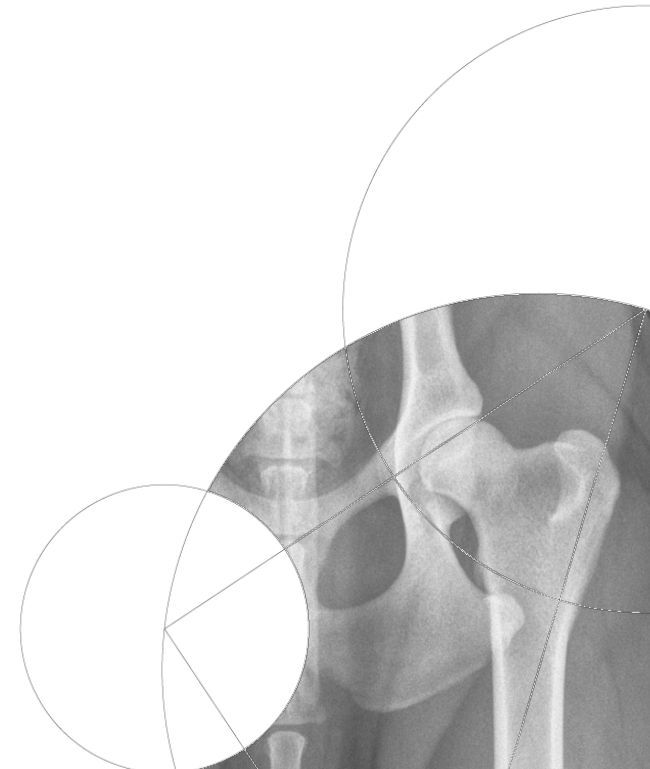




HD-bekæmpelsesprogram



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



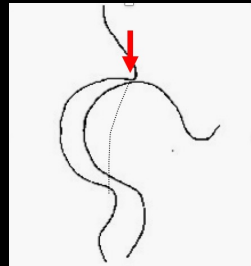
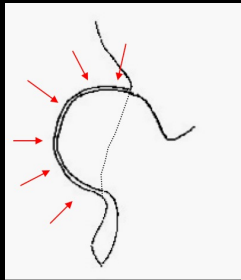
Normalt hofteled



Ledslaphed → sublaksation



Ledslaphed
→ sublaksation/luksation
→ remodellering/malformation
→ periartikulære nydannelse



Forskellig målsætning

Forskel på om en hund kommer til udredning på grund af kliniske symptomer eller om en hund der kommer i forbindelse med screening for HD

Udredning

Den halte hund

Den enkelte hund

Ofte flere projektioner

Klinikeren bestemmer

Bekæmpelsesprogram

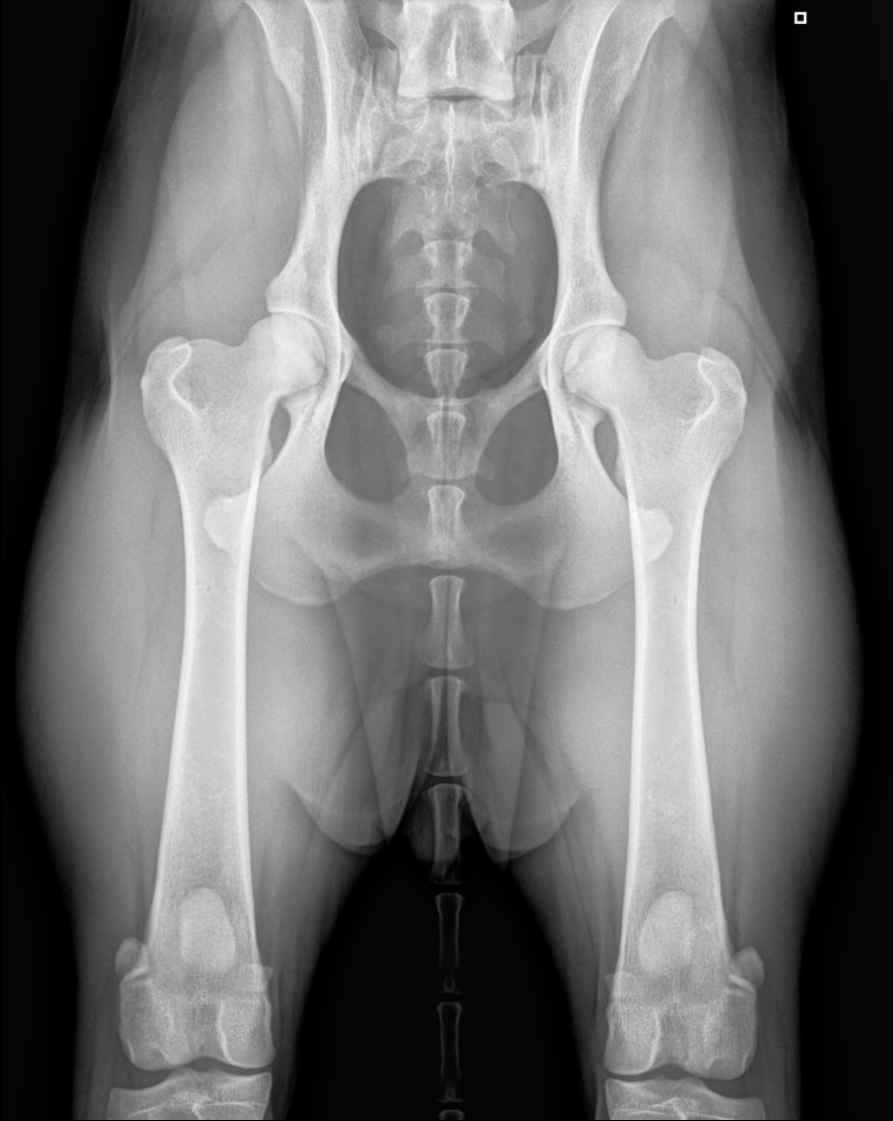
Udvælgelse af avlsdyr

Racen

Fastsatte projektioner mm.

HD (FCI)

Udvælgelse af avlsdyr



HD-procedure

FCI protokollen (Dortmund 1991) (Copenhagen 2022)
(Fédération Cynologique Internationale)

Forudsætninger for bedømmelse:

- Administrative krav

- Teknisk kvalitet

- Evaluering/klassificering

Forudsætninger for bedømmelse (administrative krav)

Hundens alder

Identitet

Permanent mærkning af røntgenoptagelserne

Ejers underskrift

Dyrlæges underskrift

Sedering

Omfotografering

Korrekt udfyldt rekvisition

Diagnostisk sensitivitet

- 25% efter 6 måneder
- 70% efter 12 måneder
- 95% efter 24 måneder

(Schæferhund)





Sedering/anæstesi Hunden skal være tilstrækkelig afslappet



Angivelse af hundens vægt

Anvendte præparater:

- Butorphanol
- Dexmedetomidin im.

Evt.:

- Fentanyl
- Propofol iv og evt. intubering.



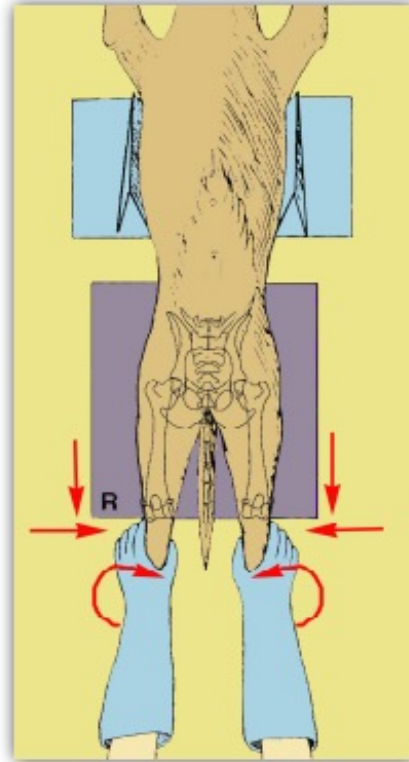
Forudsætninger for bedømmelse (krav til billedkvalitet)

Radiografisk kvalitet

Positionering

Proper positioning

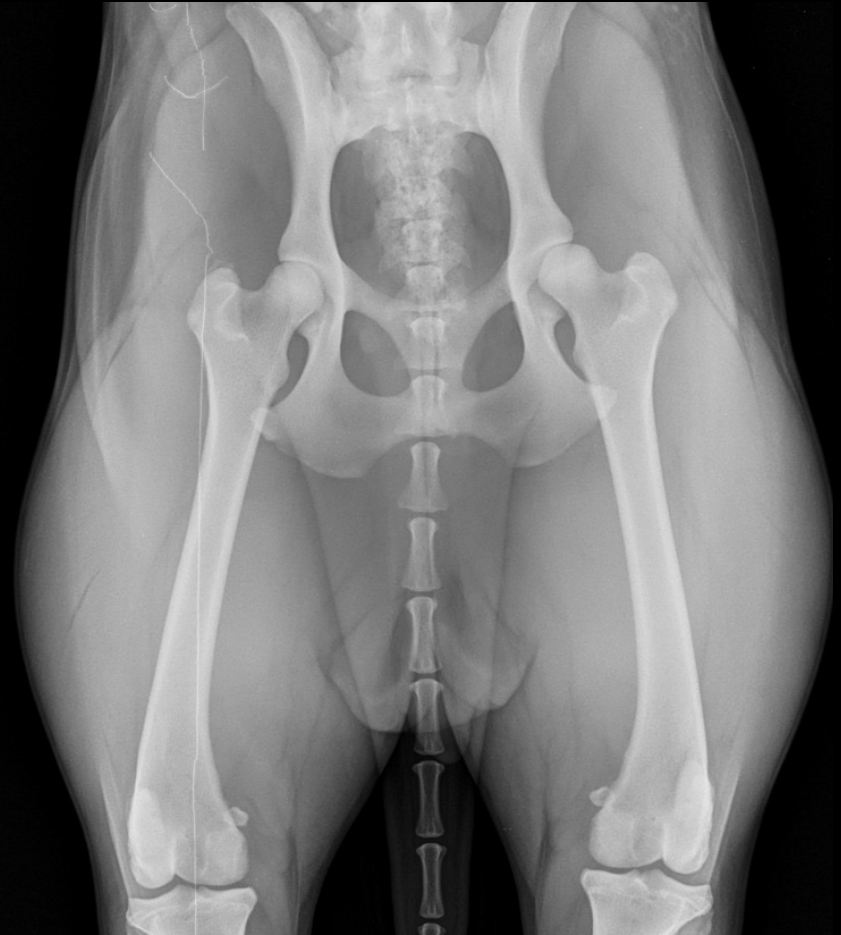
- V-shaped chest support
- Flat pelvis
- Extended and parallel femurs
- Pronation of the femurs
- Patellae centered
- SYMMETRY



Positionering (korrekt)



Positionering (ukorrekt)

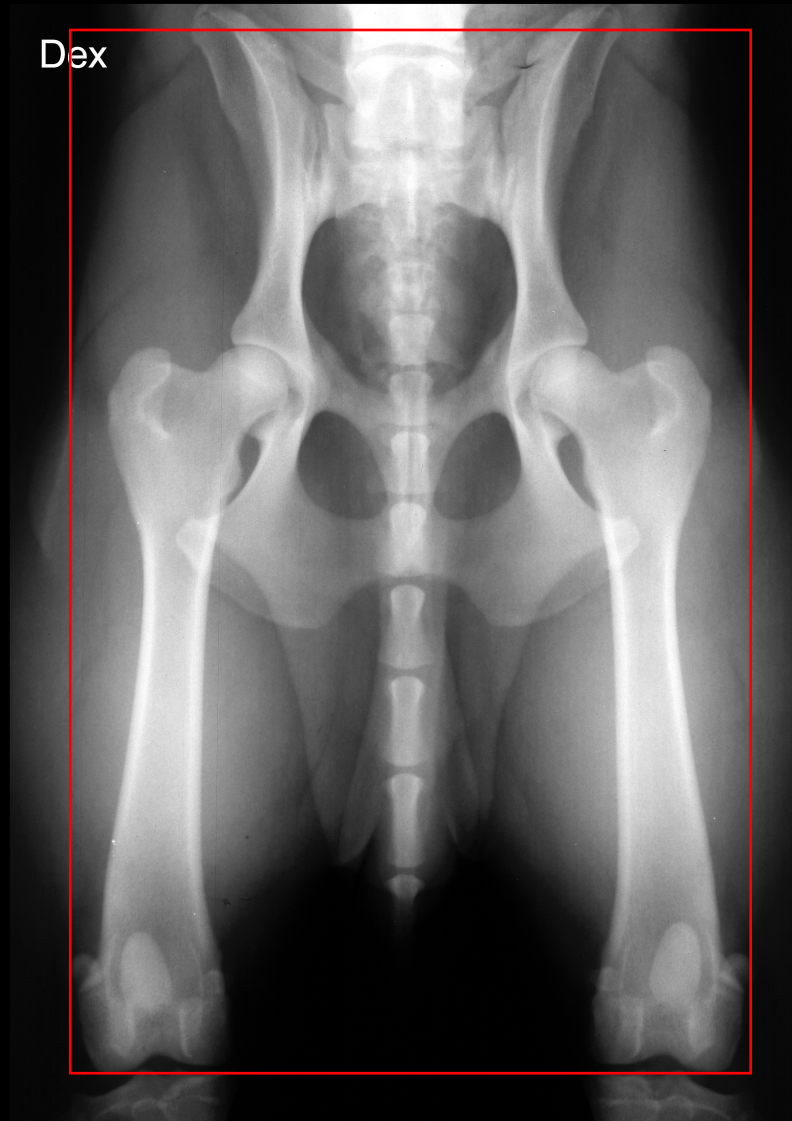




Radiographic image quality is a combination of the following:

- Radiographic density
- Radiographic contrast
- Image sharpness
- Image details
- Image magnification
- Image distortion

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



The minimum size of the x-ray film must be such as to include the pelvis up to a level of os sacrum and both patellae



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

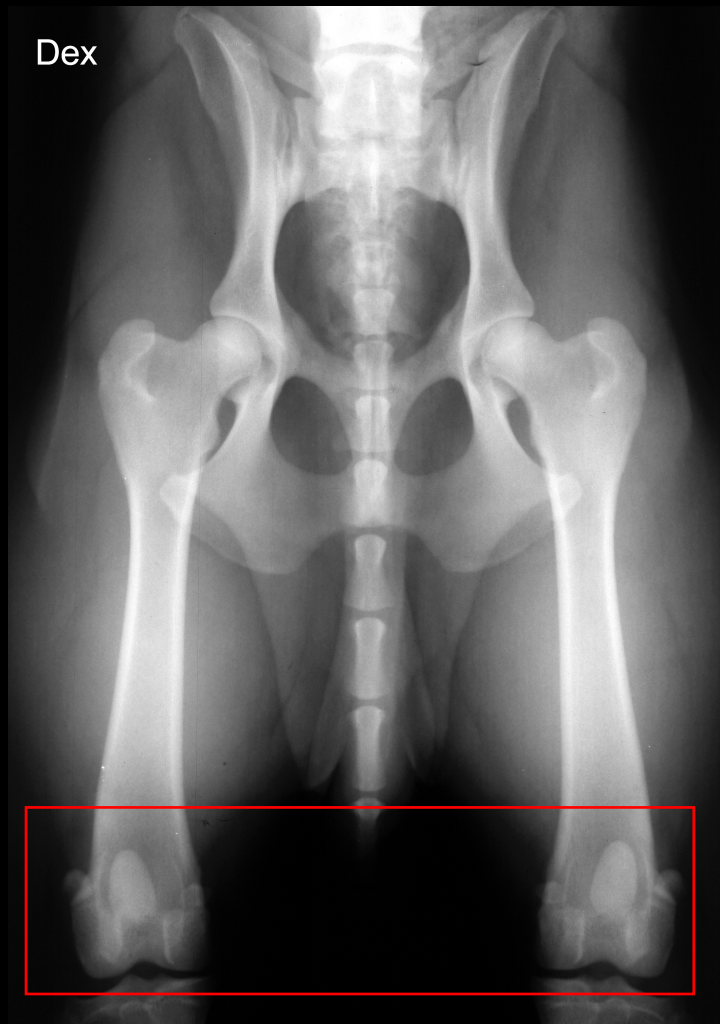


The positioning of the dog must ensure that the pelvis is symmetrical and not tilted to any side

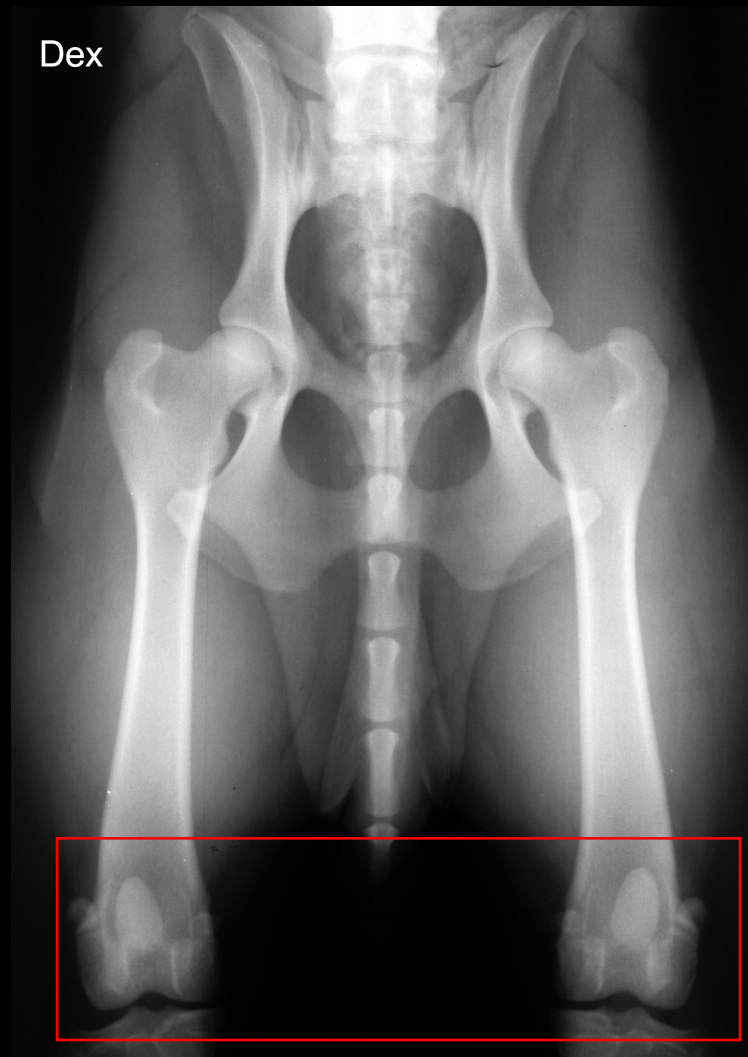
Dex



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:

- Butorphanol
- Dexmedetomidin im.

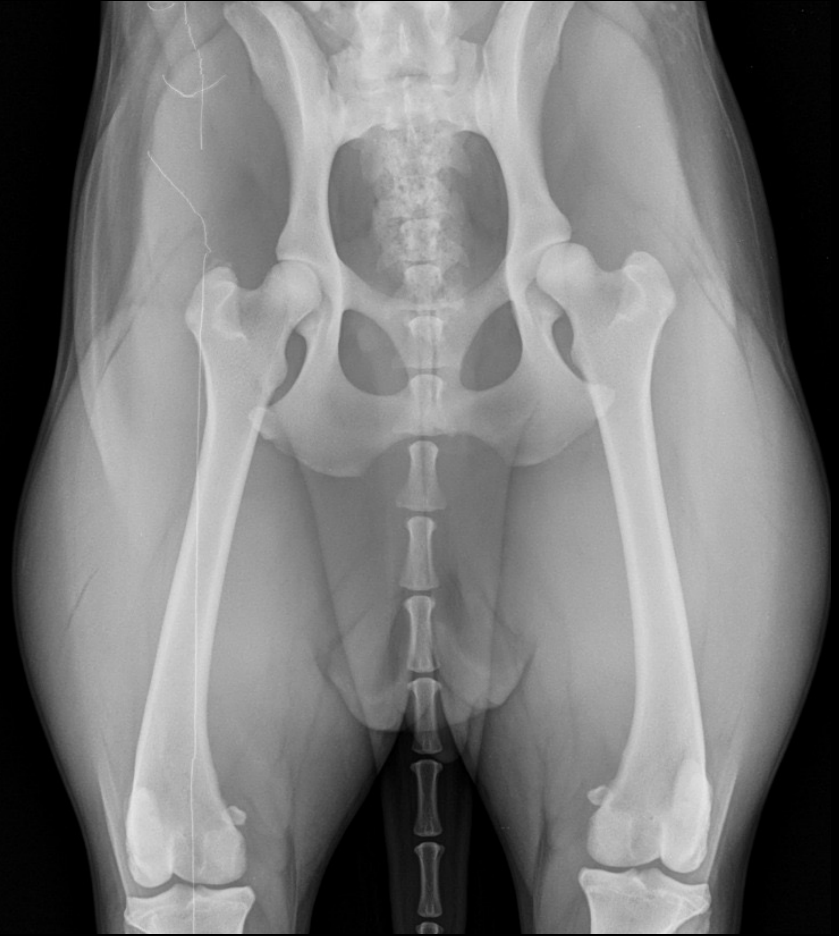
Evt.:

- Fentanyl
- Propofol iv og evt. intubering.

Positionering (korrekt)



Positionering (ukorrekt)



Evaluering/klassificering

FCI's internationale 5-delte skala (Dortmund 1991) (Copenhagen 2022)

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

For hunde op til 6 års alderen, korrekt positionerede

For ældre hunde skal sekundære forandringer evalueres under hensyntagen til hundens alder

Rekvisation HD-bedømmelse



Dato:
Sagernr.:

Oplysninger om hunden / Dog

Race / Rasse: _____ Kan / Sex: _____
 DKK registr. / Reg. No.: _____ Farve / Colour: _____ Fedt / Date of birth: _____ ID nummer / Chip and/or Tattoo _____
 Navn / Registered Name: _____

Oplysninger om dyrlæge / Veterinarian

Telefonnr. / Phone: _____
 Aut.nummer: _____
 Optagedato: _____ Ved anden dato end anført, udfyld i hånden Date: _____
 Ved brug af anden dyrlæge end overført anført, udfyld i hånden - Dyrlæge: _____ Aut.nummer: _____
 Adresse: _____ Postnr. og by: _____

Udfyldes af dyrlæge

Billeder er fremsendt som:
 CD Sedation/arkose: _____ VB anbefaler, at dyrlægen ikke Har hunden tidligere
 Altn. røntgen Præparat: Navn(e): _____ udfører sig til sig om røntgen status. været bedømt?
 Upload Dosis: _____ Har dyrlægen til trods herfor givet
 Hundens vægt: _____ kg Ja Nej Ja Nej

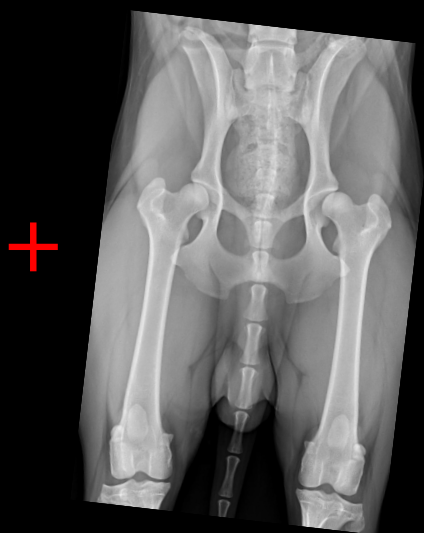
Dyrlæges underskrift og stempel

Dato / date: _____ Underskrift og stempel / Veterinarian's signature and stamp _____
 Overensrettede dyrlæger bekræfter med en underskrift og stempel for anerkendelse af en
 underskrift og stempel af DKK nummer af hunden. Overensrettede dyrlæger bekræfter derfor med
 en underskrift og stempel af en helsekæde, eller en helsekæde godkendt af DKK/OCD.

KLIP - til brug ved indtøffraføring

Sagernr.: _____ ID-nummer: _____ Optagedato: _____

OBSP Husk at rekvisation og billeder skal sendes til
 Veterinær Billeddiagnostik - Universitetshospitalet for Familiedyr • IMHS • ATT: HD/AD/OCD - Dyrlægevej 32 • 1870 Frederiksberg C



Billeder/CD sendes til:
Veterinær Billeddiagnostik
Universitetshospitalet for Familiedyr
Att: HD/AD/OCD
Dyrlægevej 32
1870 Frederiksberg C

ELEKTRONISK UPLOAD AF HD/AD/OCD BILLEDER

Pr 1. januar bliver det muligt at uploade digitale HD/AD og OCD røntgen direkte til KU sund.

Kontakt KU sund for link og password på hd-kons@sund.ku.dk



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.

Klassificering

Kongruens vs. inkongruens

Ledslaphed

ledspalten

subluxation/luxation

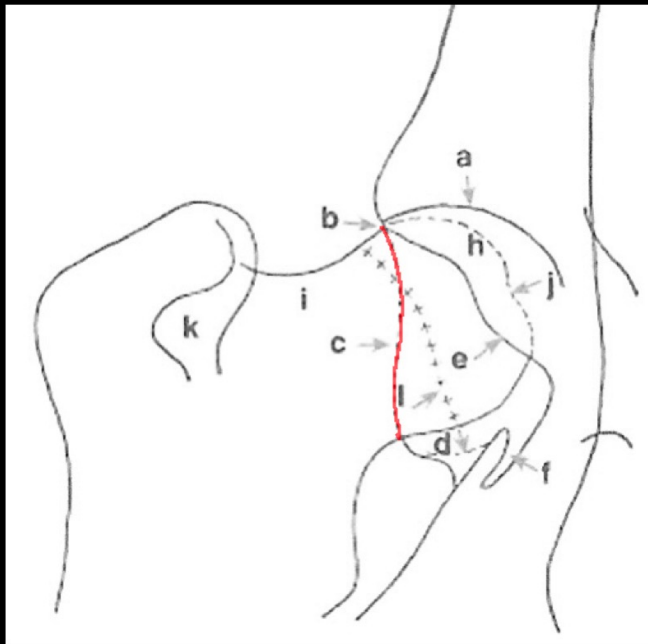
den kraniale acetabular rand

Deformerende forandringer

formændring af caput femoris

acetabulum

Periartikulære nydannelser



- a = craniale acetabular margin
- b = cranio laterale acetabular rim
- c = **dorsale acetabular margin**
- d = caudale acetabular margin
- e = ventrale acetabular margin

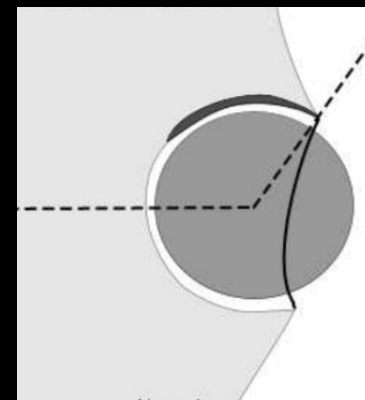
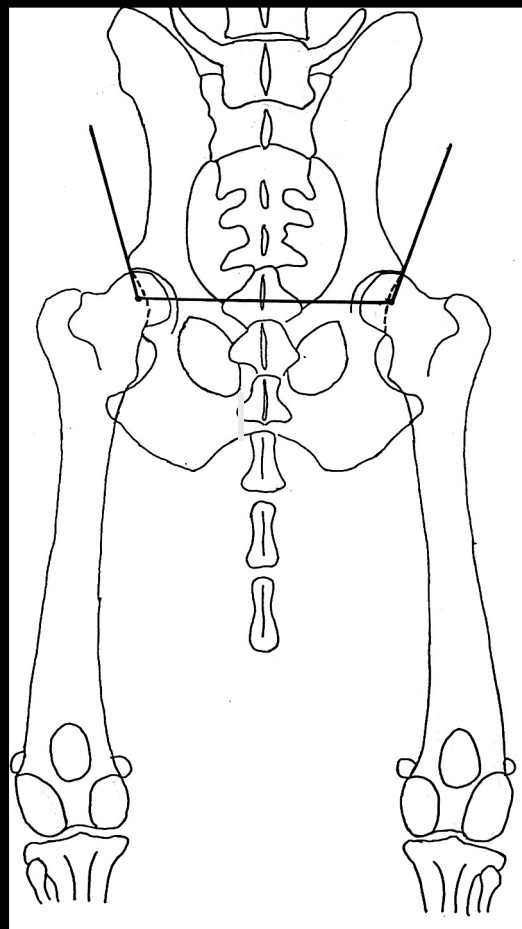
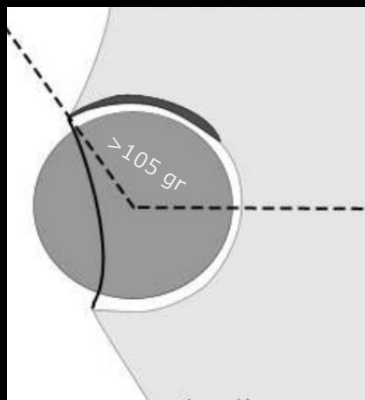


- f = acetabular notch
- h = caput femoris
- i = collum femoris
- j = fovea capitis
- k = trochanter major
- l = vækstzone

The dorsale acetabular margin



Laxity measurement methods



Norberg angle
>105 gr

The centre of the femoral head

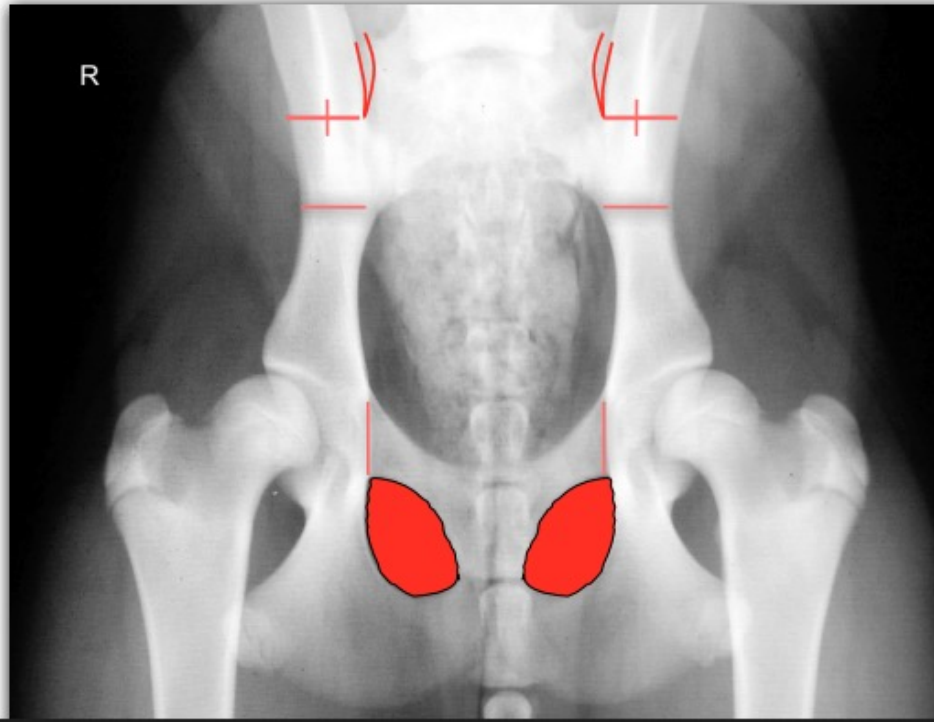


The centre of the femoral head is lateral to the dorsal margin of the acetabulum

The centre of the femoral head is medial to the dorsal margin of the acetabulum

Proper positioning

- Pelvic symmetry



Subluxation/luxation

Subluxation of the femoral head, lateral or caudal

Luxation of the femoral head, all direction



Grade A

The femoral head is well centred 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 fovea capitis

The subchondral bone plate of the *cranial acetabular margin* is a fine line of even thickness; in excellent hip joints 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 *centre of the femoral head* is medial to the dorsal margin of the acetabulum

The *Norberg angle* is about 105° (as a reference)

No signs of *osteoarthritic* changes are present



GRADE B



The femoral head is centred 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 *centre of the femoral head* is medial or superimposed to the dorsal margin of the acetabulum

The *Norberg angle* is as least 100° (as a reference)

No signs of *osteoarthritic* changes are present



Grade C

The *femoral head* is not centred 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 *centre 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° (as a reference)

Signs of *osteoarthritic* changes can be present

Grade D



The *femoral head* is not centred well in the acetabulum and the subchondral bone of the *femoral head* and the *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 a craniolateral direction

The *centre 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 90° (as a reference)

Signs of *osteoarthritic* changes can be present.

Grade E



Marked dysplastic changes of the hip joint. Remodelling and deformation of the acetabulum and/or the 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 *centre of the femoral head* is lateral to the dorsal margin of the acetabulum.

Luxation or *subluxation* of the femoral head

The *Norberg angle* is less than 90° (as a reference)

Signs of *osteoarthritic* changes can be present



HD-symptomkomplekset

Arvelig HD

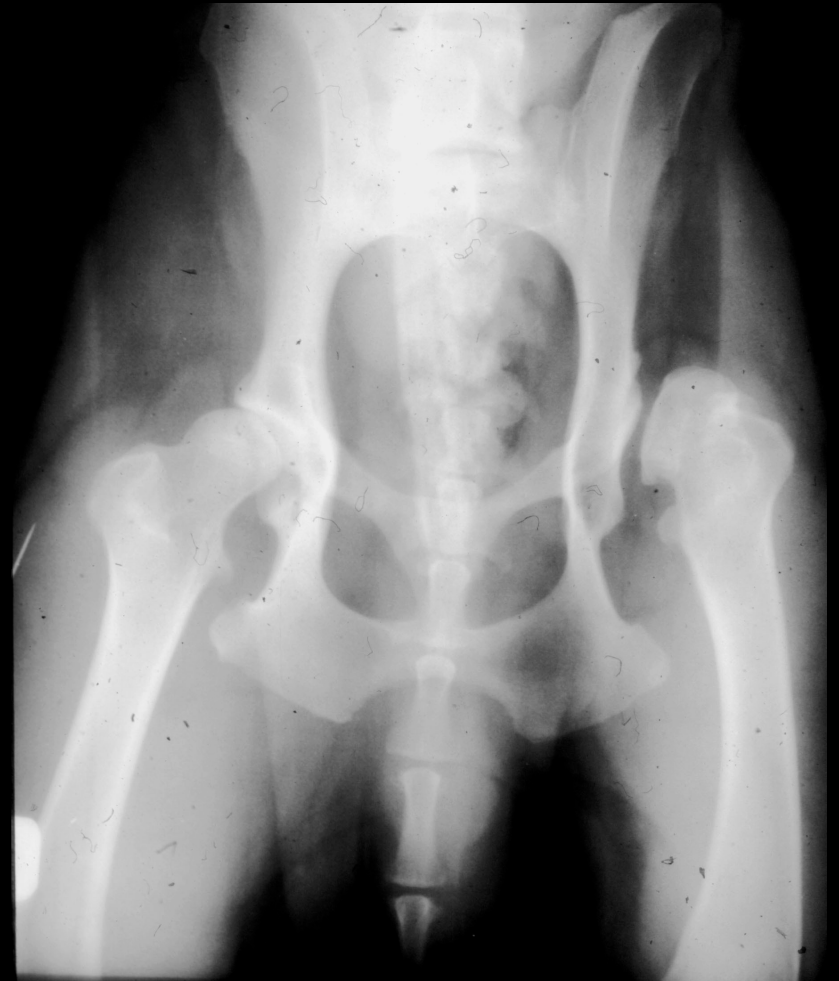
Multifaktoriel

Polygenetisk

Erhvervet "HD" (falsk HD-positive)

Traume, malformation af columna og pelvis,
osteoarthritis

HD?



En røntgenundersøgelse kan aldrig blive en eksakt metode til at fastslå en hunds HD-status

Der foreligger (endnu) ingen objektiv radiologisk undersøgelsesmetode til vurdering af HD hos hund