Cornell University Veterinary Specialists
ADVANCE2025

Spread Your Wings
Pelvic Radiographic Techniques & Interpretation

is sponsored by

sound POWERED BY ANTECH

Spread Your Wings

Pelvic Radiographic Techniques & Interpretation

Alison L. Tarbell, DVM
Practice Limited to Diagnostic Imaging
Cornell University Veterinary Specialists
ADVANCE 30 March 2025

Cornell University Veterinary Specialists | Continuing Education

For the next hour together…

Program Description:

The pelvis is an anatomically complex region that can be challenging to image and interpret, and which presents a range of pathologies for pets of all life stages. Acquisition of diagnostic radiographs requires anticipation of appropriate patient preparation, familiarity with correct patient positioning (and re-positioning) and radiographic technique, and an understanding of the application of specialized views. Once images are made, interpretation relies on understanding of normal anatomy, including at various stages of skeletal maturation, and the types of pathology that may arise from this region. This course will begin by addressing the unique challenges of imaging the pelvis, focusing on how to refine technique and "troubleshoot" images for maximal diagnostic quality. After a review of normal anatomy, it will then explore diagnosis of commonly encountered conditions evaluated with pelvic radiography, ranging from pediatric to geriatric dogs and cats. This will include a discussion of the widely used hip scoring systems offered by PennHIP and Orthopedic Foundation for Animals (OFA), since general practitioners may be commonly asked to submit to these organizations.

Learning Objectives:

1. Understand appropriate patient preparation, patient positioning, and radiographic technique for routine survey pelvic radiography, and refine algorithm for troubleshooting during this process.
2. Identify normal pelvic radiographic anatomy, including structures that commonly sustain pathology.
3. Compare and contrast the PennHIP and OFA scoring systems for evaluation of canine coxofemoral joints.
4. Review differentials for commonly diagnosed conditions affecting the pelvis that are diagnosed with survey radiographs.

3

Pelvic Radiography: Techniques and Interpretation

I. Foundations of Radiography
II. Relevant Pelvic Anatomy
III. Specific Juvenile Assessments: PennHIP and OFA
IV. Common Conditions Affecting the Pelvis

4

Pelvic Radiography: Techniques and Interpretation

I. **Foundations of Radiography**
II. Relevant Pelvic Anatomy
III. Specific Juvenile Assessments: PennHIP and OFA
IV. Common Conditions Affecting the Pelvis

5

Radiographic Fundamentals

- Radiographic technique: generally LOW kVp and HIGH mAs
  - Appropriate technique for bones may overexpose soft tissues
- Positioning: understanding symmetry is critical
  - May need multiple limb positions
  - How straight or oblique patient needs to be depends on what information is needed
  - Position DOWN limb cranially – typically, affected limb down
  - In some cases, may complement with ML of single pelvic limb at the hip
- Don't forget laterality +/- calibration marker(s)
- LOOK at your images before the patient has left

Aim for perfect, but know when it's diagnostic

6

Evaluating Technique

7

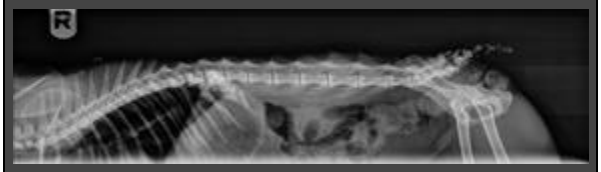
Evaluating Technique

8

Evaluating Technique

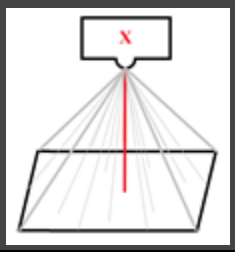
9

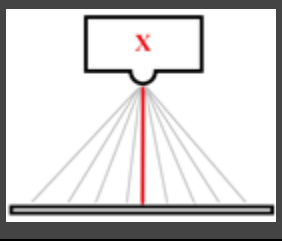
Evaluating Technique



10

Translating X-rays Into Radiographs





11

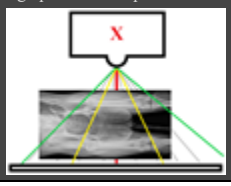
Radiographic Terms You Probably Haven't Thought About Since Vet School…

- Magnification
- Foreshortening
- Parallax

12

Vocab Redux: Magnification

- Distortion resulting in anatomy appearing larger than its true size
- Degree of enlargement occurs proportionally to the distance from the patient to the radiographic detector plate



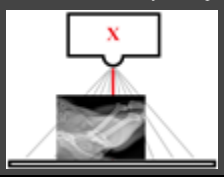
13

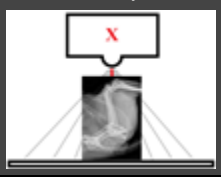
Vocab Redux: Magnification

14

Vocab Redux: Foreshortening

- Distortion resulting in anatomy appearing shorter than its true size (antonym: elongation)
- Occurs when anatomy is not perpendicular to the x-ray source





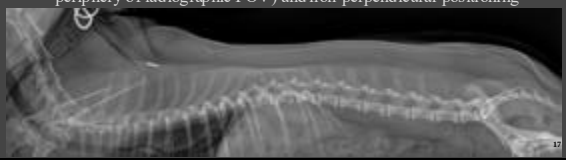
15

Vocab Redux: Foreshortening

16

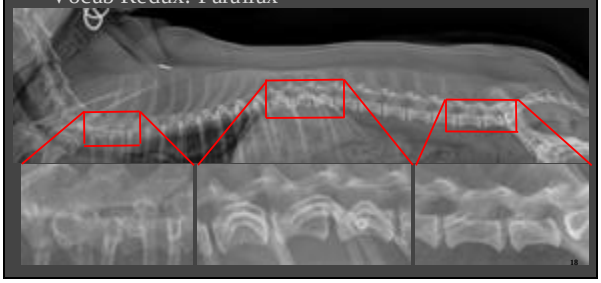
Vocab Redux: Parallax

- Difference in apparent position of something when viewed from different perspectives
- Often occurs as a result of x-ray beam divergence (i.e. towards periphery of radiographic FOV) and non-perpendicular positioning



17

Vocab Redux: Parallax



18

Radiographic Preparation

- Diagnostic orthopedic studies need sedation or general anesthesia
  - Positioning needs are specific
  - Relatively long exposure times (high mAs) increase susceptibility to motion
  - Many of these patients are painful
  - Facilitates hands-free restraint – staff dose matters!
- For studies that are planned
  - Prepare patients for sedation: fasting, premedication
  - Minimize artifacts: remove debris from coat, walk to encourage defecation

19

Radiographic Positioning

- Resources to walk you through positioning and evaluation:
  - https://todaysveterinarypractice.com/radiology-imaging/imaging-essentials-small-animal-pelvic-radiography/
  - https://todaysveterinarynurse.com/radiology-imaging/a-positioning-guide-to-orthopedic-radiography-of-the-pelvic-limb/
  - https://www.cliniciansbrief.com/article/tips-techniques-pelvic-radiography
    - Requires free subscription
  - https://info.antechimagingservices.com/Videos/Radiographic_Positioning_of_the_Dog_Pelvis/story_content/external_files/Pelvic Positioning Course Handout.pdf
    - Printable PDF checklist (*not a video*)

20

Radiographic Positioning

- Resources to walk you through positioning and evaluation:
  - *Techniques of Veterinary Radiography*, ed. Joe P. Morgan, DVM (Wiley Blackwell)
  - *Lavin's Radiography for Veterinary Technicians*, Brown & Brown (Elsevier)

21

Radiographic Positioning

- Take advantage of positioning devices and aids
  - Sandbags
  - Troughs – position pelvis entirely OFF the trough, lying on table
  - Tape, tape, tape!
  - Foam wedges, blocks
- Appropriate positioning includes radiation safety!
  - Sedation or anesthesia minimizes need for manual restraint
  - IF someone must hold, use appropriate radiation protection – gown, thyroid shield, gloves covering entire hands, eyewear, dosimeter
  - Collimation minimizes scatter, which reduces staff dose AND improves radiographic quality
  - **Human anatomy should NEVER be in primary beam, shielded or unshielded**
- Evaluate symmetry visually, by palpation, and on the radiograph… then adjust

22

Radiographic Positioning: Lateral Views

- Collimation: iliac crest to perineum, cranial dorsal iliac spine to proximal tibias
- Cranial limb down, with marker cranial to the limb (not b'wn limbs)
  - Typically, affected limb is down to minimize magnification
- Support caudal limb that is raised from the table (foam, tape roll) to maintain parallel to the plate
- Separating hip joints slightly can be beneficial to evaluate dorsal acetabular rim
  - Push affected limb dorsally, pull contralateral limb ventrally
  - Can be helpful to have affected limb up in this case

23

Radiographic Positioning: VD Views

- Collimation: iliac crest to proximal tibias, include gluteal/thigh musculature laterally
- Straight-legged: secure thighs in internal rotation to keep limbs parallel
  - This view pushes femoral heads INTO acetabula, makes hip coverage look as good as possible
- Frog-legged: useful in pelvic trauma cases
  - Less stress on the anatomy when characterizing pelvic trauma
  - ADD this view if you aren't sure whether there's femoral head/neck trauma on a straight-legged view!
  - Generally do NOT include the entire thighs
- DOWN obturator foramen will be LARGER and ROUNDER
  - If asymmetric, LIFT and straighten entire back and pelvis, focusing on lifting down side

24

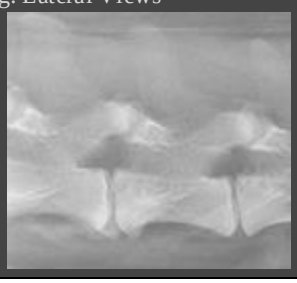
Radiographic Positioning

25

Evaluating Positioning

26

Evaluating Positioning: Lateral Views



27

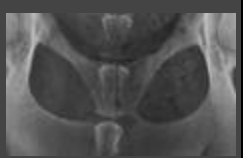
Evaluating Positioning: Lateral Views

28

Evaluating Positioning: Lateral Views

29

Evaluating Positioning: Ventrodorsal Views



30

Evaluating Positioning: Ventrodorsal Views

31

Evaluating Positioning: Ventrodorsal Views

32

Evaluating Positioning: Ventrodorsal Views

33

Evaluating Positioning: Ventrodorsal Views

34

Pelvic Radiography: Techniques and Interpretation

I. Foundations of Radiography
II. **Relevant Pelvic Anatomy**
III. Specific Juvenile Assessments: PennHIP and OFA
IV. Common Conditions Affecting the Pelvis

35

Anatomy Resources

- https://vetmed.illinois.edu/imaging_anatomy/
  - Includes labeled canine and feline radiographic anatomy
- IMAIOS (https://www.imaios.com/en/vet-anatomy)
  - Includes labeled canine and feline radiographic anatomy
  - Subscription ($20/month or $125/year), includes phone app
- *Atlas of Normal Radiographic Anatomy and Anatomic Variants in the Dog and Cat*, Donald Thrall, DVM, PhD, DACVR(R,RO), and Ian Robinson, BVSc, DACVR (Saunders)

36

Osseous Anatomy

- Ossa coxarum (pelvis), consisting of two os coxae ("hemipelvis")
  - Ilium (pl. ilia)
  - Pubis (pl. pubes)
  - Acetabulum (pl. acetabula)
  - Ischium (pl. ischia)
- Sacrum
- Femurs
- Sacroiliac (SI) joints
- Coxofemoral (hip) joints
- Pubic symphysis

37

Osseous Anatomy

- Ilium
  - Iliac wing
  - Iliac body
- Pubis
  - Cranial ramus
- Acetabulum
- Ischium
  - Body
  - Ischiatic table
  - Ischiatic tuberosity
- Sacrum
- Obturator Foramen
- Femur
  - Femoral head: fovea capitis
  - Femoral neck
  - Trochanteric fossa

38

Osseous Anatomy

- Ilium
  - Iliac crest
  - Cranial dorsal iliac spine
  - Greater sciatic notch
- Pubis
  - Iliopubic eminence
- Acetabulum
  - Dorsal acetabular rim
- Ischium
  - Body
  - Ischiatic spine
  - Ischiatic table
  - Ischiatic tuberosity
- Obturator Foramen

39

Soft Tissue Anatomy: Inside the Pelvic Canal

- Psoas, internal obturator musculature
- Sacral nn. (pelvic, pudendal, perineal)
- Median sacral a. and v. and their branches
- Iliosacral lymphocenter (in and cranial to pelvic canal)
- Colon → rectum
- Urethra +/- urinary bladder
- Genital tract

40

Soft Tissue Anatomy: Outside the Pelvic Canal

- Epaxial, gluteal, (thigh) musculature
- Abdominal wall, attaching at prepubic tendon
- Sciatic n. (dorsally over acetabular rim and hip)
- Femoral n. (ventrally)
- Perineum, anus
- Female dogs: vulva
- Male dogs: urethra, penis, prepuce

41

Implications for Trauma Management

- Weight-bearing axis:
  - Sacrum and SI joints
  - Ilia
  - Acetabula
  - Femoral heads and necks

→ *Fractures to this anatomy typically require surgical stabilization, especially when fractures are bilateral and/or there are multiple pelvic limb fractures as well*

42

Implications for Trauma Management

- Fractures particularly requiring surgical management:
  - Acetabular fractures
  - Significantly displaced iliac fractures
  - Unstable or >50% displaced SI luxations
  - Fractures resulting in narrowing/impingement on pelvic canal
- Fractures to the non-weight-bearing axis may require surgery if:
  - There is concurrent abdominal wall herniation (prepubic tendon avulsion)
  - Ischiatic tuberosities are avulsed (some cases)
- Fractures more amenable to medical management:
  - Most pubic and ischial fractures
  - Minimally displaced SI luxation and/or iliac fractures
  - Chronic fractures (>2 weeks old)

43

Pelvic Radiography: Techniques and Interpretation

I. Foundations of Radiography
II. Relevant Pelvic Anatomy
III. **Specific Juvenile Assessments: PennHIP and OFA**
IV. Common Conditions Affecting the Pelvis

44

Pennsylvania Hip Improvement Program (PennHIP)

- Patient population
  - Validated in dogs starting at 16 weeks of age
  - Results in 16-week-old puppies do not significantly change with age on subsequent re-evaluations
- Patient preparation
  - General anesthesia is required
- Radiographic views
  - Extended-leg view: evaluates for secondary degenerative joint disease
  - Compression view: evaluates hip congruity
  - Distraction view: quantitatively evaluates hip laxity (distraction index, DI)
  - Cavitation (gas) in the hip joints is disqualifying, as it falsely increases DI → radiographs can be repeated after 24 hours
  - Gonadal shielding recommended in male dogs

45

Pennsylvania Hip Improvement Program (PennHIP)

- Reporting now offered exclusively through Antech
  - Historically developed as a non-profit project at UPenn
  - Evaluation by a radiologist and by quantitative algorithm
- Only certified practitioners may offer PennHIP radiographs
  - Certification available to veterinarians and veterinary technicians BUT submissions must be under veterinarian's name
  - Free online course consisting of 5 modules over 14 days
  - Completion upon submission of 3 test cases demonstrating proper technique
  - Distractor device has practitioner's unique ID number
  - EVERY PennHIP study made is required to be submitted to the database for quantitative analysis

46

PennHIP: Views

Compression View

Distraction View

47

PennHIP: Calculation

- Distraction Index (DI) = d/r = measure of laxity of hip joints
  - Essentially % displacement of the femoral head from the acetabulum
  - Red circle is acetabulum, yellow/green circle is femoral head
  - In compression view, these circles essentially overlap (with some variation by breed) with a single center
  - In distraction view, distance moved by center of femoral head (d) is divided by radius of femoral head (r)
  - Tight hips have DI < 0.3 compared with loose hips ≥ 1.0, but each breed has a different distribution along this spectrum
- Presence of laxity correlates closely with development of degenerative joint disease, which is the clinically relevant outcome

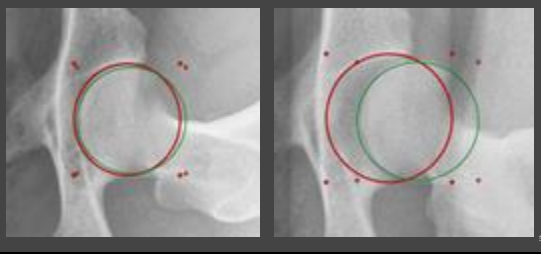
48

PennHIP: Calculation

https://www.antechdiagnostics.com/imaging-services/pennhip/measuring-hip-joint-laxity/

49

PennHIP: Calculation



50

PennHIP Report: Owner Results

51

PennHIP Report: Additional Veterinarian Results

INTERPRETATION AND RECOMMENDATIONS: No OA/High Risk: Depending on size and breed, dogs with this degree of hip laxity have near 100% chance of showing hip OA by 2-3 years of age and may show OA and clinical signs within the first year of life. For dogs with this most extreme form of hip laxity there are often notable clinical signs observed such as shifting weight to the front legs, bunny hopping, trouble with stairs, obvious pain, lameness, exercise intolerance and stiffness. Orthopaedic examination often elicits pain on palpation of the hips. **Recommendations:** Evidence-based strategies to lower the risk of dogs getting OA or to treat those having OA fall into 5 modalities.* For detailed information, consult these documents.[1] Use any or all of these modalities as needed:
1) For acute or chronic pain prescribe NSAID PO short or long term. Amantadine can be added if response is marginal or if neuropathic pain is suspected.
2) Optimize body weight, keep lean, at BCS = 5/9.
3) Prescribe therapeutic exercise at intensities that do not precipitate lameness.
4) Administer polysulfated glycosaminoglycans IM or SQ, so-called DMOAD.
5) Feed an EPA-rich prescription diet preventatively for dogs at risk for OA or therapeutically for dogs already showing radiographic signs of OA.
At the present time there is inadequate evidence to confidently recommend any of the many other remedies to prevent or treat OA. Studies are in progress. For dogs with such high risk for hip OA exercise should be severely limited for up to 18 months of age particularly if pain and lameness are precipitated by activity. More than 70% of dogs with this most severe form of hip dysplasia will return to reasonable pet-quality function after 18 months of age. Excessive activity, however, will induce flares of pain treatable with the multimodalities mentioned above. Repeat hip radiographs at periodic intervals to determine the rate of DA progression and adjust treatment accordingly. It may be wise when the patient is young to begin a conversation with the owners about the possibility of FHO or THR should end stage hip disease develop causing unrelenting pain and disability.
Breeding Recommendations: Please consult the PennHIP Manual.

* From WSAVA Global Pain Council Guidelines and the 2015 AAHA/AAFP Pain Management Guidelines

52

Orthopedic Foundation for Animals (OFA)

- Patient population
  - Only dogs 2 years of age and older are issued final OFA Grade
  - Dogs from 4 months to < 24 months can be issued preliminary Grade
    - Dogs > 1 year old with permanent ID (tattoo or microchip) may have preliminary result posted to public database with owner approval
- Patient preparation
  - Sedation or general anesthesia is not required, but is recommended
  - Recommend avoiding radiographing female dogs in estrus
    - > 1 month after weaning of a litter, or > 1 month before or after heat cycle
  - Recommend evaluation of dogs "in good physical condition"
- Radiographic view
  - Extended-leg view only
  - Gonadal shielding recommended in male dogs

53

Orthopedic Foundation for Animals (OFA)

- Reporting offered exclusively through OFA
  - Initial evaluation by a radiologist for diagnostic quality
- Owner must complete a portion of the application
- No certification required to submit radiographs; however:
  - OFA image labeling specifications, image file format, and submission requirements are still very specific – consult website carefully!
  - Film radiographs may be submitted by owners or veterinary practice, but digital images (ideally online; CD images accepted in select cases) may only be submitted by a veterinary practice registered with OFA
  - No requirement of submission of results for analysis
  - Owner must authorize release of results to be included in breed database

54

OFA: Evaluation

https://ofa.org/diseases/hip-dysplasia/hip-screening-procedures/

- Hip Grades (subjective): Excellent, Good, Fair, Borderline, Dysplastic (Mild, Moderate, Severe)
  - Excellent, Good, Fair all considered Normal
- Radiographs evaluated by three radiologists
  - Subjective conformation, congruency of hip joint
  - Presence of secondary degenerative joint disease
  - If two radiologists agree and one is a single degree different, patient receives majority Grade
  - If three radiologists differ, patient receives middle Grade
- Preliminary grades are assigned by only single OFA in-house radiologist
  - Hips graded as Excellent preliminarily remain Normal at 24 months of age
  - Lesser Grades have potential for Grade to decrease by 24 months of age

55

OFA: Results

_____ **EXCELLENT HIP JOINT CONFORMATION**
superior hip joint conformation as compared with other individuals of the same breed and age

_____ **GOOD HIP JOINT CONFORMATION**
well formed hip joint conformation as compared with other individuals of the same breed and age

_____ **FAIR HIP JOINT CONFORMATION**
minor irregularities of the hip joint conformation as compared with other individuals of the same breed and age

_____ **BORDERLINE HIP JOINT CONFORMATION**
marginal hip joint conformation of indeterminate status with respect to hip dysplasia at this time -- Repeat study in six months

_____ **MILD HIP DYSPLASIA**
radiographic evidence of minor dysplastic changes of the hip joints

_____ **MODERATE HIP DYSPLASIA**
well defined radiographic evidence of dysplastic changes of the hip joints

_____ **SEVERE HIP DYSPLASIA**
radiographic evidence of marked dysplastic changes of the hip joints

RADIOGRAPHIC FINDINGS

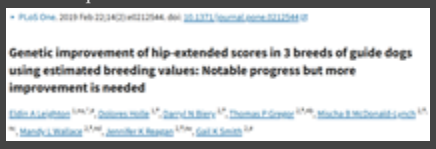
_____ subluxation
_____ remodeling of femoral head/neck
_____ osteoarthritis/degenerative joint disease
_____ shallow acetabula
_____ acetabular rim/edge change
_____ unilateral _____ left _____ right
_____ transitional vertebra
_____ spondylosis
_____ periostetis

56

	PennHIP	OFA
Age for finalized results	Validated from 16 weeks of age	24 months of age
Availability of preliminary results	No	Yes, from 4 month so f age Reportable after 12 months with permanent ID
Tendency of results to change over time	No	Potentially
Sedation or GA	GA mandatory	Sedation recommended
Patient selection	No specific recommendations Gonad al shielding recommended for male dogs	Recommended not to screen females while pregnant or in estrus Gonad al shielding recommended for male dogs
Radiographic views	Straight-legged VD = hip-extended view (HEV) Compression view Distraction view	Straight-legged VD (HEV) only – *recall this increases appearance of femoral head coverage by acetabulum*
Assessment	Quantitative and qualitative	Qualitative only
Practitioner certification	Required – available for doctors and technicians	No
Submissions	Must be under certified veterinarian	Digital submission sr equire clinic registration
Database comprehensiveness	Submission of all results mandatory	Owners may elect to submit or not; may elect not to include in database

57

Are these equivalent metrics?



PLoS One. 2019 Feb 22;14(2):e0212544. doi: 10.1371/journal.pone.0212544

Genetic improvement of hip-extended scores in 3 breeds of guide dogs using estimated breeding values: Notable progress but more improvement is needed

Eldin A Leighton, Dolores Holle, Daryl N Berry, Thomas P Greeley, Mischa B McDonald-Lynch, Mandy L Wallace, Jennifer K Reagan, Gail K Smith

- Populations of German Shepherd, Golden Retriever, and Labrador Retriever dogs, available through The Seeing Eye, whose breeding was guided by OFA hip-extended view (HEV; used since 1961) and then PennHIP DI (based on 10 years' worth of data, first published in 1993)

58

Are these equivalent metrics?

Dogs, −0.21 in Labrador Retrievers, and −0.29 in Golden Retrievers. Genetic selection for improved hip quality based upon the hip extended score phenotype began in 1900. Among first generation puppies, 34% of 273 German Shepherd Dogs, 55% of 323 Labrador Retrievers, and 43% of 51 Golden Retrievers had an Excellent hip extended score. After 8 generations of selection, mostly based on estimated breeding values derived from the hip extended score, over 93% of 695 German Shepherd Dogs, 94% of 528 Labrador Retrievers, and 87% of 116 Golden Retrievers received an Excellent hip extended score. With respect to PennHIP distraction index values among these same dogs, median values were at or above 0.30 for all 3 breeds meaning that half or more of dogs possessing the Excellent hip-extended-score phenotype remained susceptible to developing the osteoarthritis of canine hip dysplasia. Genetic improvement of the hip-extended-view phenotype to its desired biological endpoint left a surprising proportion of dogs expressing sufficient joint laxity to place them in an osteoarthritis at-risk state as they age. Only by directly applying selection pressure to reduce distraction index was marked reduction in joint laxity noted.

59

Thank you for your time and attention!

Questions? Feedback?

Treats?

60

Pelvic Radiography: Techniques and Interpretation

I. Foundations of Radiography
II. Relevant Pelvic Anatomy
III. Specific Juvenile Assessments: PennHIP and OFA
IV. **Common Conditions Affecting the Pelvis**

→ ***This will be abbreviated due to time constraints, but the following slides are available for your reference to selected (by no means exhaustive) conditions affecting the pelvis***

61

Canine Hip Dysplasia (CHD)

- Abnormal conformation of the hip joint, developing at 30-60 days of age
  - Decreased coverage of the femoral head by the acetabulum
  - Irregular margination of the femoral head (excluding fovea capitis)
  - Shallow or irregular shape of the acetabulum
  - Luxation or subluxation of the femoral head

62

Canine Hip Dysplasia (CHD)

- Presence of secondary degenerative changes of the hip joint
  - Osteophytes: *periarticular* new bone formation
  - Enthesophytes: new bone formation at the insertions of *joint capsule or other connective tissue structures*
  - Circumferential femoral head osteophyte (CFHO), caudolateral curvilinear osteophyte (CCO; Morgan line, actually an enthesophyte), acetabular rim
  - Subchondral sclerosis of the acetabular rim and/or femoral head

63

Canine Hip Dysplasia (CHD)

- Presence of secondary degenerative changes of the hip joint

Vet Radiol Ultrasound. 2009 Mar-Apr;50(2):157-66. doi: 10.1111/j.1740-8261.2009.01509.x.

Puppy line, metaphyseal sclerosis, and caudolateral curvilinear and circumferential femoral head osteophytes in early detection of canine hip dysplasia

Amanda Kealy [1], Julia M Klauer, Nicholas S Keuler, William M Adams

A: CCO
B: Metaphyseal sclerosis
C: CFHO

- Metaphyseal sclerosis or "puppy line" may be present commonly in dogs 15-17 weeks of age
  - NOT assoc. with DJD or evidence of CHD at 42-52 weeks
- Presence of CCO at 24-27 weeks assoc. with CHD by 42-52 weeks
- Presence of CCO + CFHO at 24-27 weeks assoc. with DJD by 42-52 weeks

64

Do cats get hip dysplasia?

- Yes! And it's probably under-recognized…
  - Many of the conformational changes are similar to those recognized in dogs
  - Femoral head subluxation may be a LESS common feature of FHD

Both femurs fore-shortened, R >> L, but ossa coxarum are straight

L acetabulum shallow and slightly irregular in margination with cranial subchondral acetabular sclerosis

65

Feline "Slipped" Capital Femoral Epiphysis (SCFE)

- Also called capital femoral physeal dysplasia, femoral neck metaphyseal osteopathy, and spontaneous femoral capital physeal fracture
- Over-represented in overweight male cats castrated at a young age, and especially identified in young cats (~ 4 months to 3.5 years of age)
  - Maine Coon and likely Siamese cats are predisposed
  - Often progresses to become bilateral (50-90% of cases)
- Fracture along the femoral head physis, NOT femoral neck
- Look for loss of smooth contour from the greater trochanter to the femoral head: nothing here should appear jagged

66

Feline "Slipped" Capital Femoral Epiphysis (SCFE)

Frog-legged view shows this best:

Smooth contour vs femoral neck "colliding" with fem. head

More obvious step at the level of fracture

67

Avascular Necrosis (AVN) of the Femoral Head

- Also called Legg-Calvé-Perthes (LCP) disease, and osteochondritis dissecans (OCD) of the femoral head
- Over-represented in toy and terrier breeds
  - Autosomal recessive in Miniature Poodles and West Highland White Terriers
  - Presents bilaterally in 12-16.5% of patients
- Predictable sequence of radiographic features:
  - Thickening, sclerosis of the lateral epiphyseal region
  - Femoral head and neck lysis creating an "apple-core" appearance
  - Flattening and irregularity of the femoral head
- Also highlighted by the frog-legged view
- Can be difficult to differentiate from chronic trauma

68

Avascular Necrosis (AVN) of the Femoral Head

Recognize this is ALL due to foreshortening, not a true femoral lesion

Bulbous thickening of femoral head & neck, esp. near epiphysis

69

Avascular Necrosis (AVN) of the Femoral Head