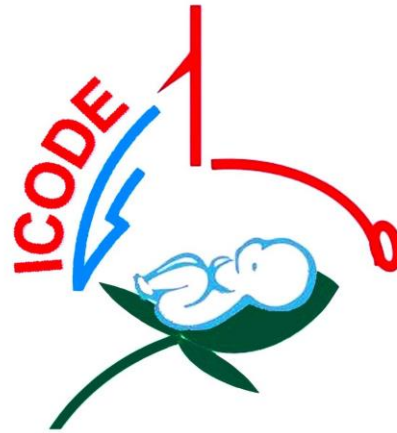


Graf Hip Types



Anatomical Identification

checklist 1

1) Chondro-osseous border

2) Femoral head

3) Synovial fold

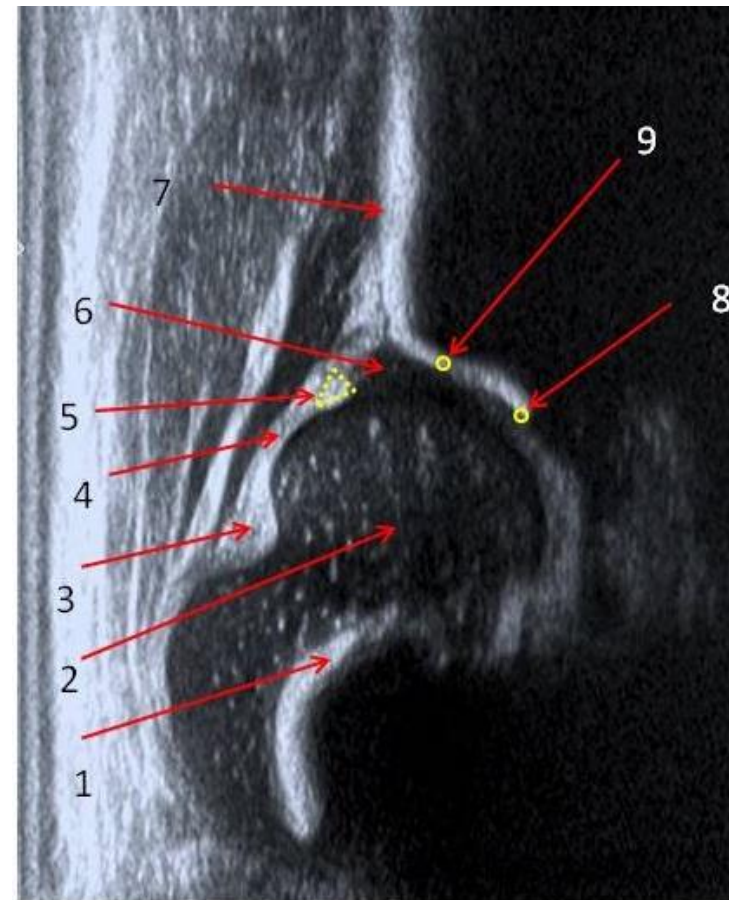
4) Joint capsule

5) Labrum

6) Hyaline cartilage roof

7) Bony roof

8 + 9 concavity to convexity
(turning point)



50% of diagnostic errors due to this list being incomplete!

Graf Sonographic Hip Types

TYPE 1

TYPE 2

TYPE 3

TYPE 4



Centered Hips

Decentered Hips

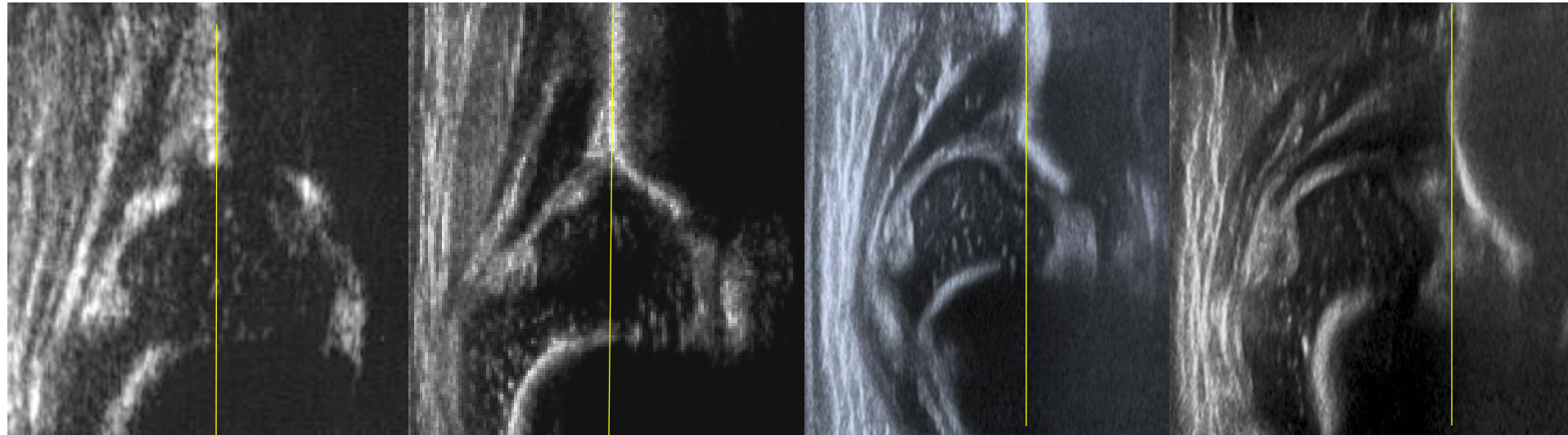
Graf Sonographic Hip Types

TYPE 1

TYPE 2

TYPE 3

TYPE 4

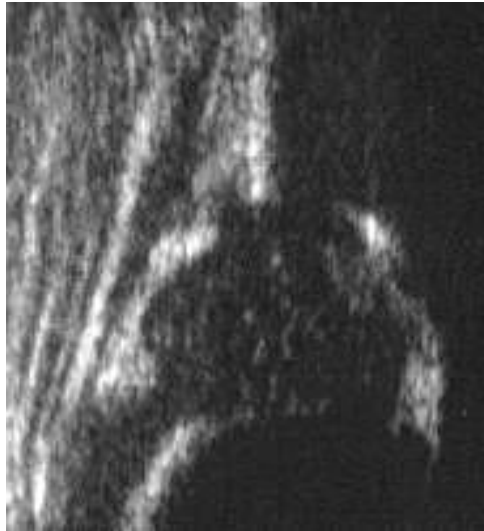


Centered Hips

Decentered Hips

Graf Sonographic Hip Types

TYPE 1



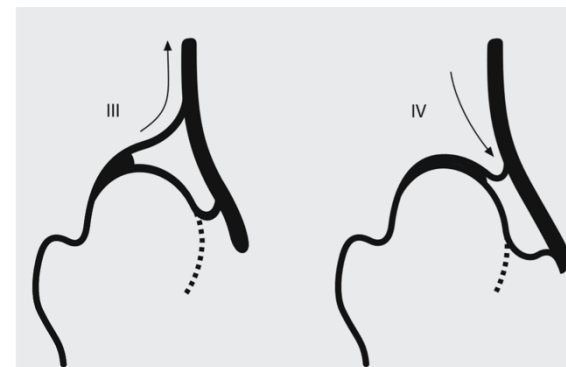
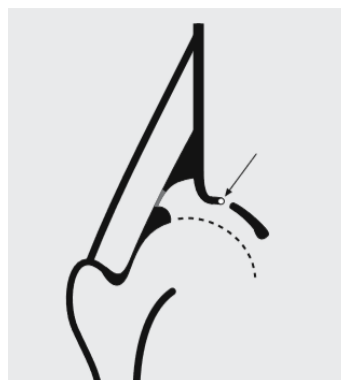
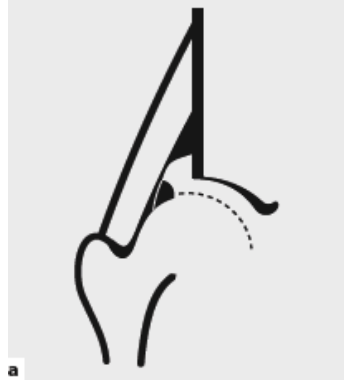
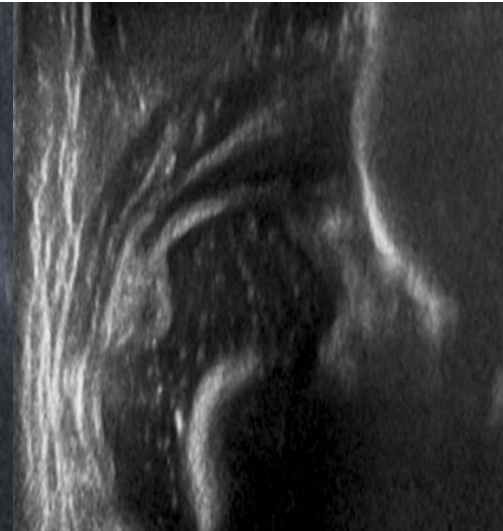
TYPE 2



TYPE 3



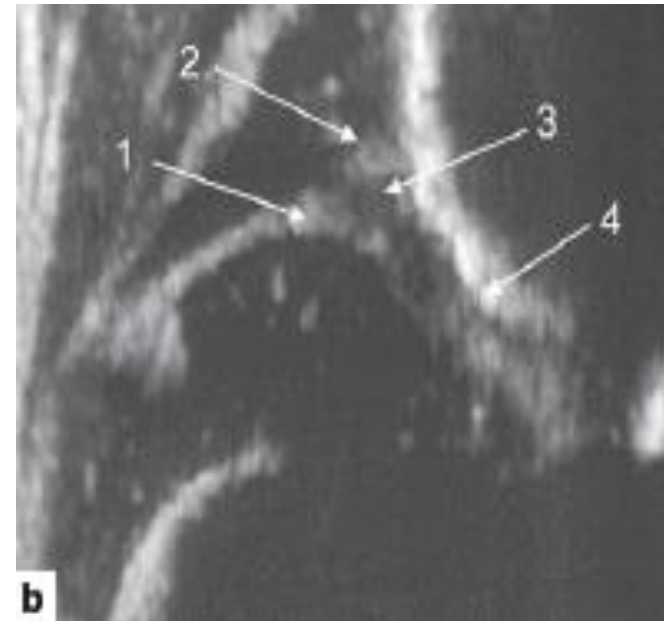
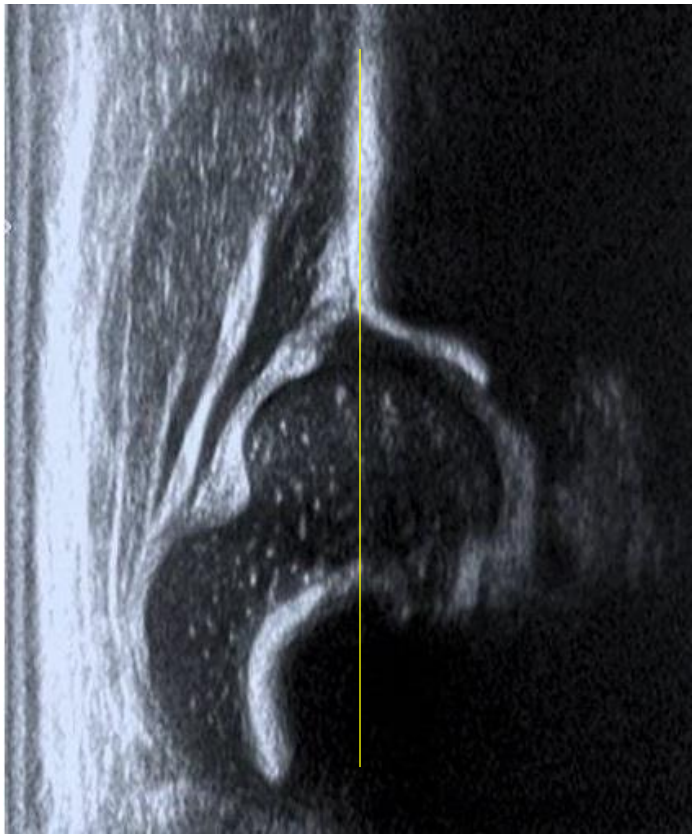
TYPE 4



Decentred hips

Labrum is above turning point

Type 1



Decentred hips

Labrum is above turning point

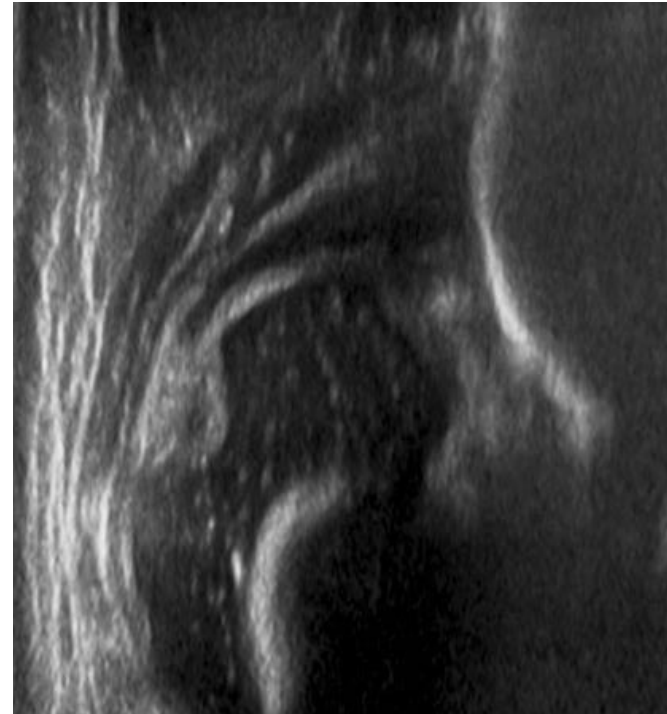
Type 1



Decentred hips

Labrum is above turning point

Type 1



Decentred hips

Labrum is above turning point

Type 1



Type 1

Description

- Centered
- Bony roof is good
- Acetabular cartilage covers head
- Acetabular edge is angular/
blunt

Appearance



Type 1

acetabular rim area (edge)

1. Angular



2. Blunt



When can a Type 1 deteriorate

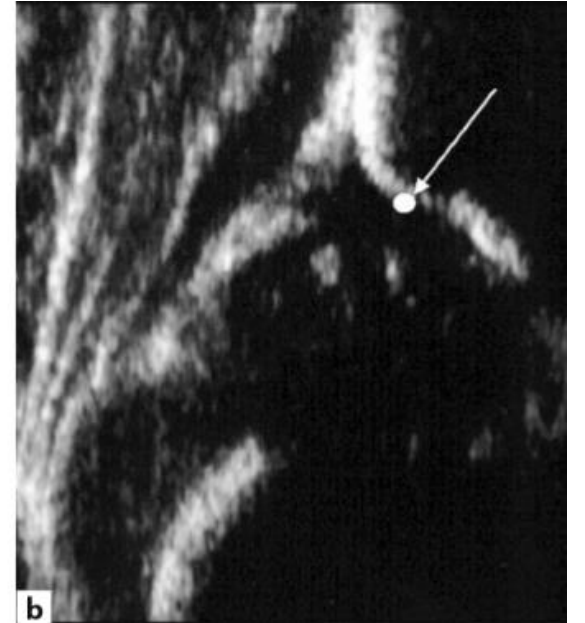
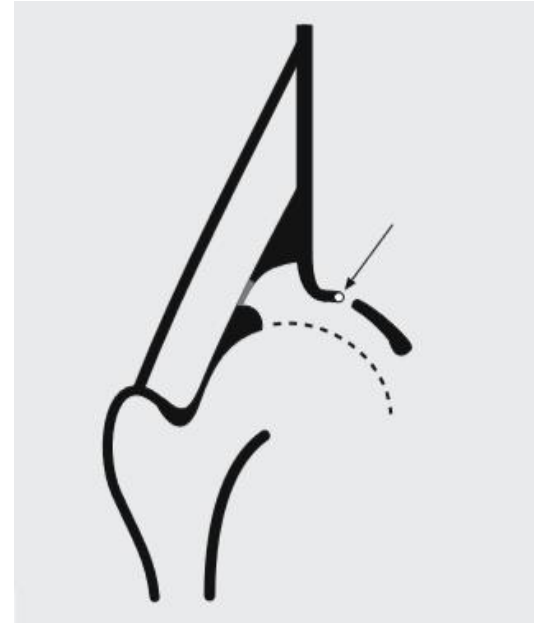
- Neuromuscular disorder
- Hip joint infection
- Secondary dysplasia
 - a previous decentered hip which is treated and becomes Type 1 can deteriorate later

Type 2

Description

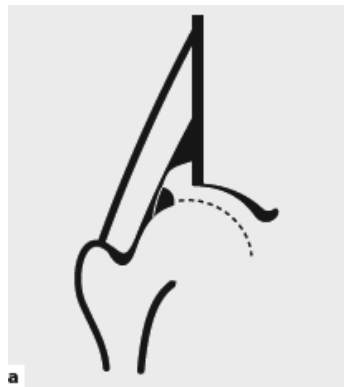
- Centered
- Bony roof is deficient
- Acetabular cartilage covers head
- Acetabular edge is rounded

Appearance

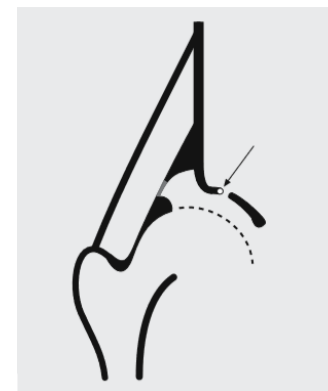
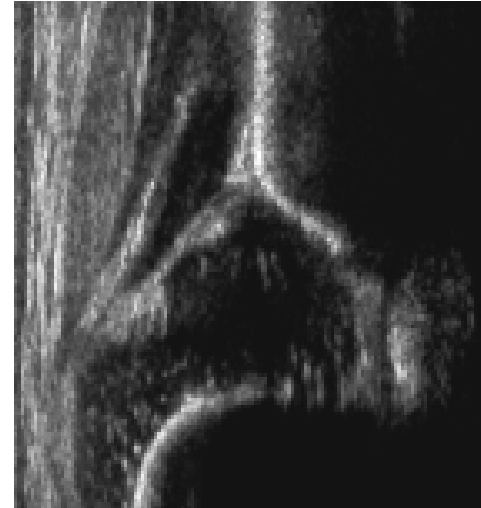


Graf Type 1 / Type 2

TYPE 1



TYPE 2



Type 2

- Subdivided into
 - II a
 - II b
 - II c
- Requires measurements

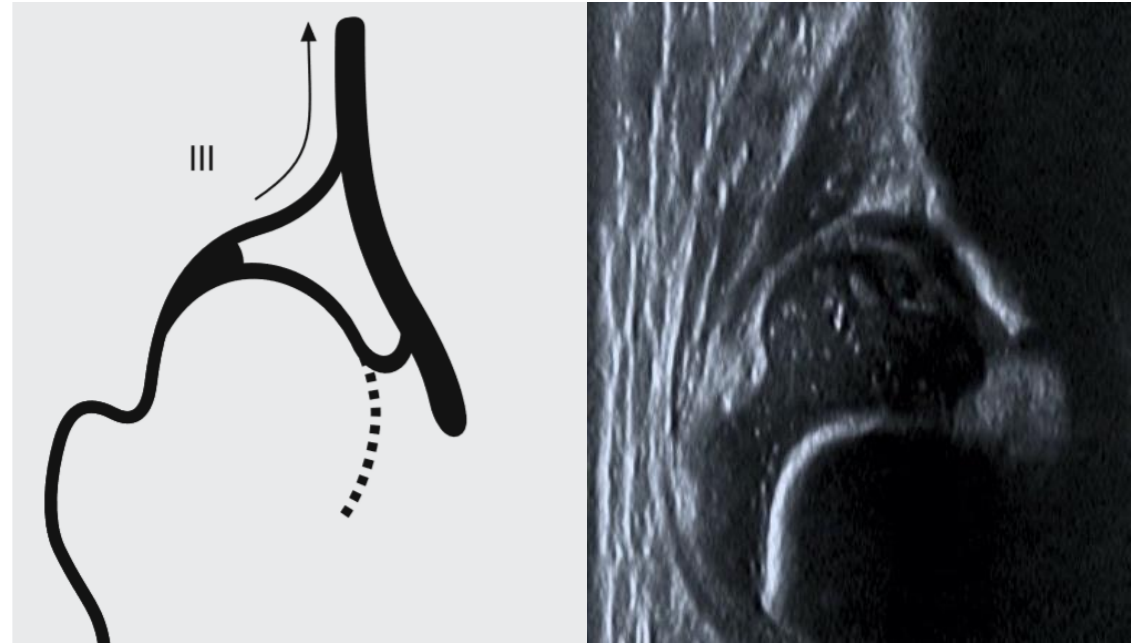
Type 2 to 3

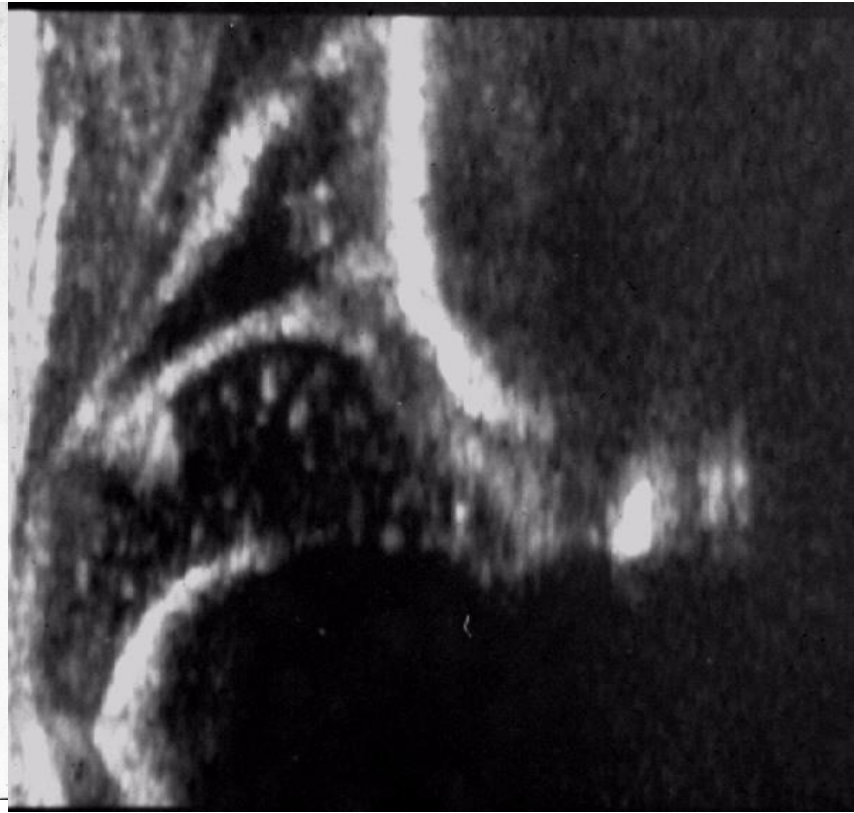


Type 3

- Decentred hip or dislocated
- Some cartilage pushed upwards
 - Perichondrium goes upward
- Bony roof poor
- Acetabular edge flat

- Appearance

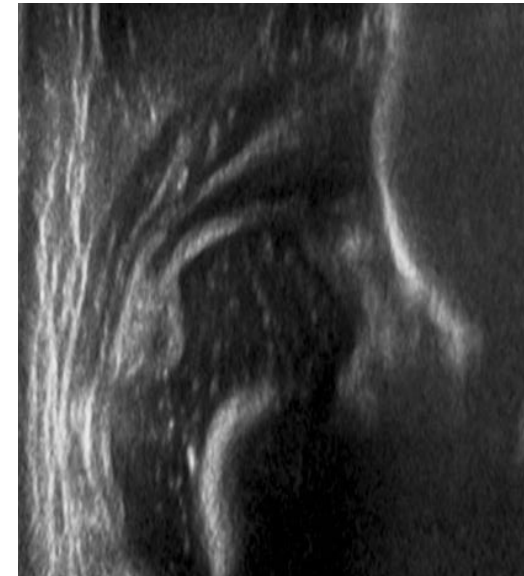
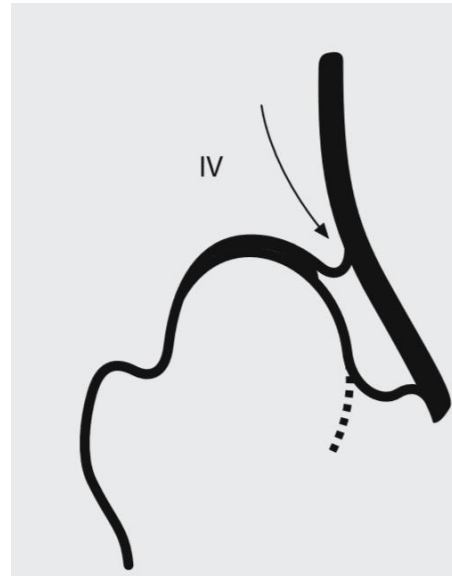




Type 4

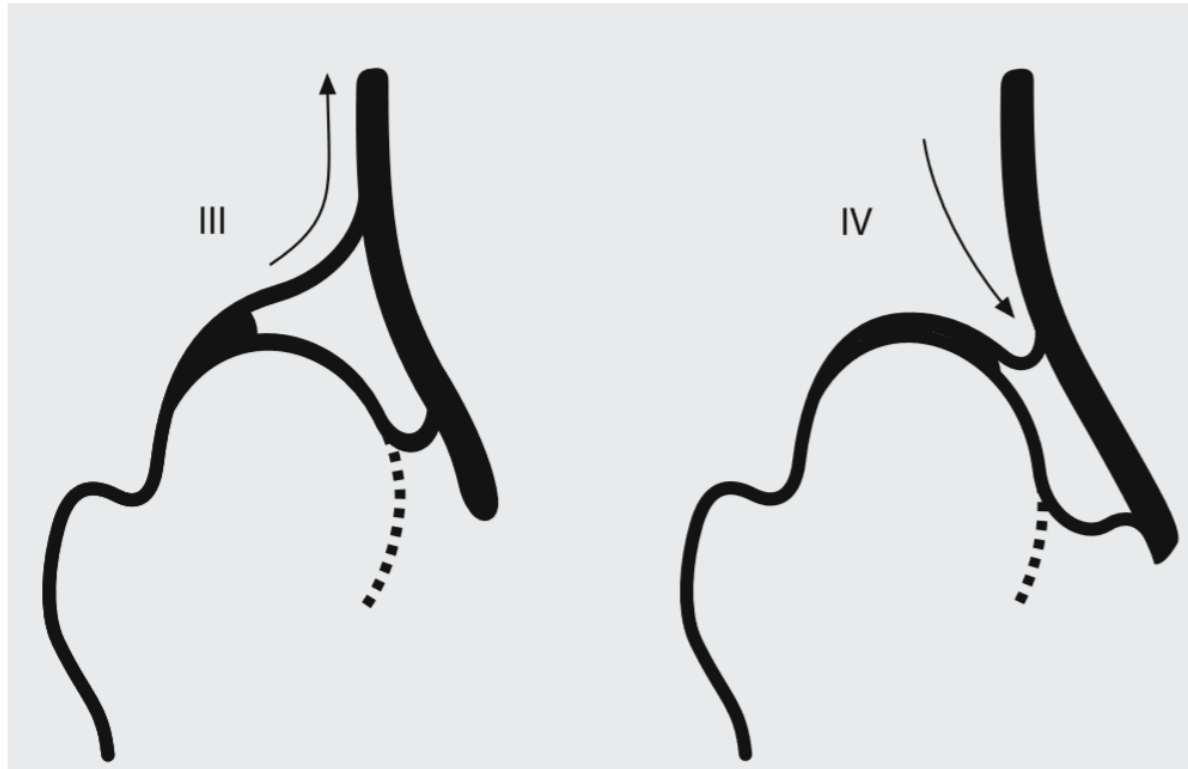
- Decentred hip or dislocated
- All cartilage pushed down
 - Perichondrium goes horizontal
- Bony roof poor
- Acetabular edge flat

- Appearance



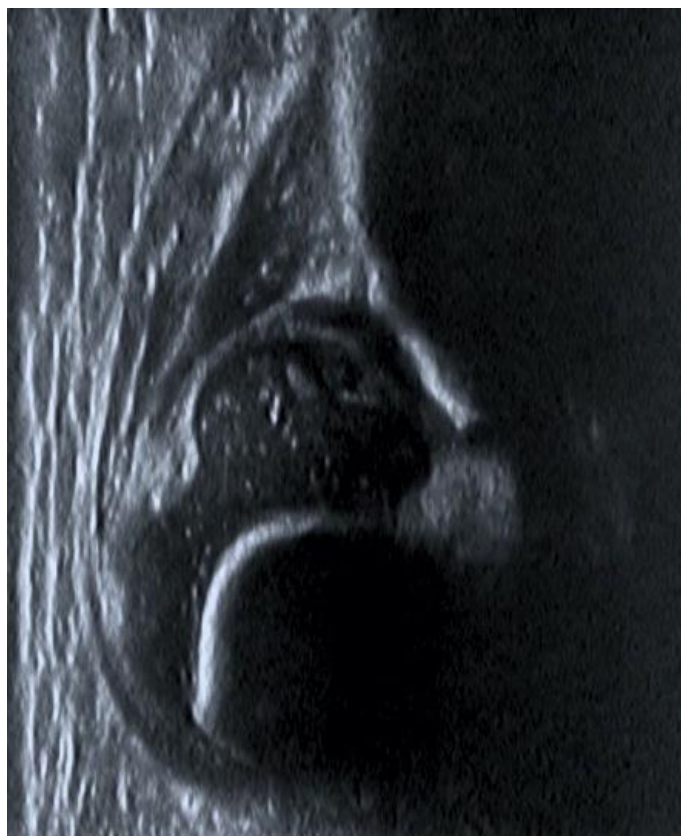
Decentered hip

Perichondrium is key

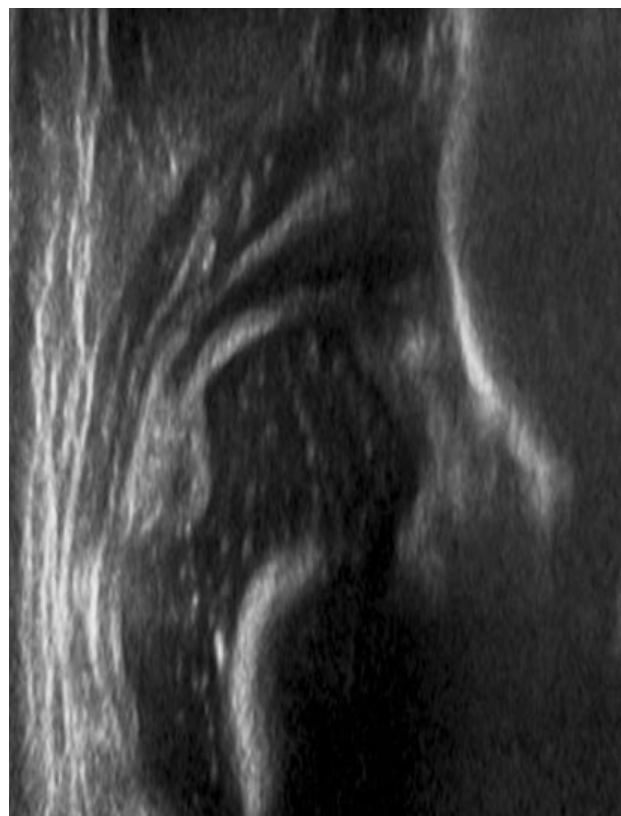


Difference between 3 and 4

3



4

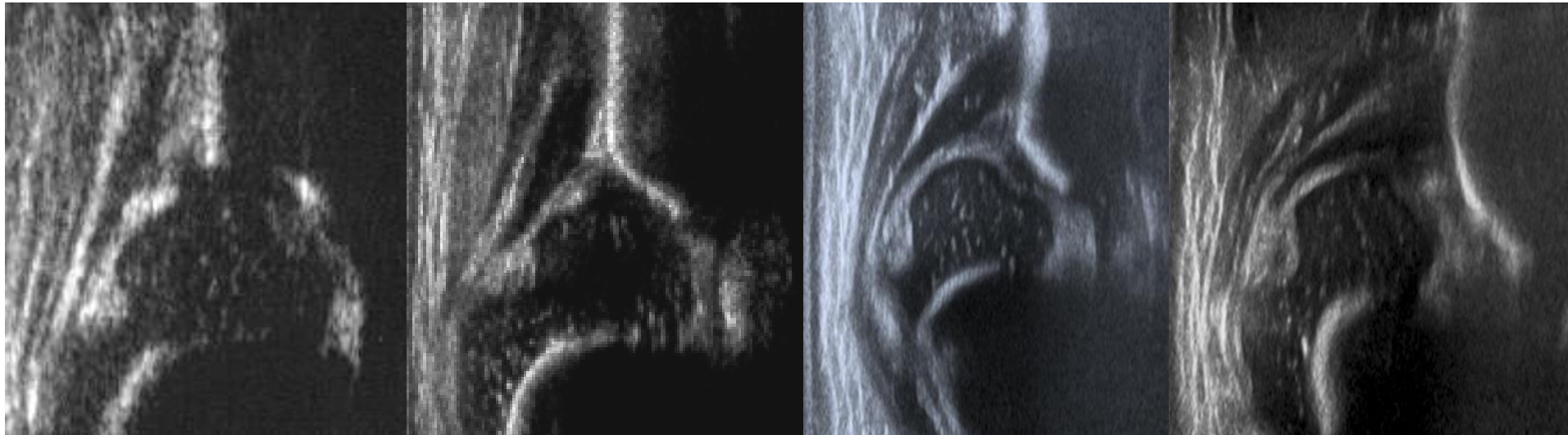


Summary

Graf Sonographic Hip Types

Centered Hips

Decentered Hips



TYPE 1

TYPE 2

TYPE 3

TYPE 4

good bony cover

deficient bony cover

cartilage pushed up

pushed down