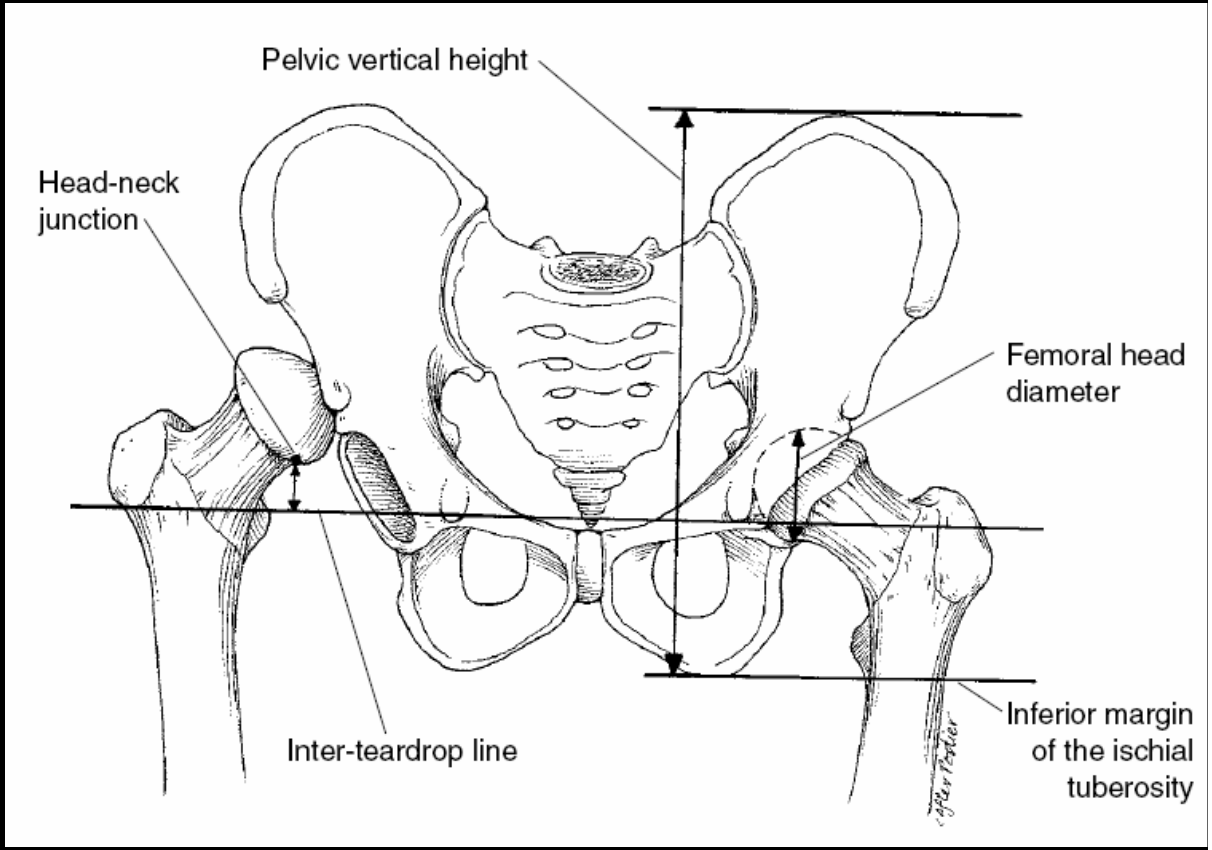
- Imaging
- Implants
- Technique & approach
- Monitoring

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

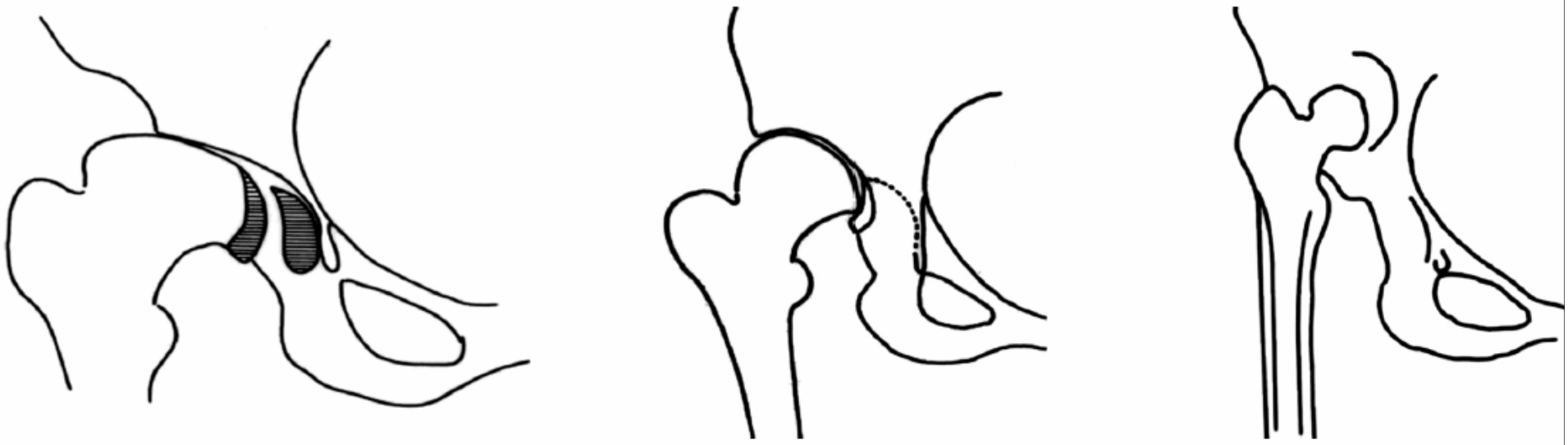


Fig. 1a Fig. 1b Fig. 1c

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:

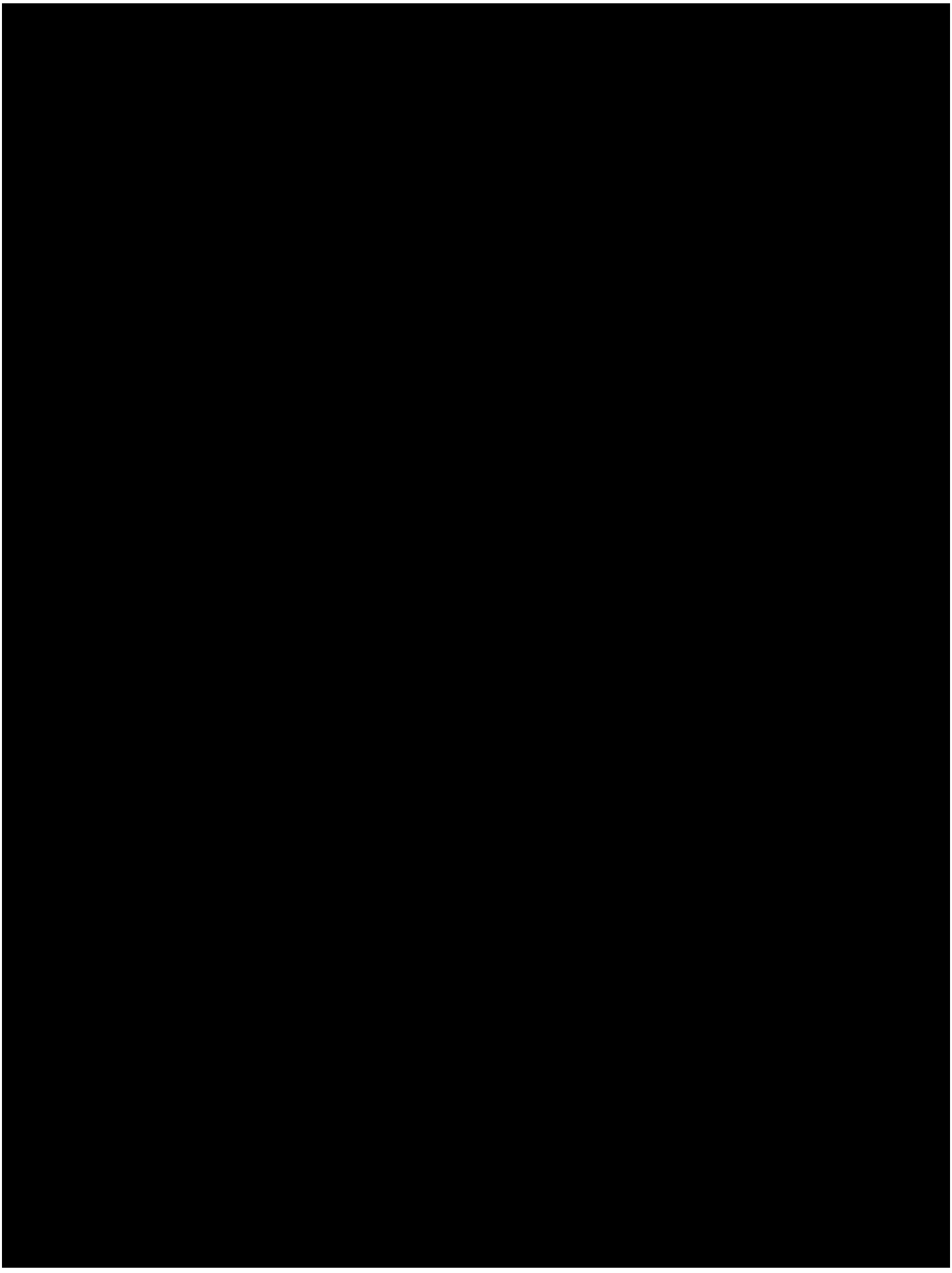
Anatomic variation

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

Anatomic variation

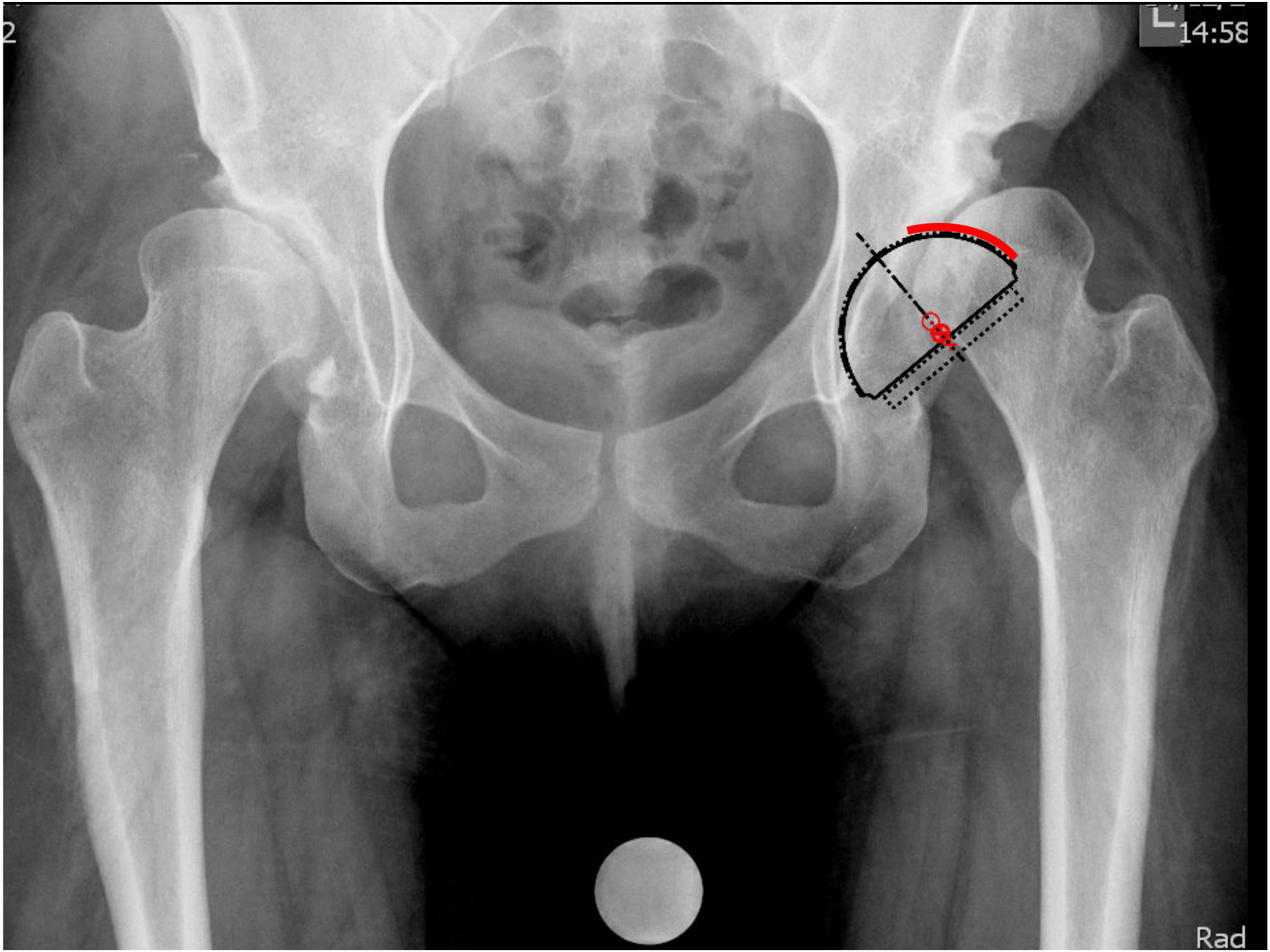
- Acetabulum:
- Femur:

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



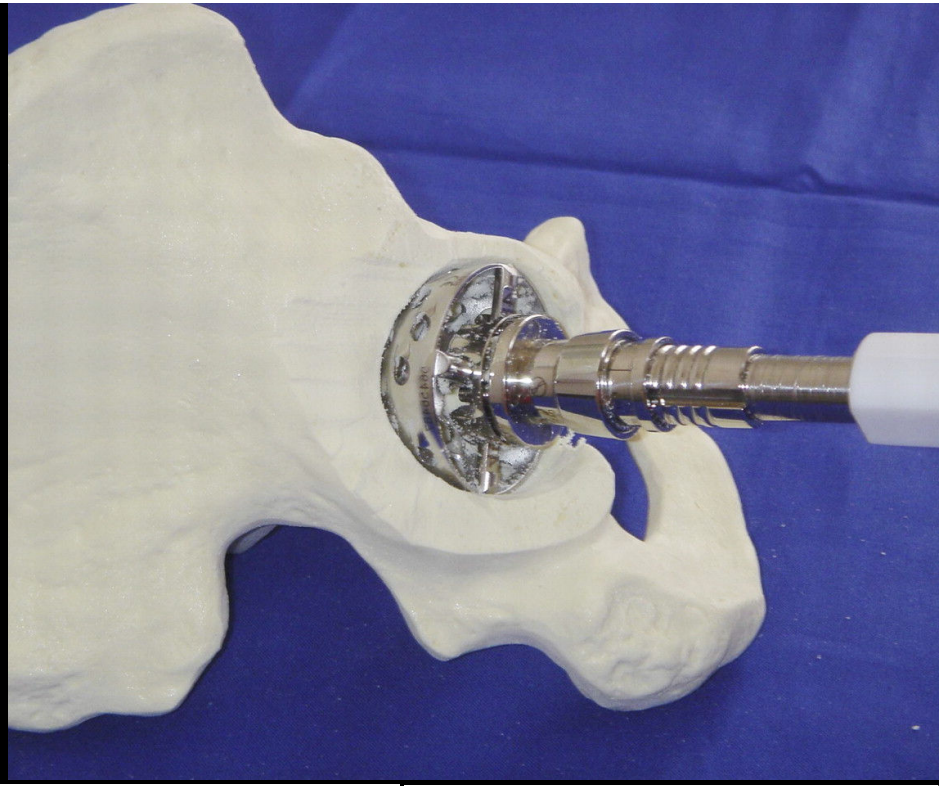
Low dislocation

- Mainly acetabular problem


14:58
Rad

Low dislocation

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



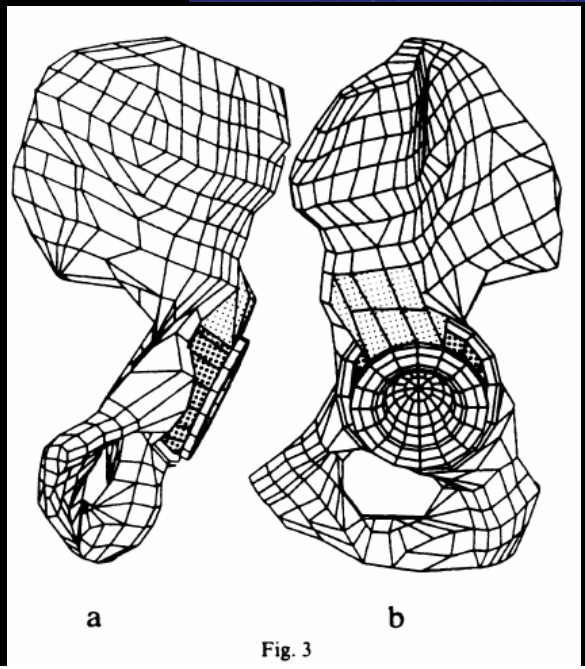


Fig. 3

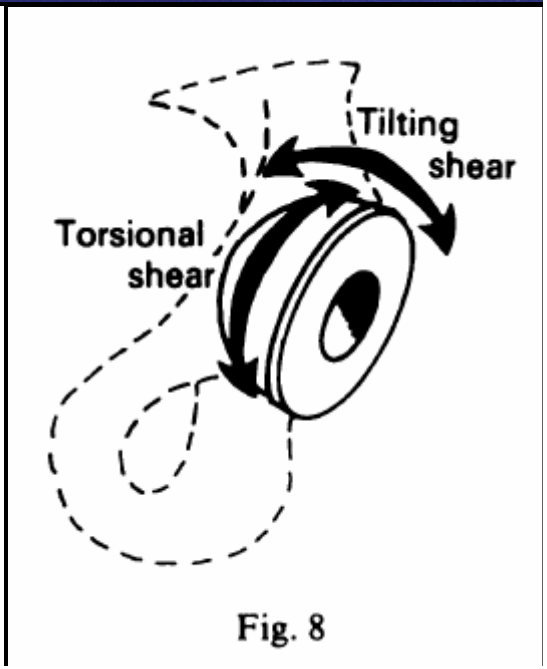
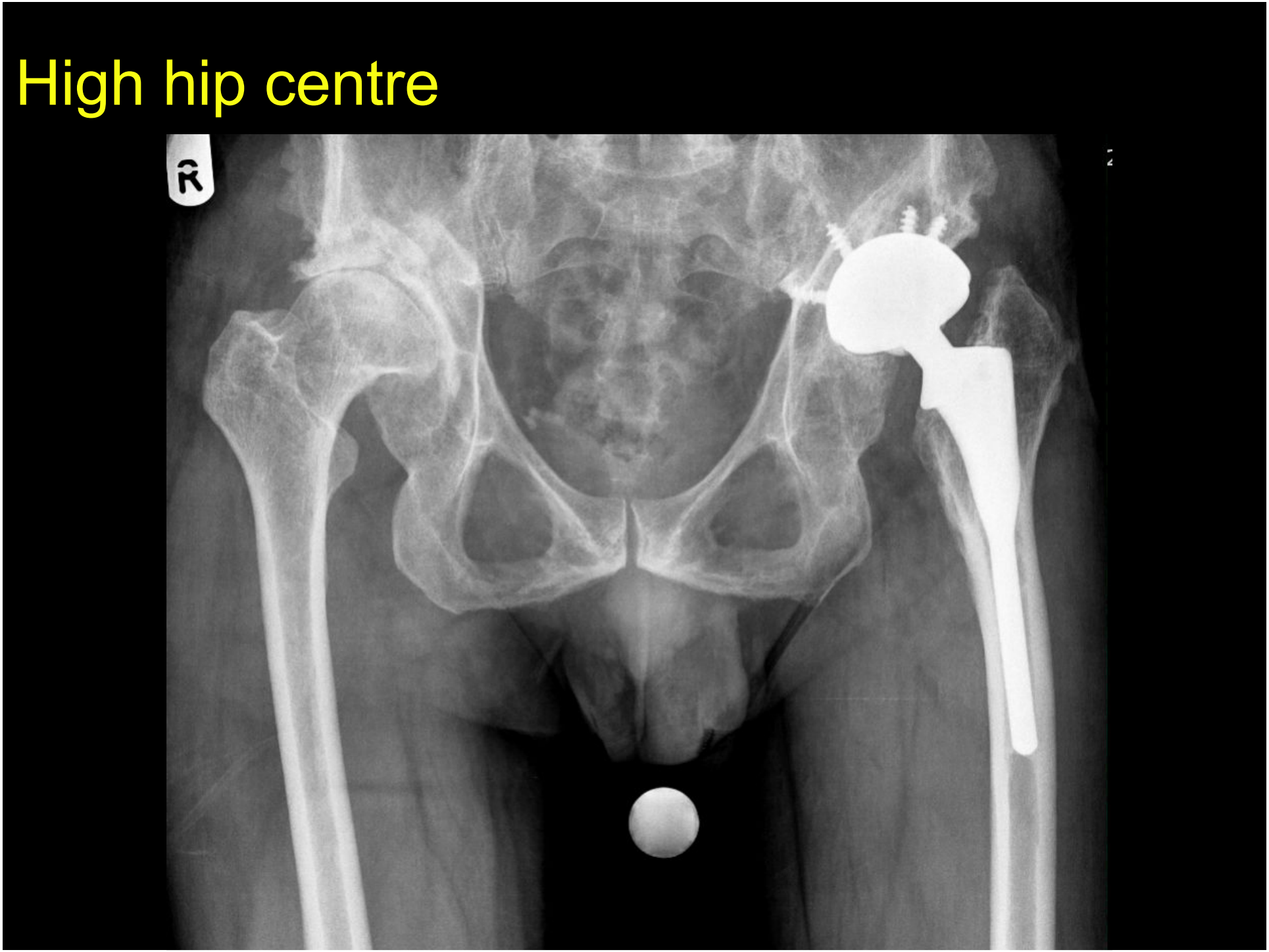


Fig. 8

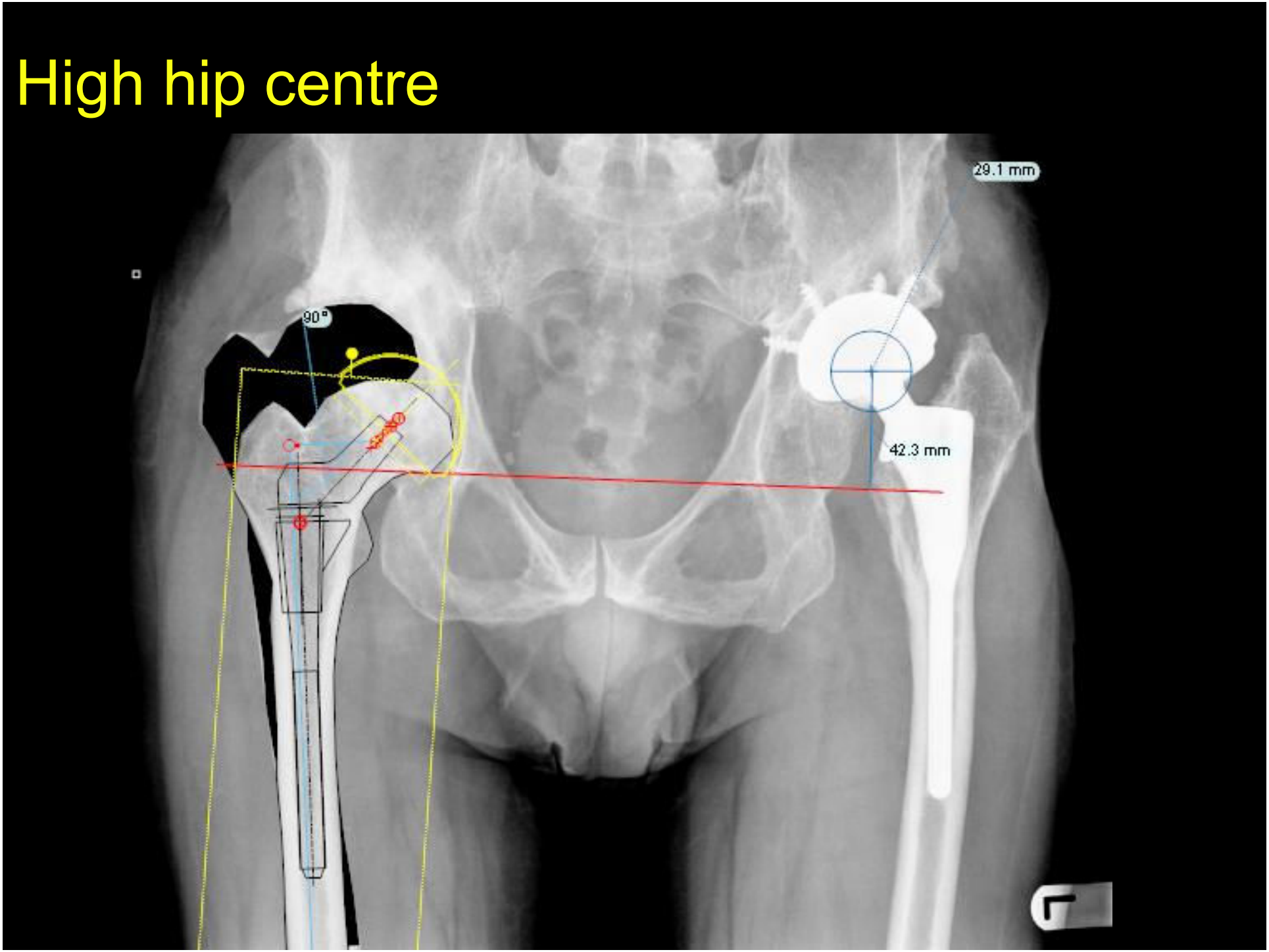
Low dislocation

- 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

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

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.

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

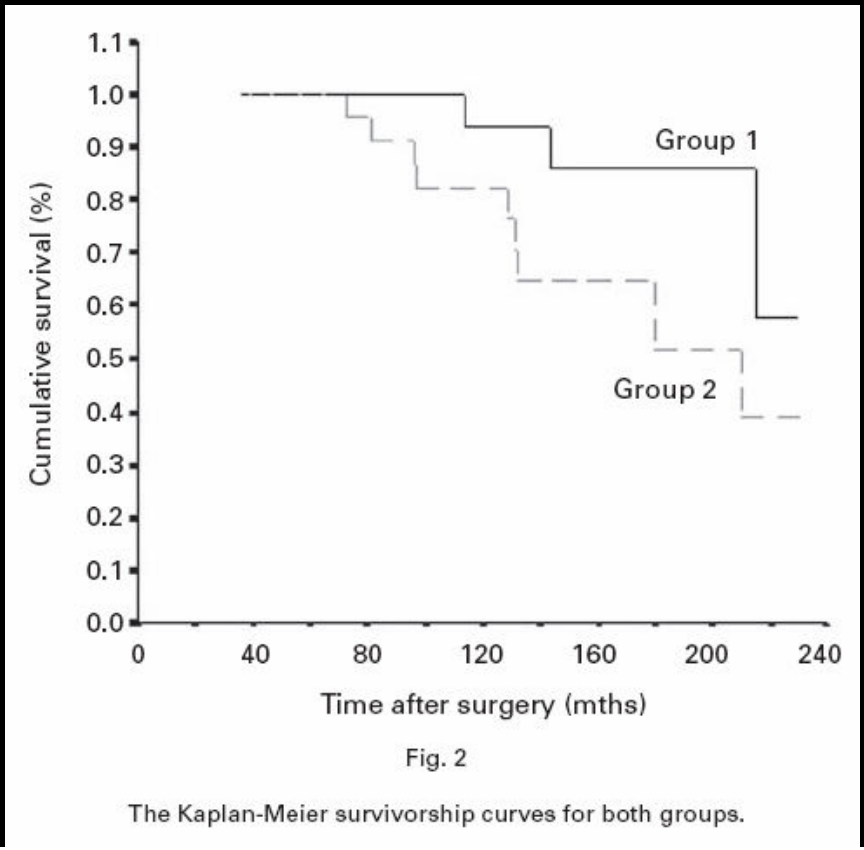


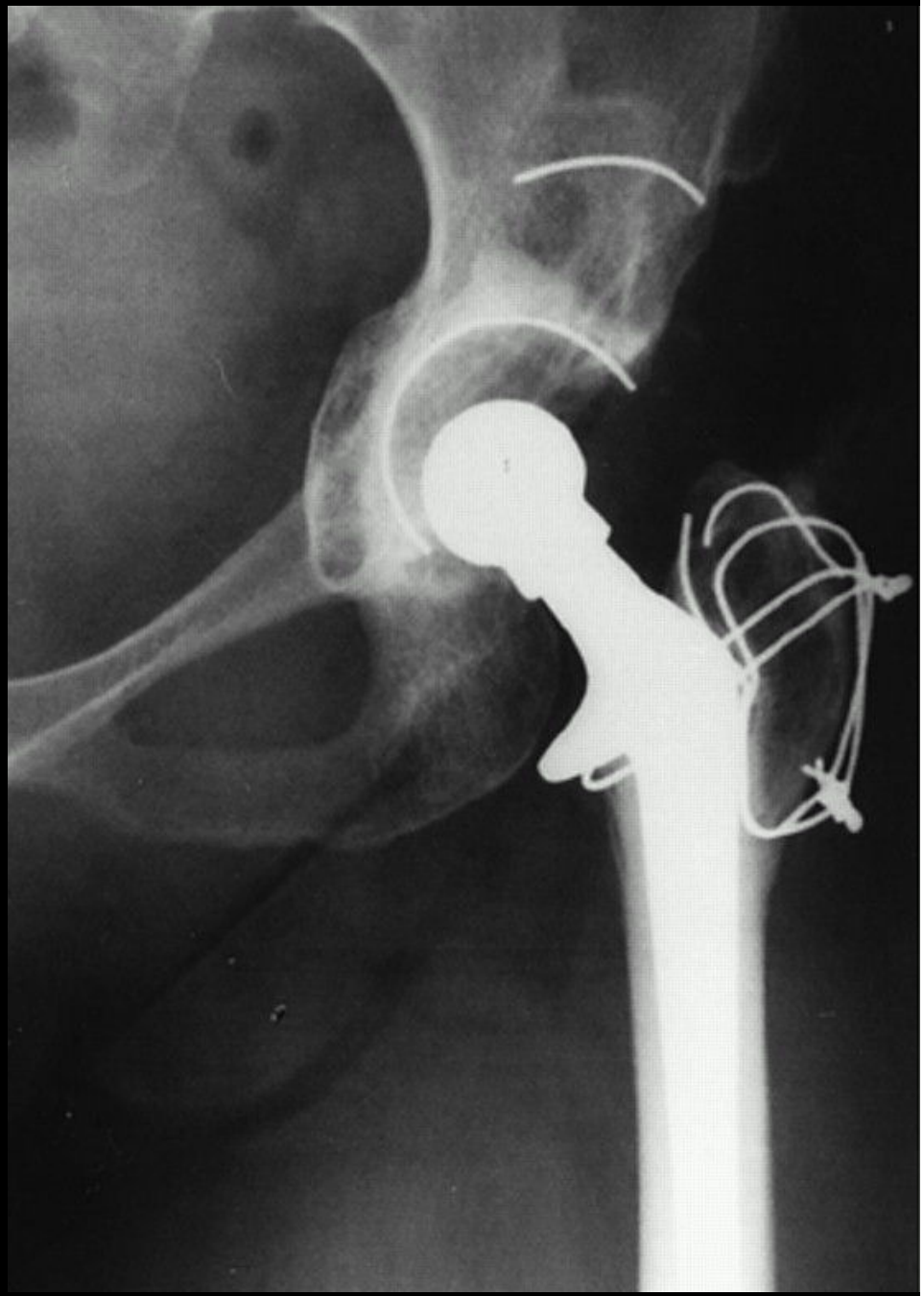
Fig. 2

The Kaplan-Meier survivorship curves for both groups.

High hip centre

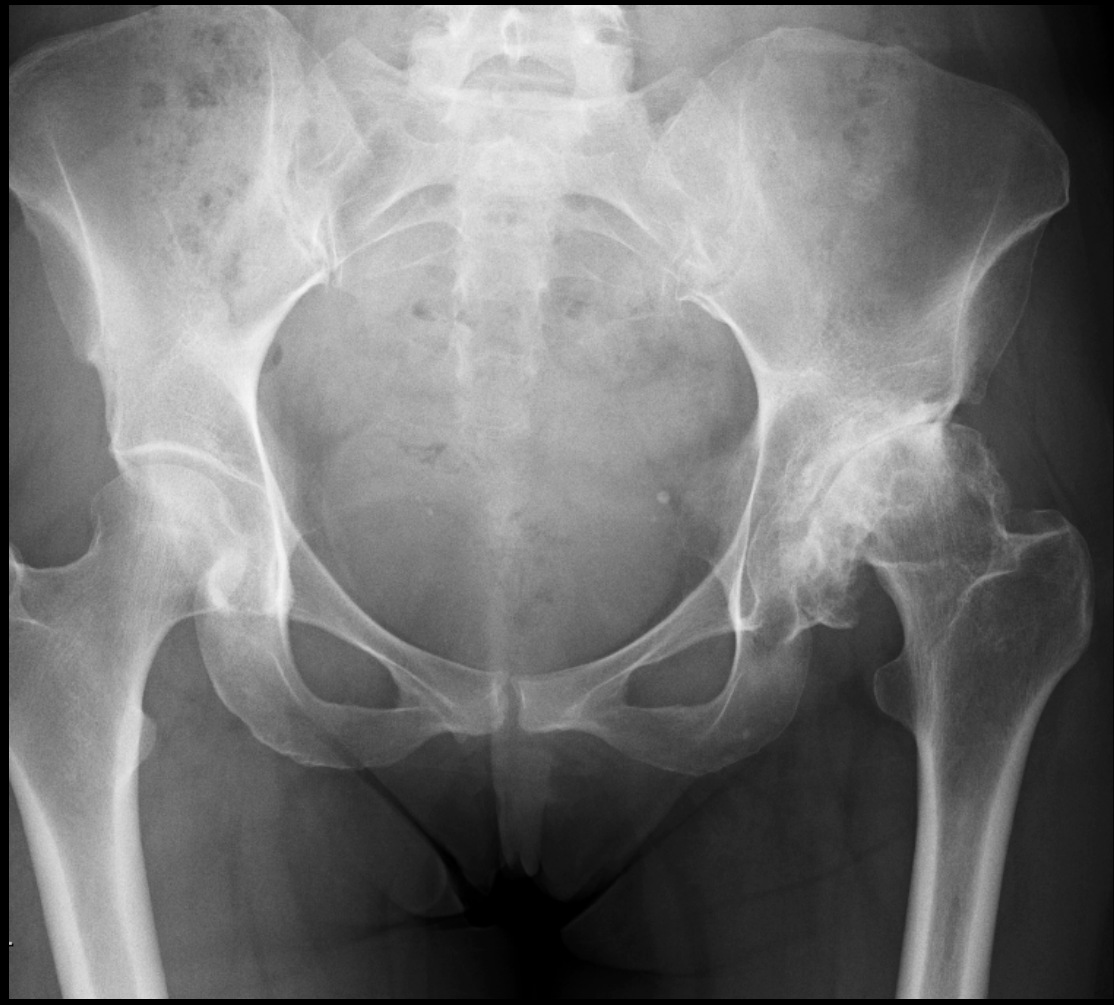
Low dislocation

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

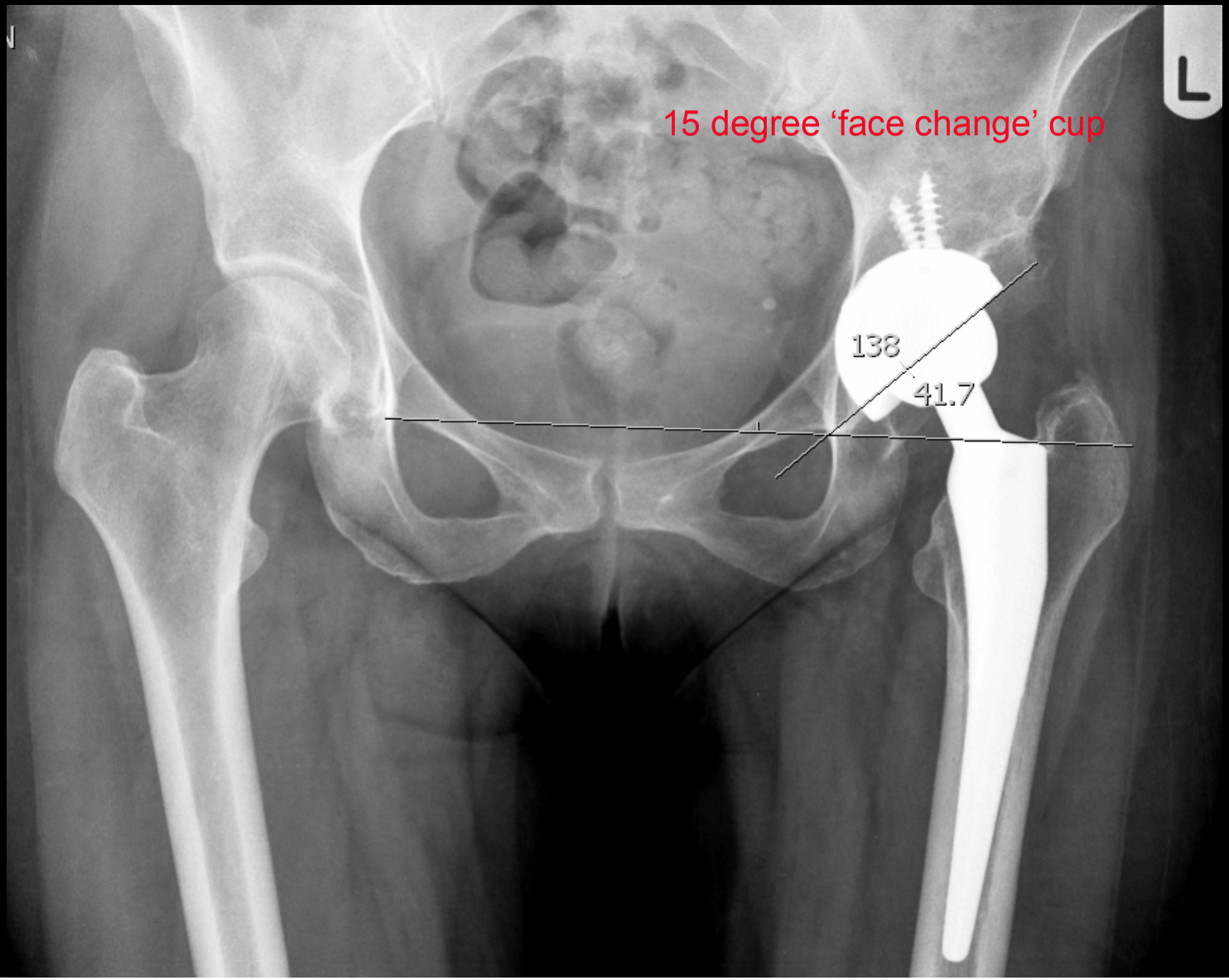


Low dislocation

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

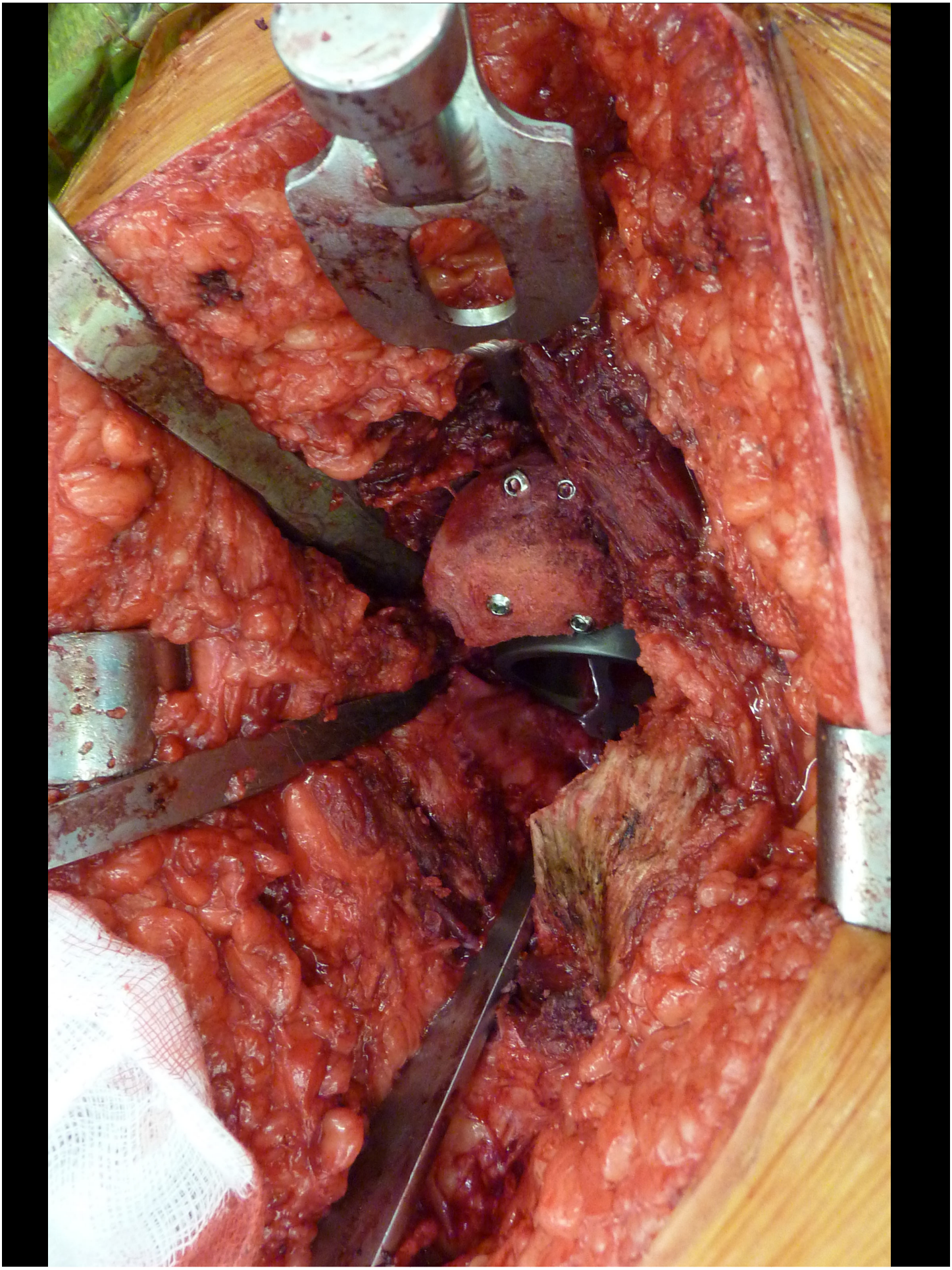


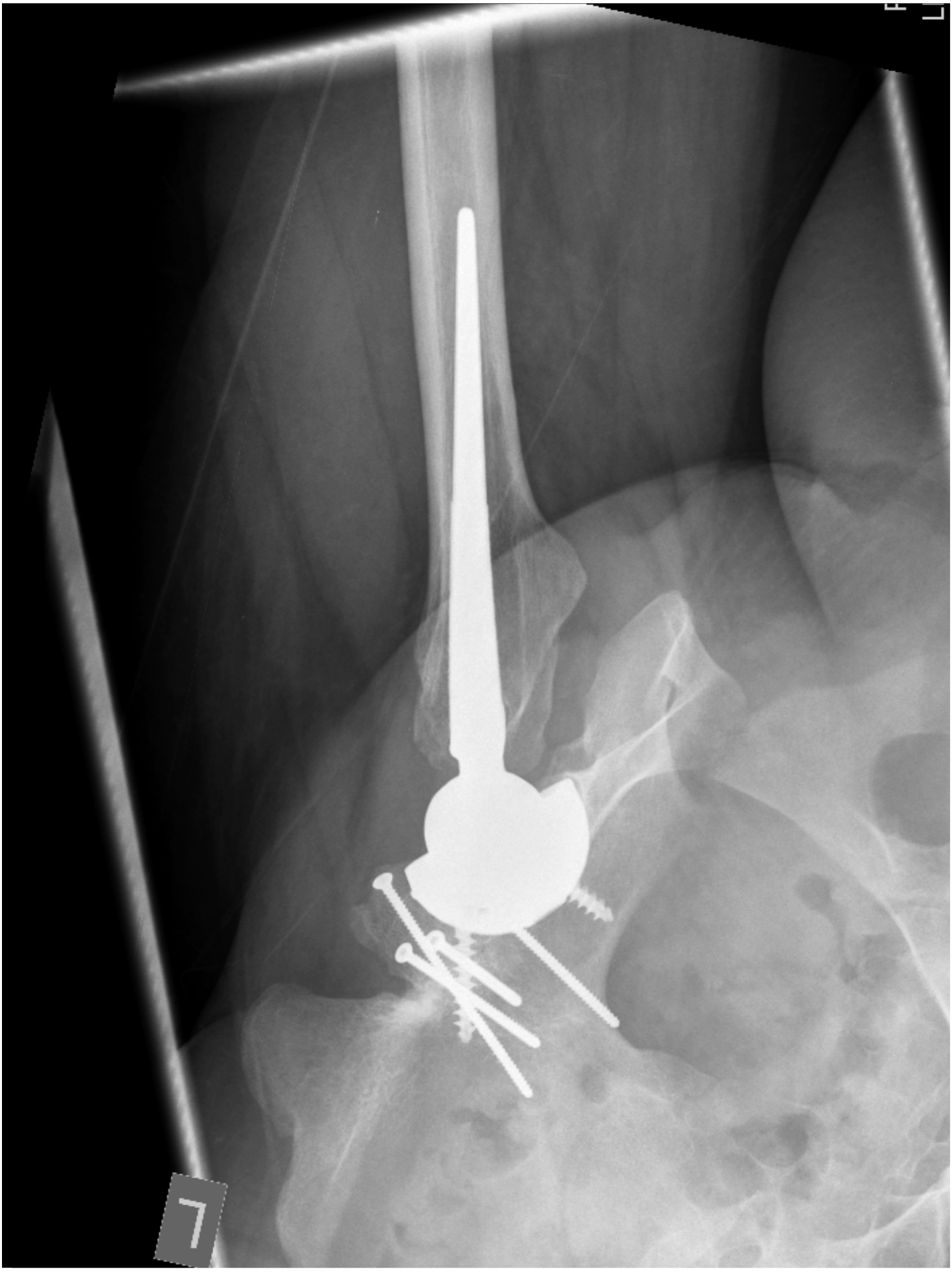
Medialisation of cup



Low dislocation

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




7

Low dislocation

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

THE JOURNAL OF BONE & JOINT SURGERY (Br)

Total hip arthroplasty with a sliding iliac graft for acetabular dysplasia

M. Ikeuchi,
T. Kawakami,
K. Kitaoka,
Y. Okanoue,
T. Tani

From Kochi University, Kochi, Japan

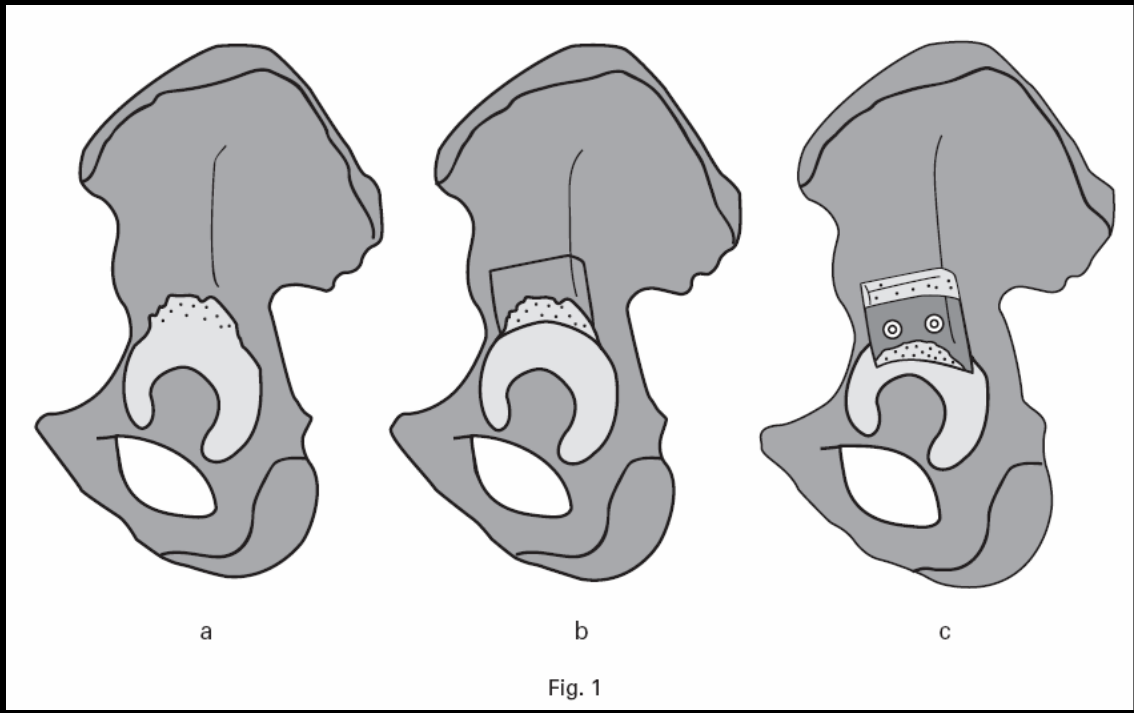


Fig. 1

Fig. 3a

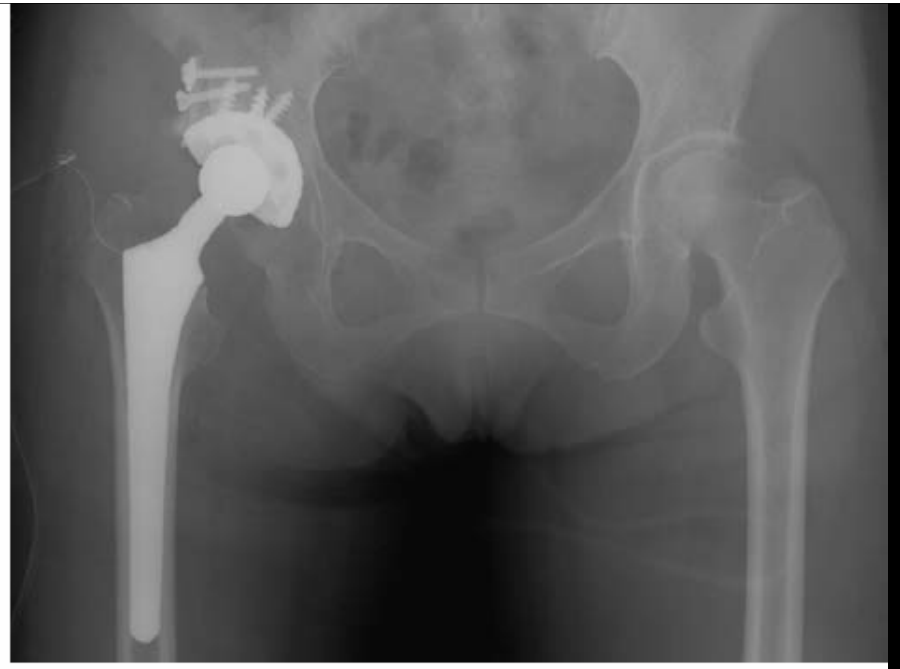
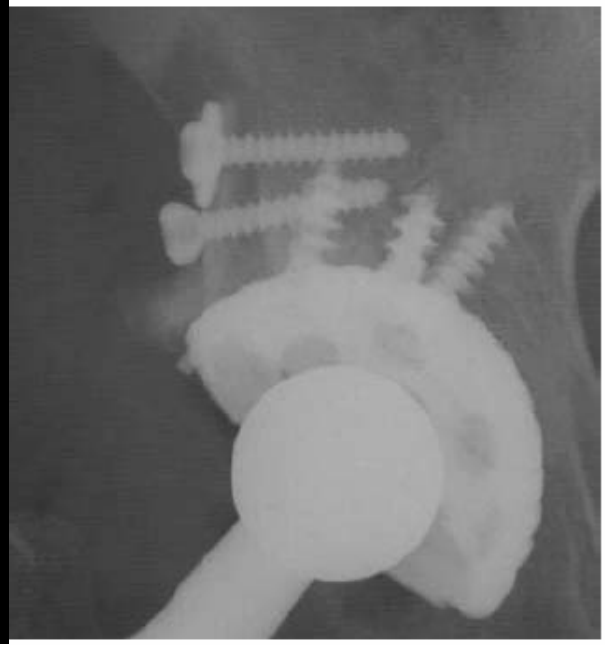
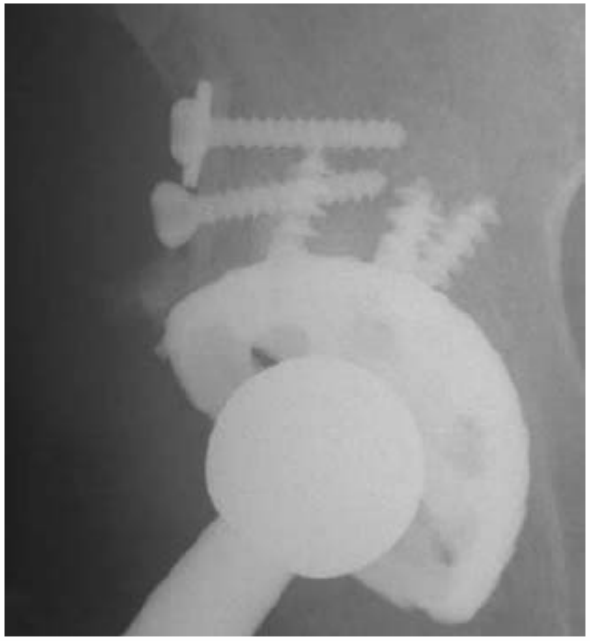
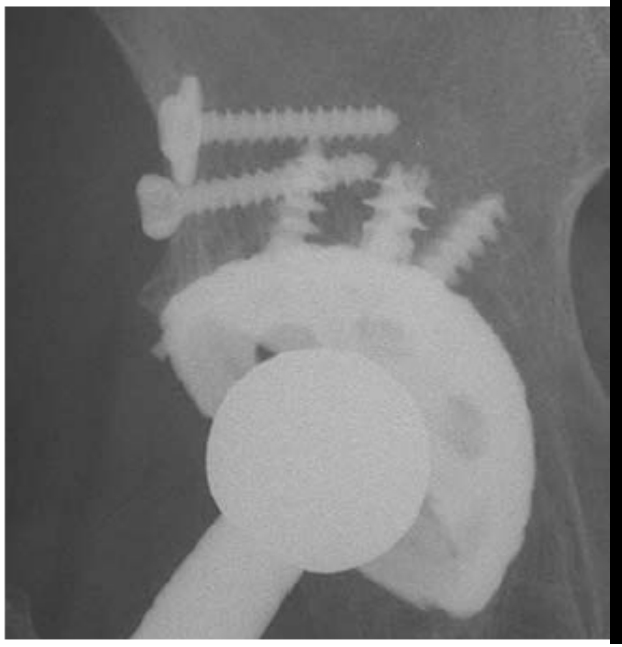


Fig. 3b

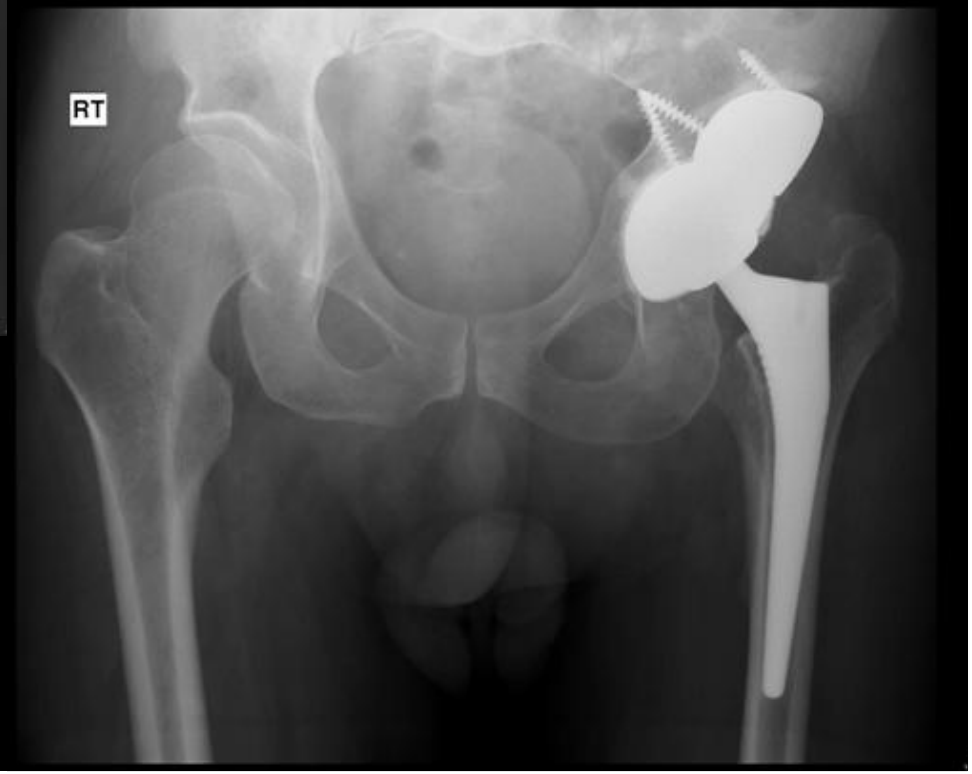


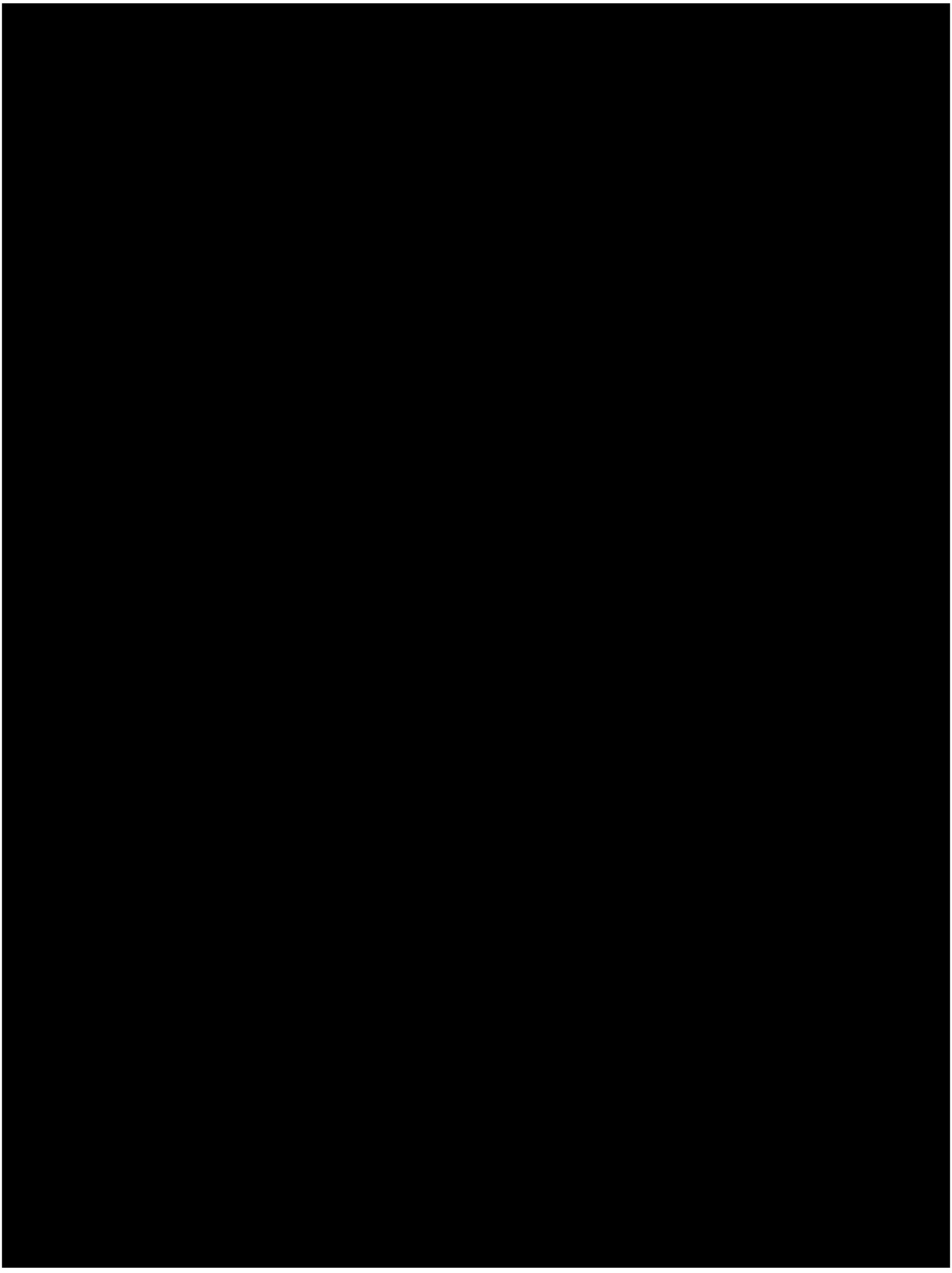




Other options

Other options





High dislocation

- Acetabulum
- Femur
- Soft tissues

High dislocation

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

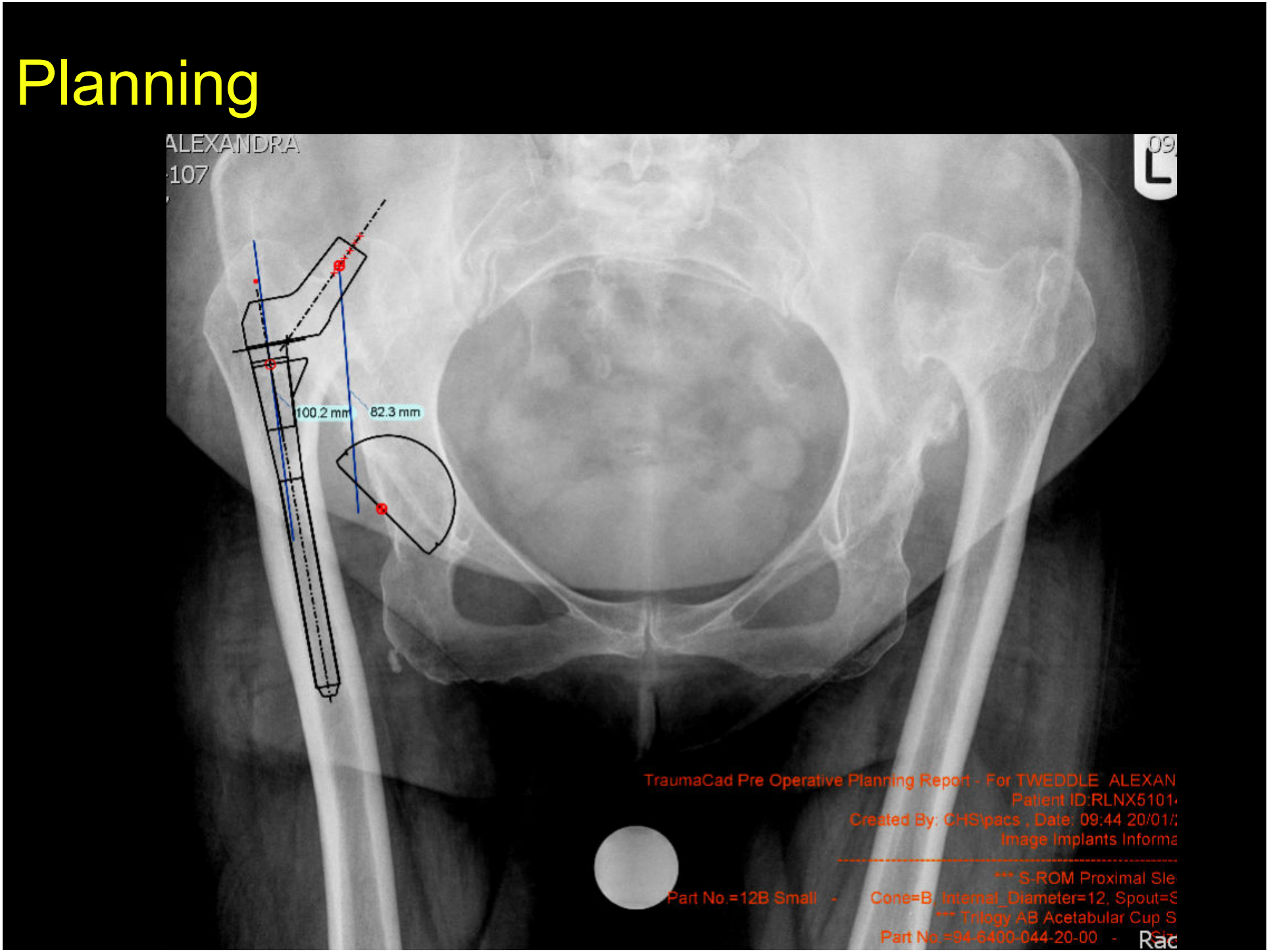
High dislocation

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

High dislocation

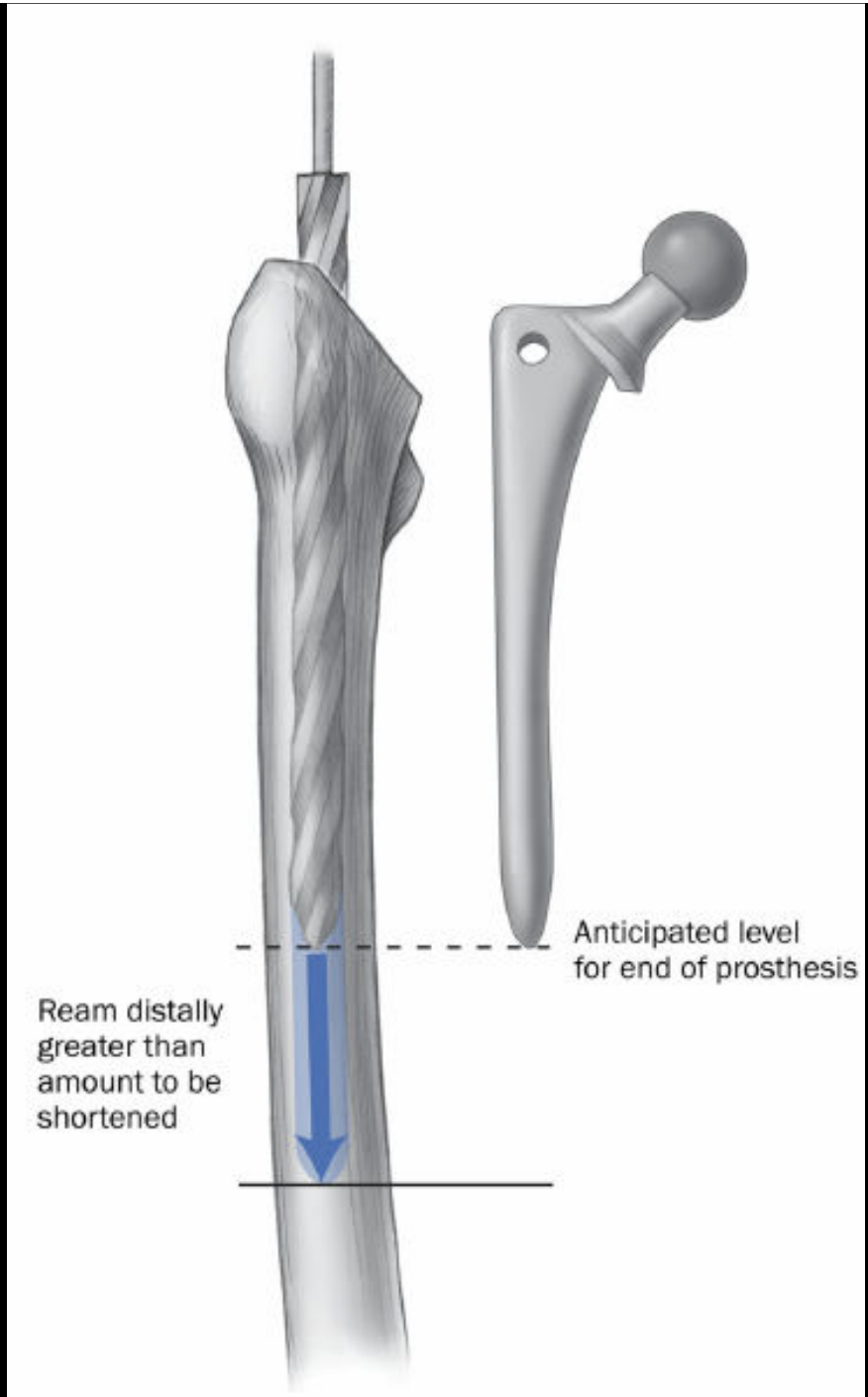
- Acetabulum
- Femur
- Soft tissues
  - Muscles
  - Nerves

Planning

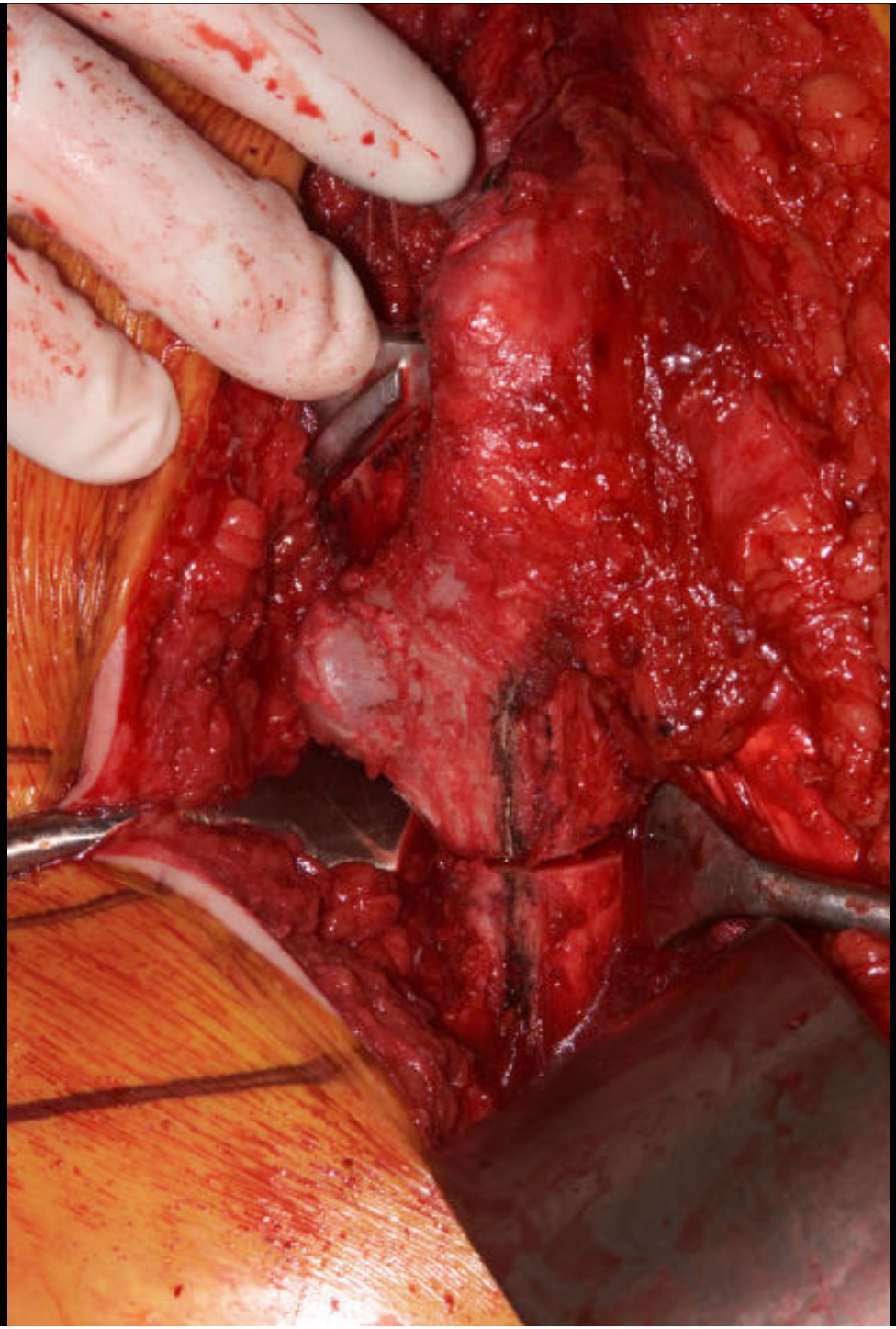

ALEXANDRA
107
100.2 mm
82.3 mm
TraumaCad Pre Operative Planning Report - For TWEDDLE ALEXAN
Patient ID:RLNX5101
Created By: CHS\pacs , Date: 09:44 20/01/
Image Implants Informa
*** S-ROM Proximal Sle
Part No.=12B Small - Cone=B, Internal_Diameter=12, Spout=S
*** Trilogy AB Acetabular Cup S
Part No.=94-6400-044-20-00 -

Acetabulum

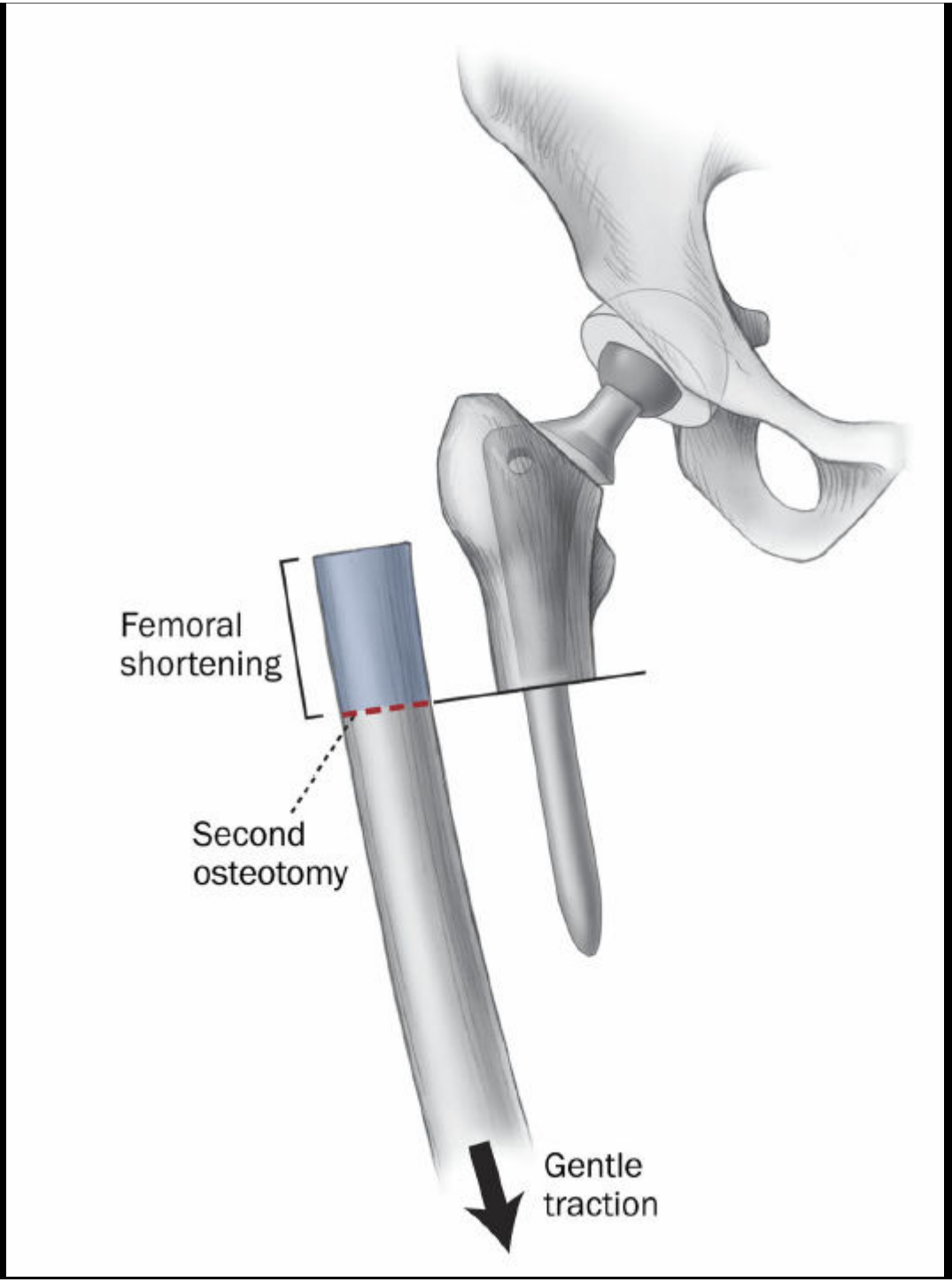
Femur


Anticipated level
for end of prosthesis
Ream distally
greater than
amount to be
shortened

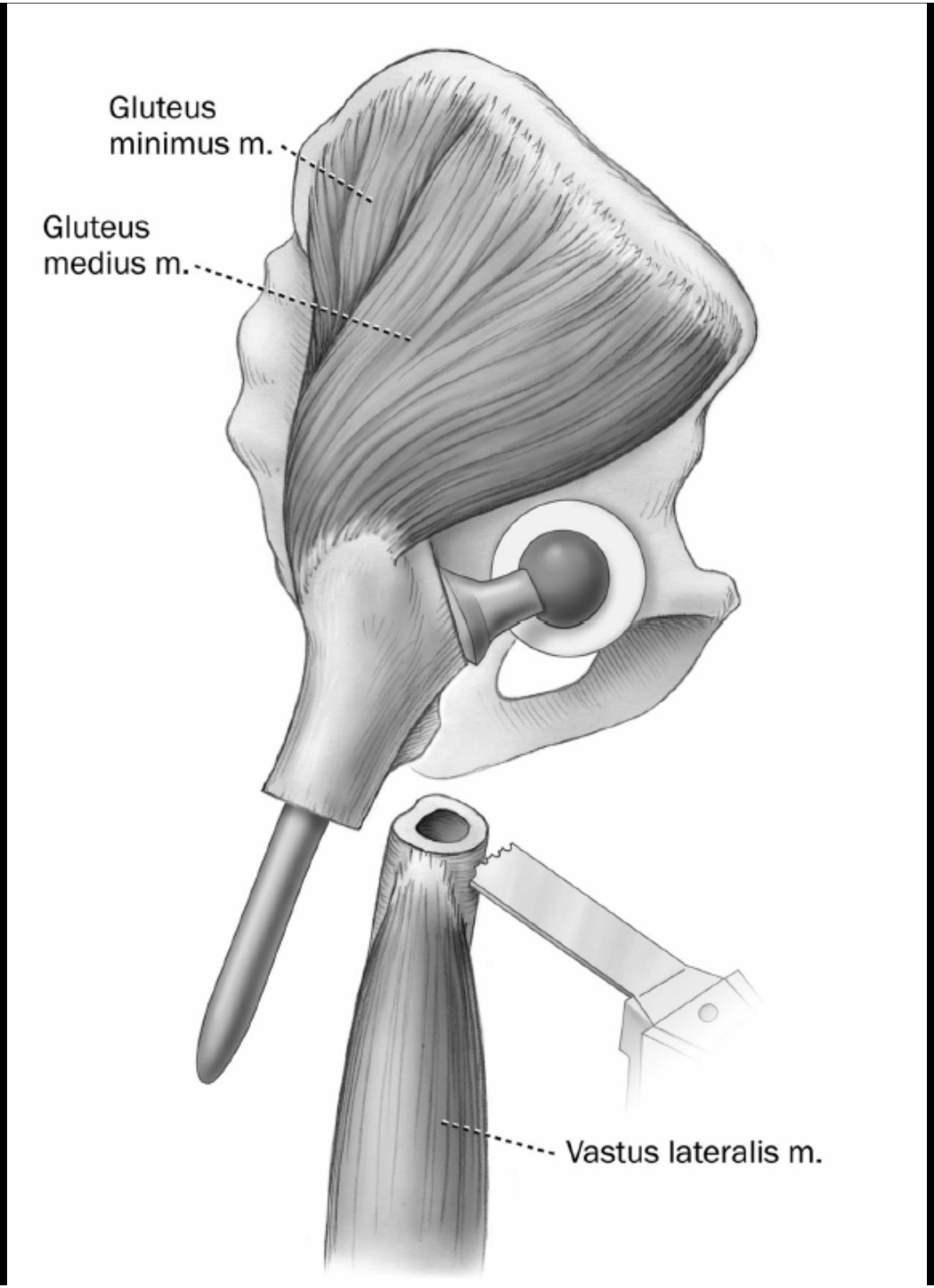
Osteotomy



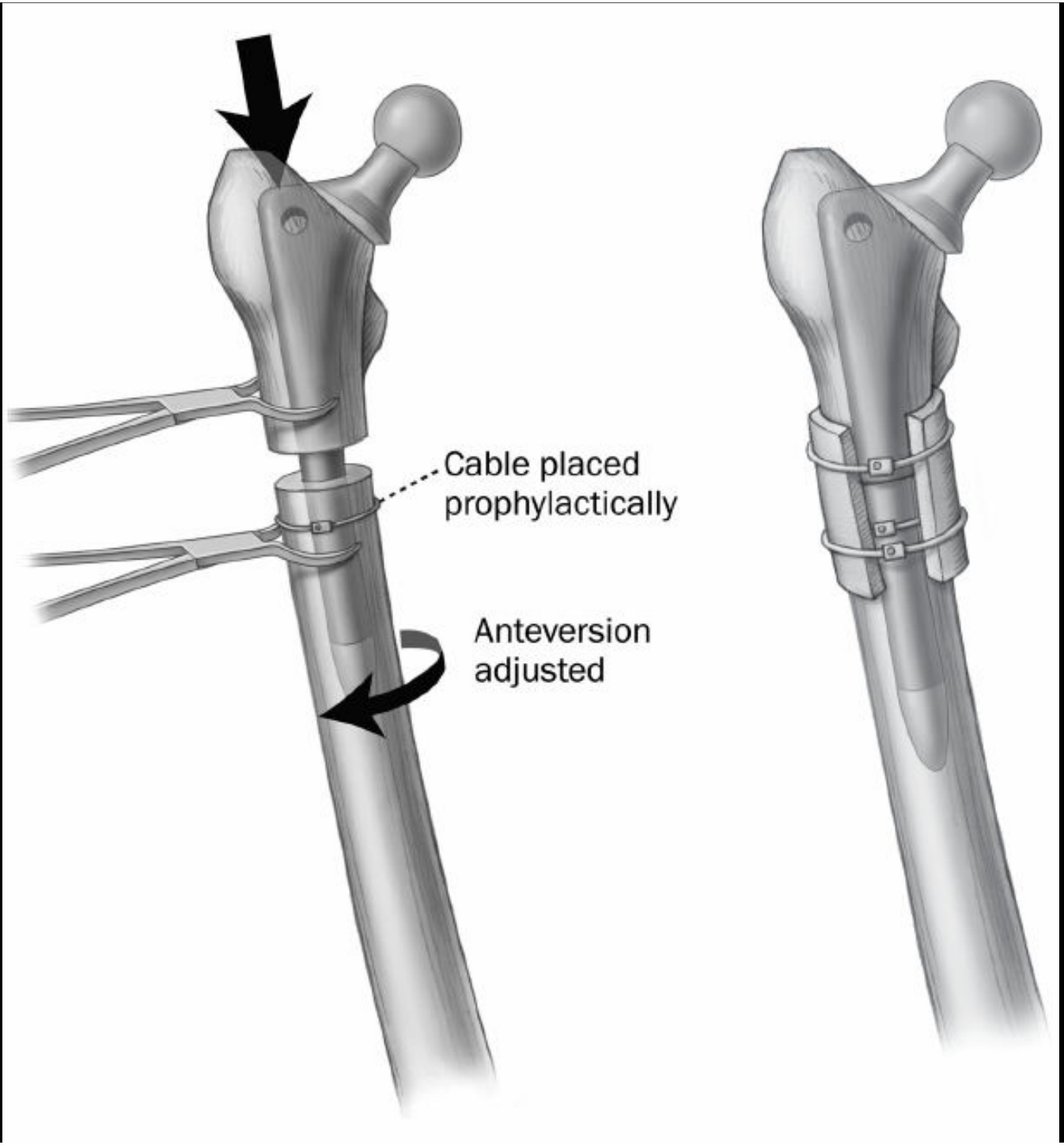
Trial reduction

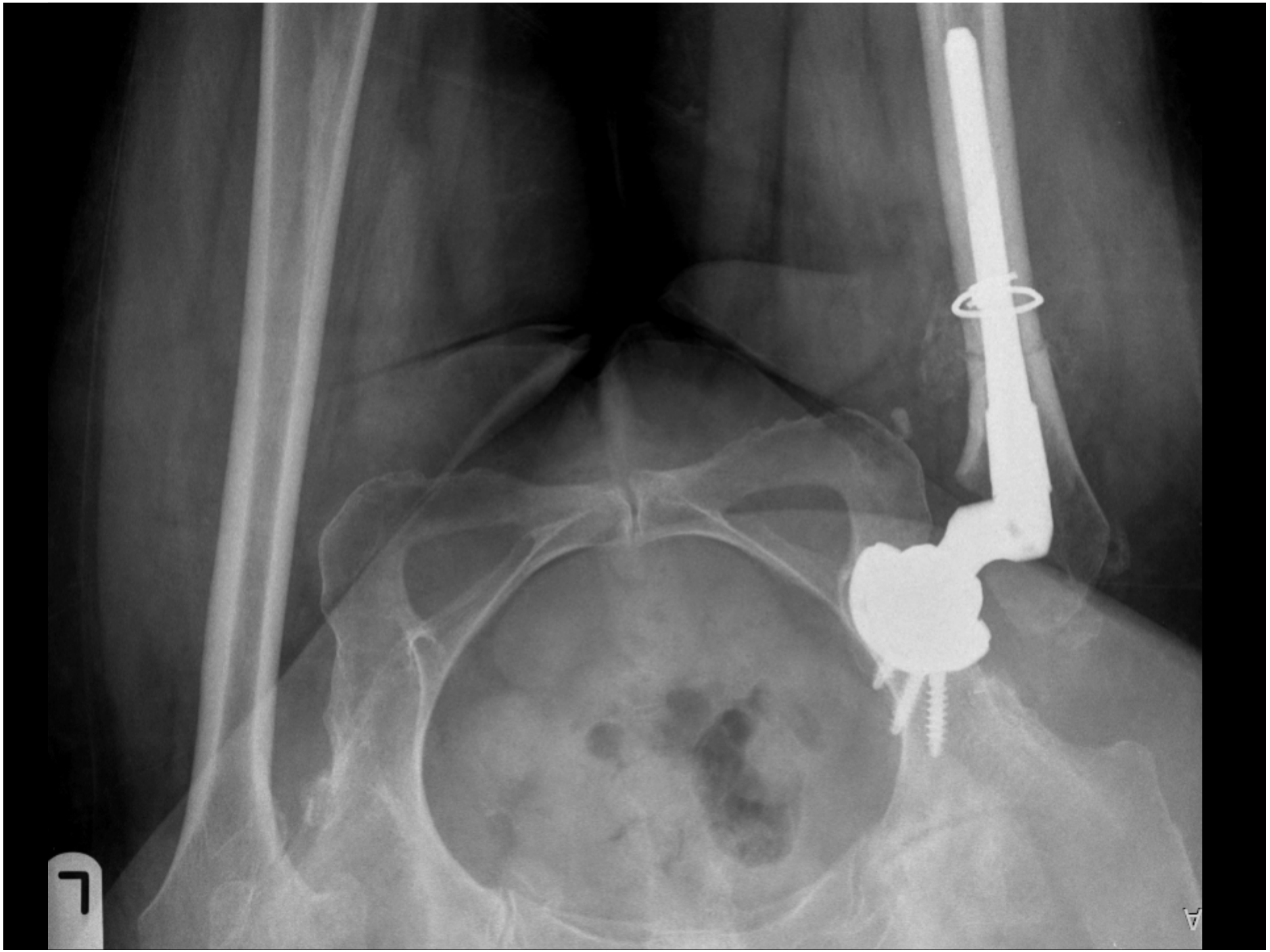


Femoral shortening



Implantion

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Treatment of Crowe IV high hip dysplasia with total hip replacement using the Exeter stem and shortening derotational subtrochanteric osteotomy

J. A. F. Charity,
E. Tsiridis,
A. Sheeraz,
J. R. Howell,
M. J. W. Hubble,
A. J. Timperley,
G. A. Gie

Fig. 1a

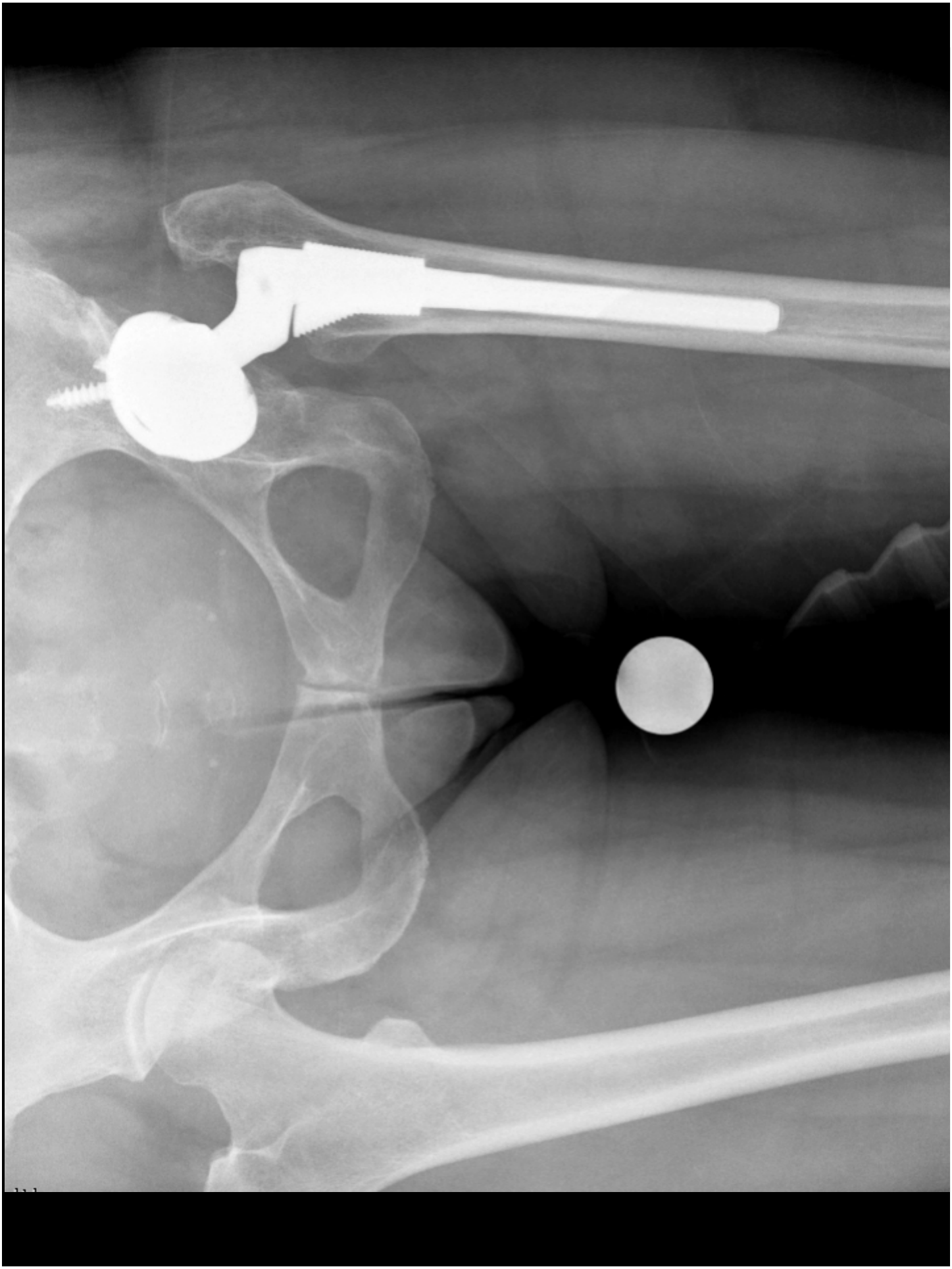
Fig. 1b

Fig. 1c

Fig. 1d

Anteroposterior (AP) radiographs of the left hip a) pre-operatively, b) immediately after operation, c) after 12 years and d) lateral view after 12 years.

Old Perthes/SUFE

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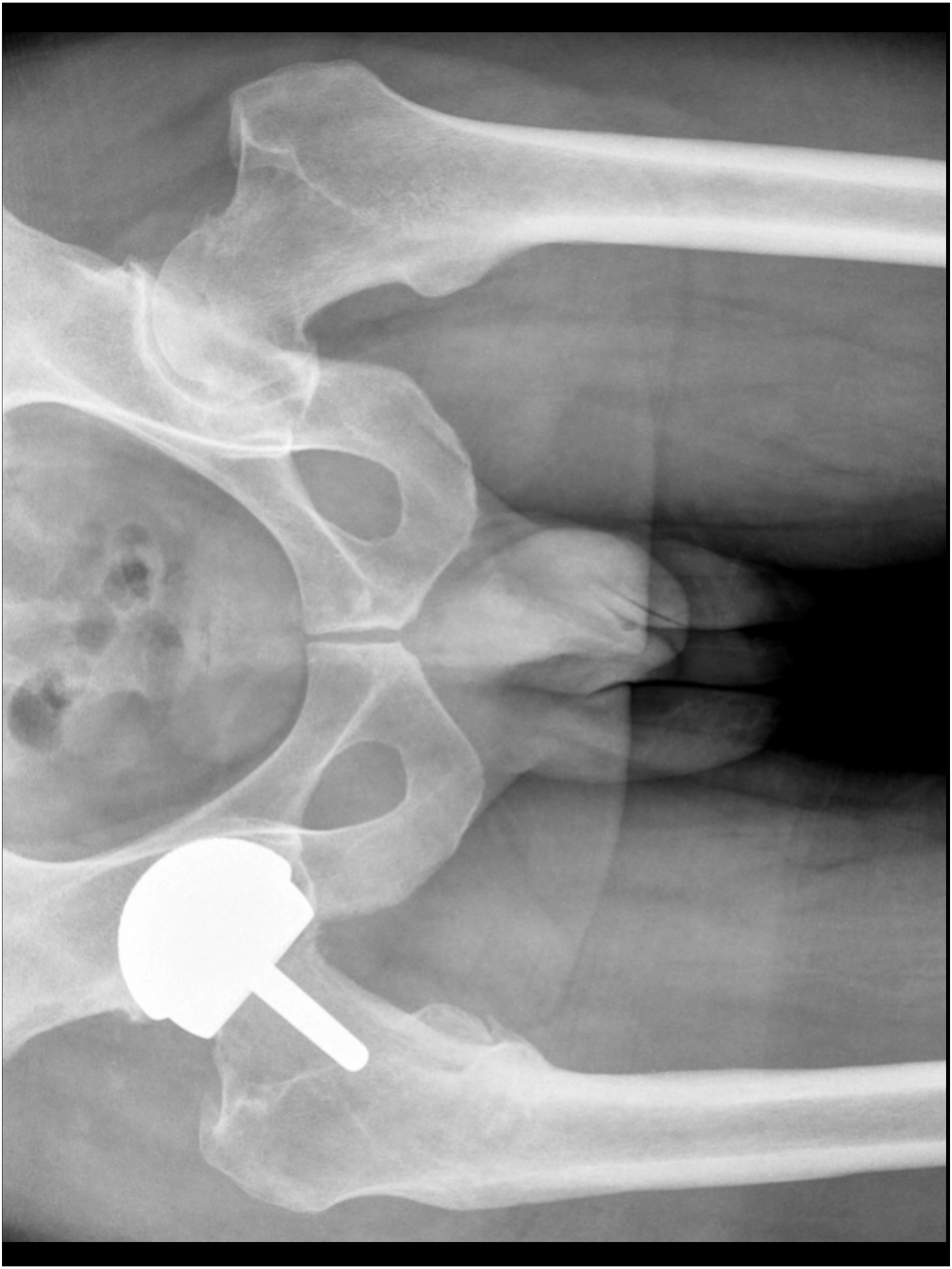
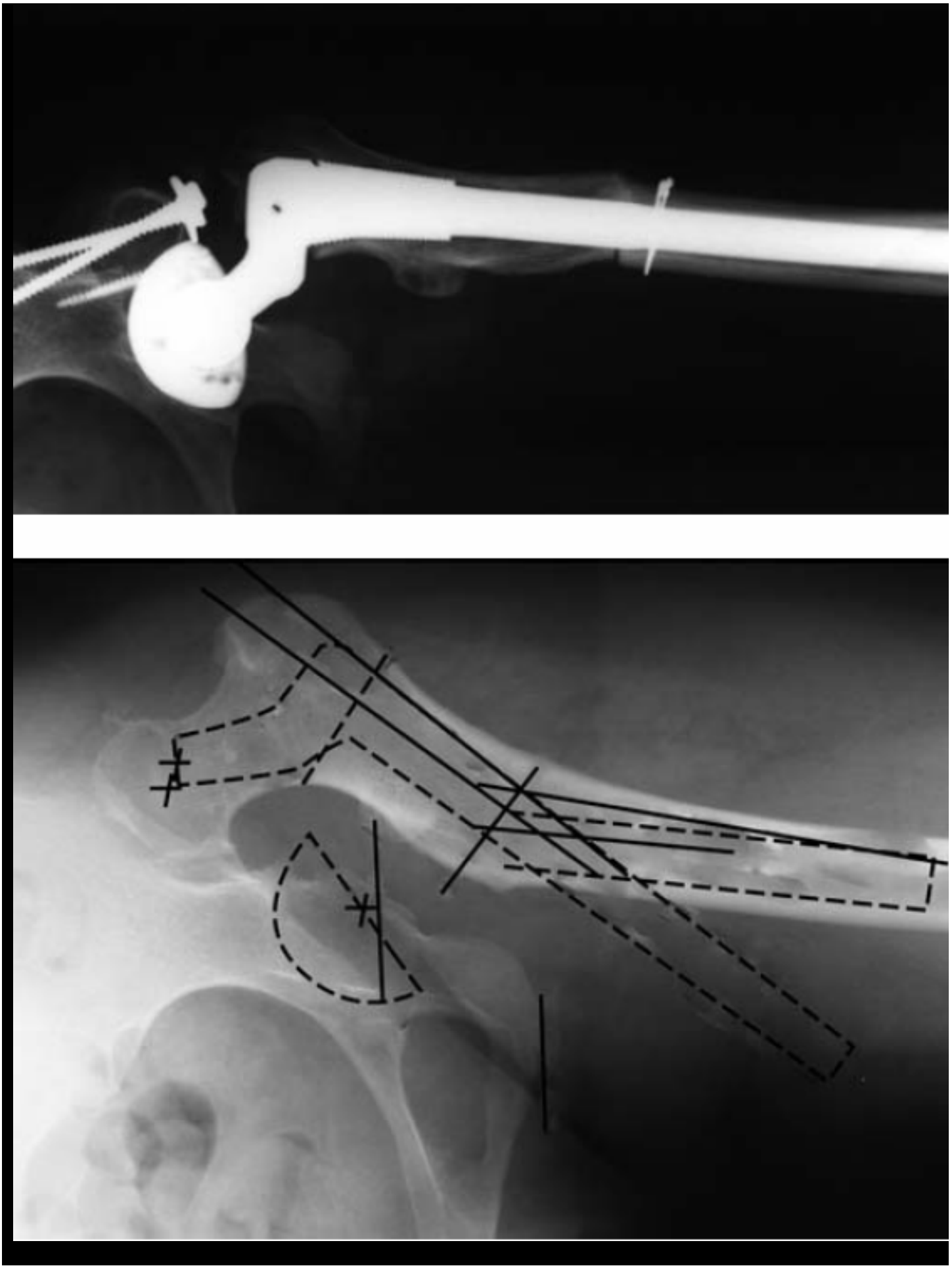
Previous osteotomies






DGH


R
Hospital

In conclusion:

- Template
- Plan
- Be prepared