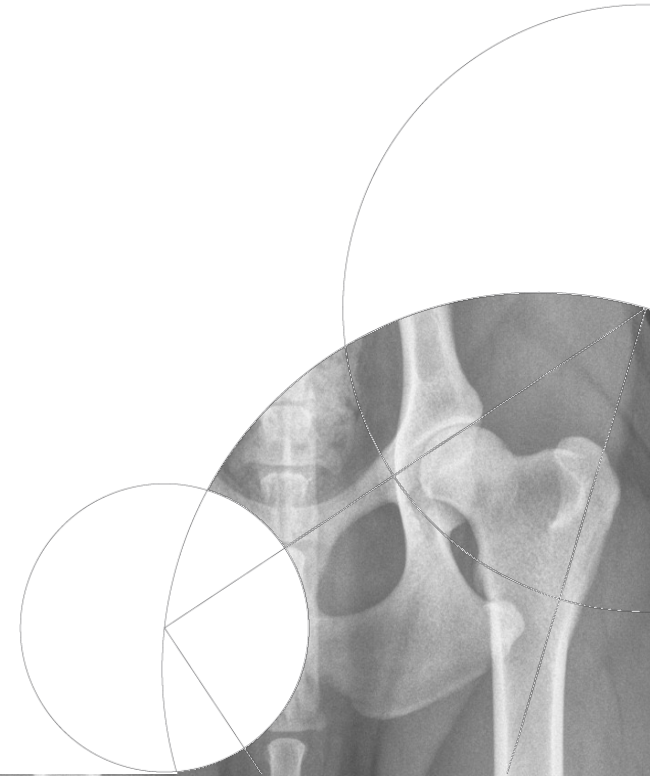




HD-bekæmpelsesprogram



Hofteledsdysplasi

Multifaktoriel

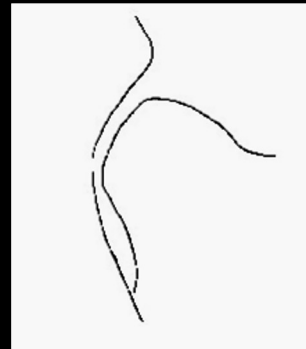
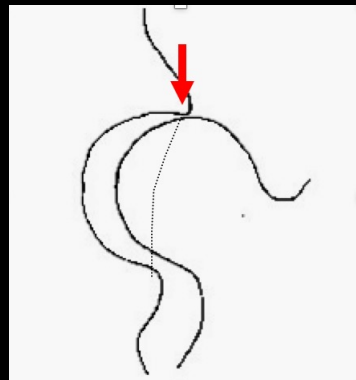
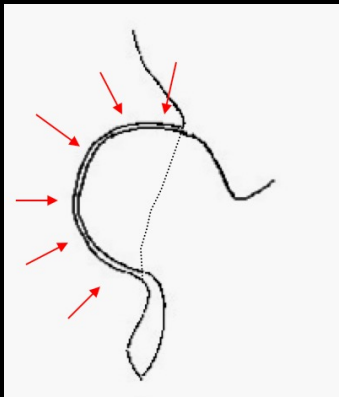
- Arv
Polygenetisk
- Miljøpåvirkning
Væksthastighed, fodring, motion

Hip Dysplasia

"a varying degree of **laxity** of the hip joint permitting subluxation during early life, giving rise to varying degrees of **malformation** of the femoral head and acetabulum and finally inevitably leading to **osteoarthritis**" (1966)



(Ikke samme hund)



Udvikling over tid



7 months



9 months

Udvikling over tid



1 år



4 år

Udvikling over tid



1 år 3 mdr



2 år 6 mdr

Forskellig målsætning

Forskel på hunden med **kliniske symptomer** og hunden der kommer for at blive røntgenundersøgt i forbindelse med et **bekæmpelsesprogram**

Den halte hund

Udredning

Den enkelte hund

Ofte flere projektioner

Klinikeren bestemmer

Bekæmpelsesprogram

Udvælgelse af avlsdyr

Racen

Fastsatte projektioner mm.

(FCI protokol)

Udredning



Oversigt

HD-procedure

FCI protokollen (Copenhagen 2022)
(Fédération Cynologique International)

Forudsætninger for bedømmelse
Teknisk kvalitet
Evaluering/klassificering

Forudsætninger for bedømmelse

Hundens alder

Identitet

Permanent mærkning af røntgenoptagelserne

Ejers underskrift

Dyrlæges underskrift

Sedering

Omfotografering

Korrekt udfyldt rekvisition

Teknisk kvalitet



Billedkvalitet

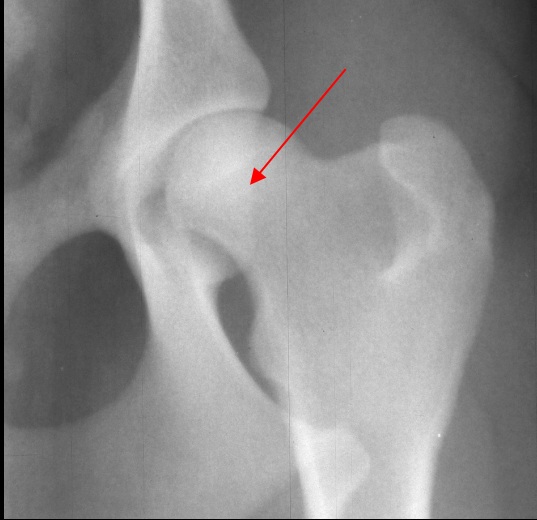
Positionering



The radiographs quality has to be such as to allow accurate visualization of the anatomy of the hip joint.

Important: the dorsal edge of the acetabulum must be clearly visible through the femoral head

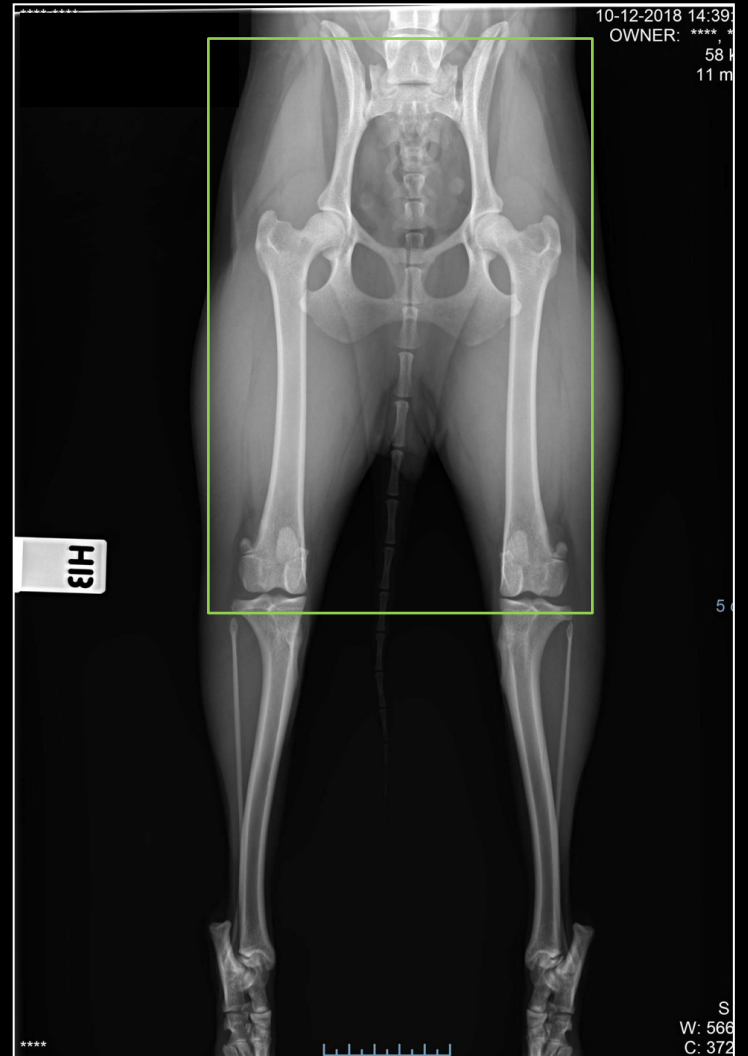
Den dorsale acetabularrand





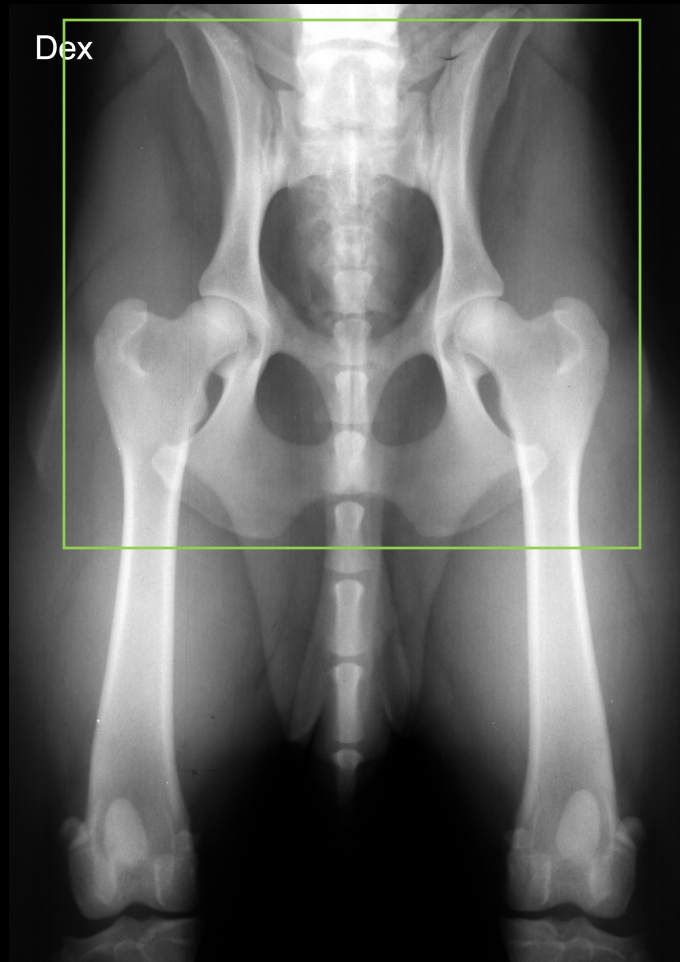
The minimum size of the radiographic image must be such as to include the pelvis up to a level of os sacrum and both patellae

The beam is centered at the caudal end of the pelvis, which can be palpated. The beam is collimated to ensure complete visualisation of the pelvis and the patellae

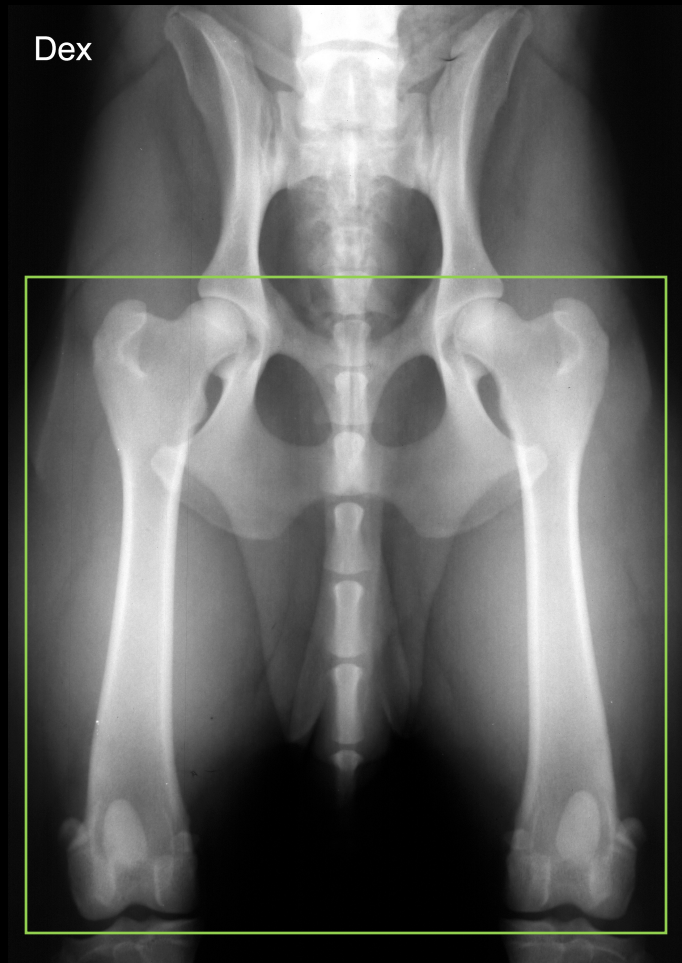




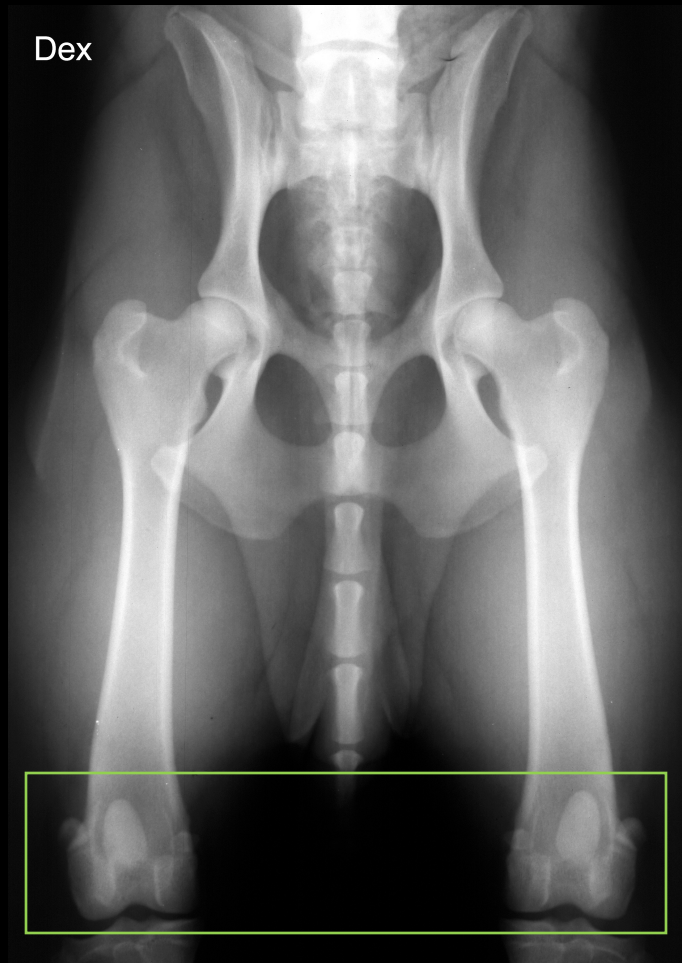
The dog must be placed with **the spine in close contact to the surface of the table**



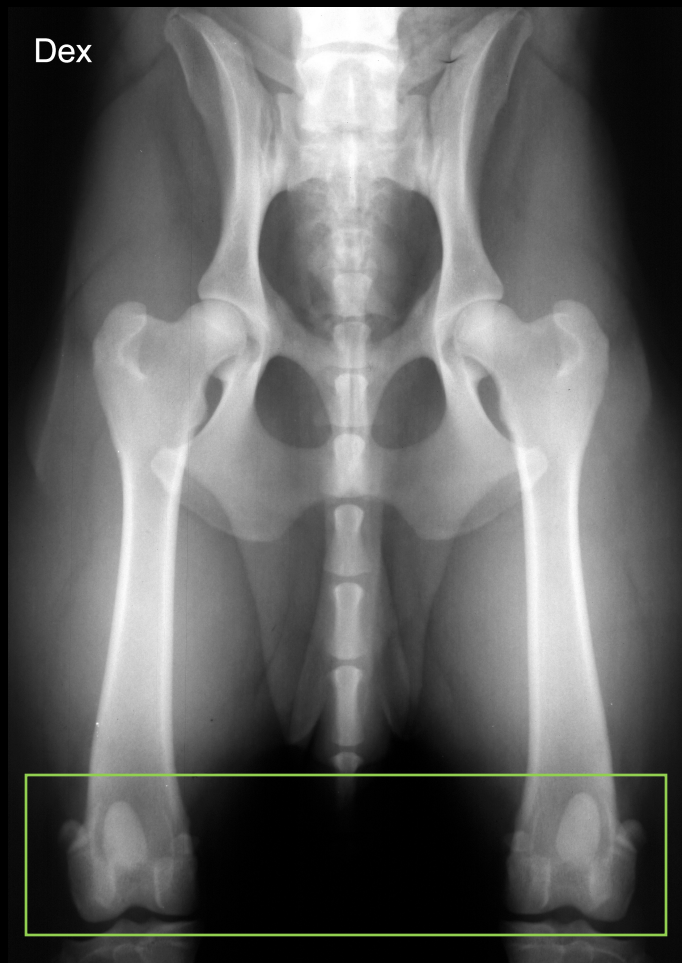
The positioning of the dog must ensure that the pelvis is symmetrical and not tilted to any side



Both ossa femoris must be **parallel** to each other and to the sagittal plane



The knees must be **pronated** so that the patellae are projected in sulcus intercondylaris on femur



The knees must be held in a position **close to the table**

Sedering/anæstesi

Hunden skal være tilstrækkelig afslappet



Angivelse af hundens vægt

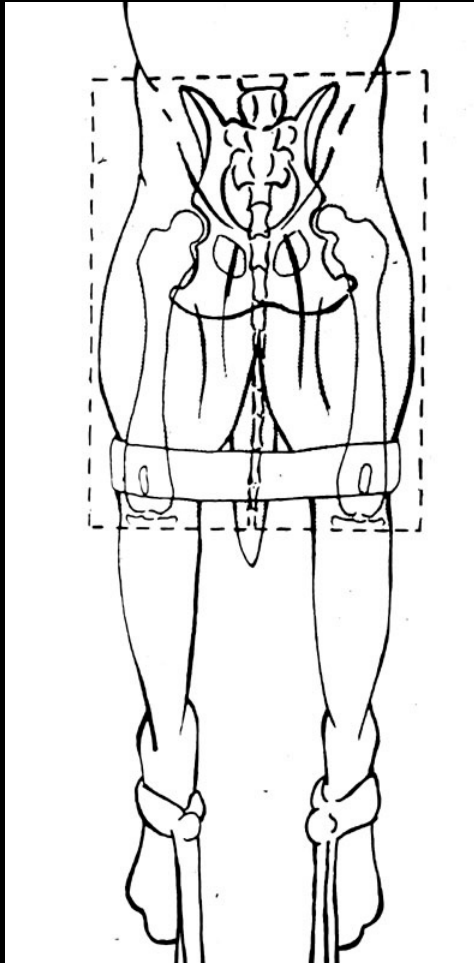
Anvendte præparater og dosis:

- Butorphanol
- Dexmedetomidin
im.

Evt.:

- Fentanyl
- Propofol
iv og evt. intubering.

Positionering



Positionering (korrekt)



Evaluering/klassificering

FCI's internationale 5-delte skala (Copenhagen 2022)

Klassificeringen er foretaget udelukkende på grundlag af de radiologiske fund og så objektivt som muligt

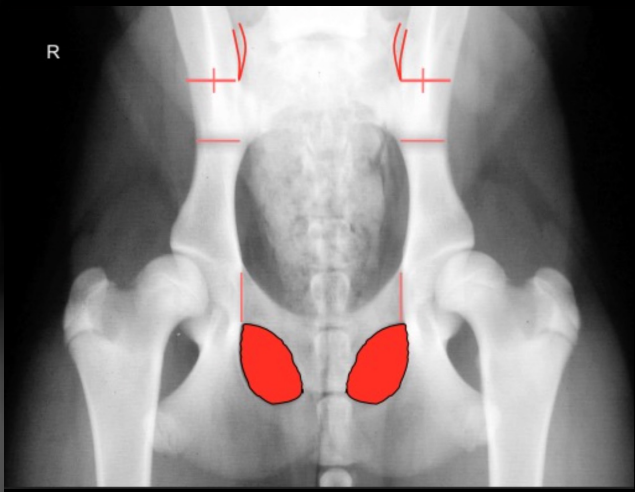
Kvalitetskontrol



- Billedkvalitet
 - Positionering
-
- 1 = god
 - 2 = rimelig
 - 3 = dårlig (men acceptabel)

På [Dyrlægeportalen](#) har du mulighed for at følge med i kvaliteten af de røntgenbilleder, du indsender til bedømmelse på KU/SUND.

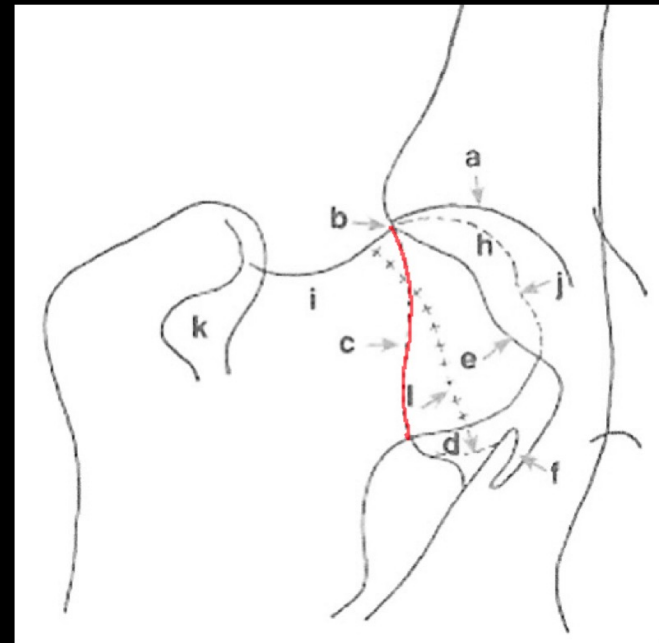
Positioning (Test)



Røntgenanatomi



h = Caput femoris
i = Collum femoris
j = Fovea capitis
k = Trochanter major
l = Growth plate



a = The cranial acetabular margin
b = The craniolateral rim
c = The dorsal acetabular margin
d = The caudal acetabular margin
e = The ventral acetabular margin
f = The acetabular notch

Evaluering

Ledslaphed

subluxation/luxation

Deformerende forandringer

formændring af caput femoris
acetabulum

Sekundære forandringer

periartikulære nydannelser

Grade A

The femoral head is well centered in the acetabulum and the *joint space* is narrow and even. The subchondral bone of the *femoral head* and the *cranial acetabular margin* are parallel or almost parallel, with the exception of the the fovea capitis.



The *subchondral bone plate* of the cranial acetabular margin is a fine line of even thickness; in excellent hip joint the subchondral bone can end before the *craniolateral rim*.

The *craniolateral rim* should be well defined and rounded, parallel, to the femoral head; in excellent hips the craniolateral rim encircles the femoral head in caudolateral direction.

The *center of the femoral head* is medial to the dorsal margin of the acetabulum.

The *Norberg Angle* is about 105 gr (as a reference).

No signs of *osteoarthritic changes* are present.

Grade A

German Shepherd



Bernese



Rhodesian



Golden



Weimaraner



Dobermann



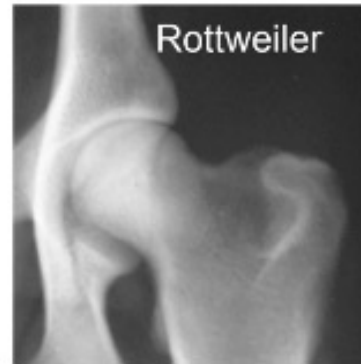
Border Collie



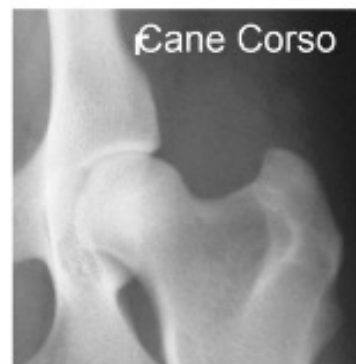
Labrador



Rottweiler



Cane Corso



Grade B



The femoral head is centered in the acetabulum and the *joint space* is narrow, however the subchondral bone of *the femoral head* and the *cranial acetabular margin* can be diverging i.e. not parallel.

The *subchondral bone plate* of the cranial acetabular margin is a fine line with even thickness.

At the lateral part, the *craniolateral rim* is horizontal, i.e. after its maximum in a straight line in the transverse plane.

The *center of the femoral head* is medial or superimposed to the dorsal margin of the acetabulum.

The *Norberg Angle* is at least 100 gr (as a reference).

No signs of *osteoarthritic changes* are present.

Grade C

The *femoral head* is not centered well in the acetabulum, and the subchondral bone of the *femoral head* and *cranial acetabular margin* are diverging i.e. not parallel.



The *subchondral bone plate* of the cranial acetabular margin can be slightly thickened laterally and/or slightly reduced medially.

The *craniolateral rim* can be slightly flattened, i.e. The craniolateral margin diverges from the femoral head in a craniolateral direction.

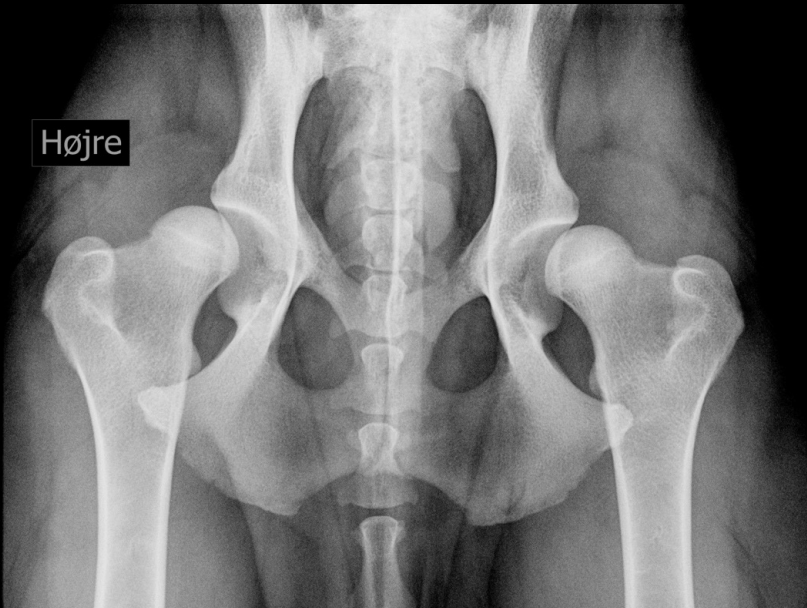
The *center of the femoral head* is superimposed or lateral to the dorsal margin of the acetabulum.

Subluxation of the femoral head, lateral or caudal, can be present.

The *Norberg Angle* is about 100 gr (as a reference).

Signs of *osteoarthritic changes* can be present.

Subluxation of the femoral head, lateral or caudal, can be present.



Grade D



The *femoral head* is not centered well in the acetabulum, and the subchondral bone of the *femoral head* and *cranial acetabular margin* are obviously diverging.

The subchondral bone plate of the *cranial acetabular margin* is moderately thickened laterally and/or moderately reduced medially.

The *craniolateral rim* is markedly flattened i.e., the craniolateral margin leaves the femoral head in craniolateral direction.

The *center of the femoral head* is lateral to the dorsal margin of the acetabulum.

Subluxation of the femoral head, lateral or caudal, can be present.

The *Norberg Angle* is more than 90gr (as a reference).

Signs of *osteoarthritic changes* can be present.

Grade E



Marked dysplastic changes of the hip joints. Remodelling and deformation of the acetabulum and/or femoral head may be present.

The *subchondral bone* of the femoral head and the subchondral bone plate of the cranial acetabular margin are obviously diverging with obvious flattening.

The *cranial acetabular margin* is markedly thickened laterally blending with the *craniolateral rim*. Thickening of the cranial acetabular margin can be absent in luxated hip joints.

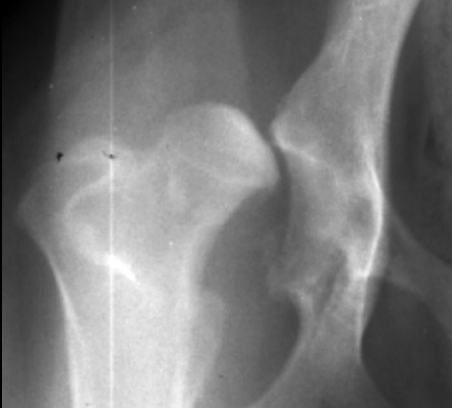
The *craniolateral rim* is markedly flattened i.e., the craniolateral margin leaves the femoral head in a craniolateral direction. The craniolateral rim may be absent.

The *center of the femoral head* is lateral to the dorsal margin of the acetabulum.

Subluxation or *subluxation* of the femoral head.

The *Norberg Angle* is less than 90gr (as a reference).

Signs of *osteoarthritic changes* can be present.



Screeningsprogrammer

Hip-extended

BVA/KC (1965)

British Veterinary Association/Kennel Club

OFA (1966)

Orthopedic Foundation for Animals

FCI (1974)

Fédération Cynologique Internationale

Dynamisk, stress

PennHIP® (1993)

Penn = Pennsylvania

H = Hip

I = Improvement

P = Program

