

ANATOMIA CLÍNICO-CIRÚRGICA DO APARELHO LOCOMOTOR DE EQUINOS

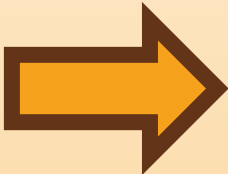
ÓSTEO-ARTICULAR

Profa. Dra. Ana Lúcia M. Yamada
VCI 0209 - Departamento de Cirurgia
FMVZ-USP



O CAVALO É UM ATLETA

IMPORTÂNCIA DAS ESTRUTURAS

- Cavalo é um atleta nato → Evolução
 - Resultante da junção de características fisiológicas e anatômicas
 - Adaptação funcional
 - Alavancas
 - Distribuição da energia cinética
 - Ação do tendões e dos ossos
 - Menor gasto energético e maior potência
 - Músculos menores, tendões mais robustos
 - Criação voltada para o esporte
- 
- Velocidade e explosão
 - Maior índice de fraturas catastróficas
 - Tendinites/rupturas tendíneas
 - Enfermidades resultantes da seleção genética e criação:
 - Doenças (síndromes) ortopédicas do desenvolvimento
 - Defeitos de aprumos

ANATOMIA CLÍNICO CIRÚRGICA DO APARELHO LOCOMOTOR

Casuística elevada das afecções do aparelho locomotor de equinos

Ósteo-articular

- Fraturas
- Fissuras
- Fragmentações
- Periostites, exostoses
- Luxações
- Doença ortopédica do desenvolvimento
- Deformidades angulares
- Sinovites
- Osteoartrite

**APARELHO
LOCOMOTOR
DOS EQUINOS**

Membro torácico

Membro pélvico

Contribuintes axiais
para a locomoção

APARELHO LOCOMOTOR DOS EQUINOS

Membro torácico

- Composto de quatro segmentos principais
- Suportam 60-65% do peso

Membro pélvico

- Também composto por quatro segmentos principais

Contribuintes axiais para a locomoção

- Coluna vertebral
- Musculatura hipaxial e epaxial, ligamentos

**CÍNGULO PÉLVICO
– COXAL, SACRO**

**FÊMUR E PATELA
(COXA)**

**TÍBIA E FÍBULA
(PERNA)**

**PORÇÃO DISTAL
(PÉ) – TARSO,
METARTARSO,
FALANGES E
SESAMÓIDES**

CÍNGULO ESCAPULAR - ESCÁPULA

ÚMERO (BRAÇO)

RÁDIO E ULNA (ANTEBRAÇO)

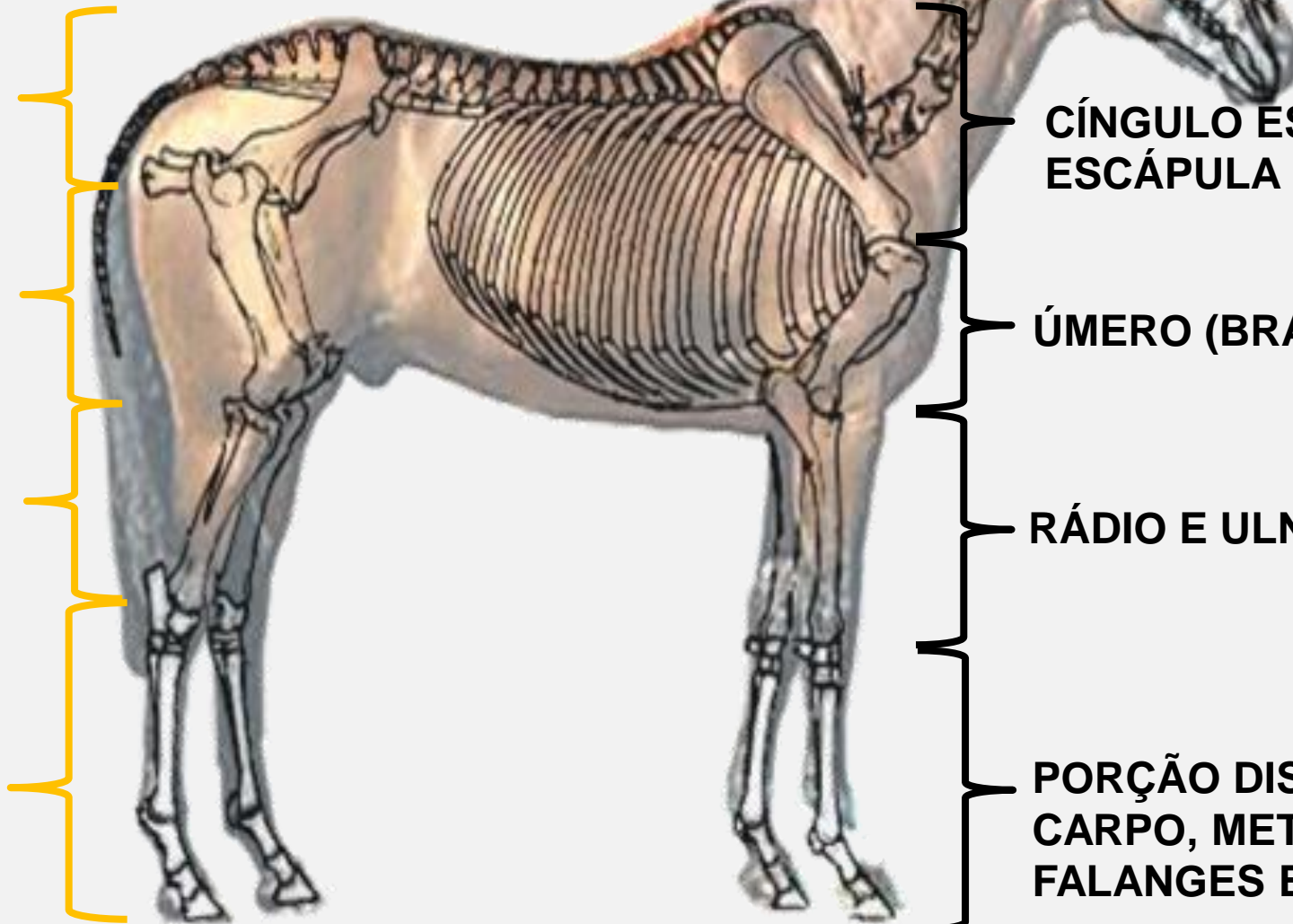
**PORÇÃO DISTAL (MÃO) –
CARPO, METACARPO,
FALANGES E SESAMÓIDES**

**CÍNGULO PÉLVICO
– COXAL, SACRO**

**FÊMUR E PATELA
(COXA)**

**TÍBIA E FÍBULA
(PERNA)**

**PORÇÃO DISTAL
(PÉ) – TARSO,
METARTARSO,
FALANGES E
SESAMÓIDES**



**CÍNGULO ESCAPULAR –
ESCÁPULA**

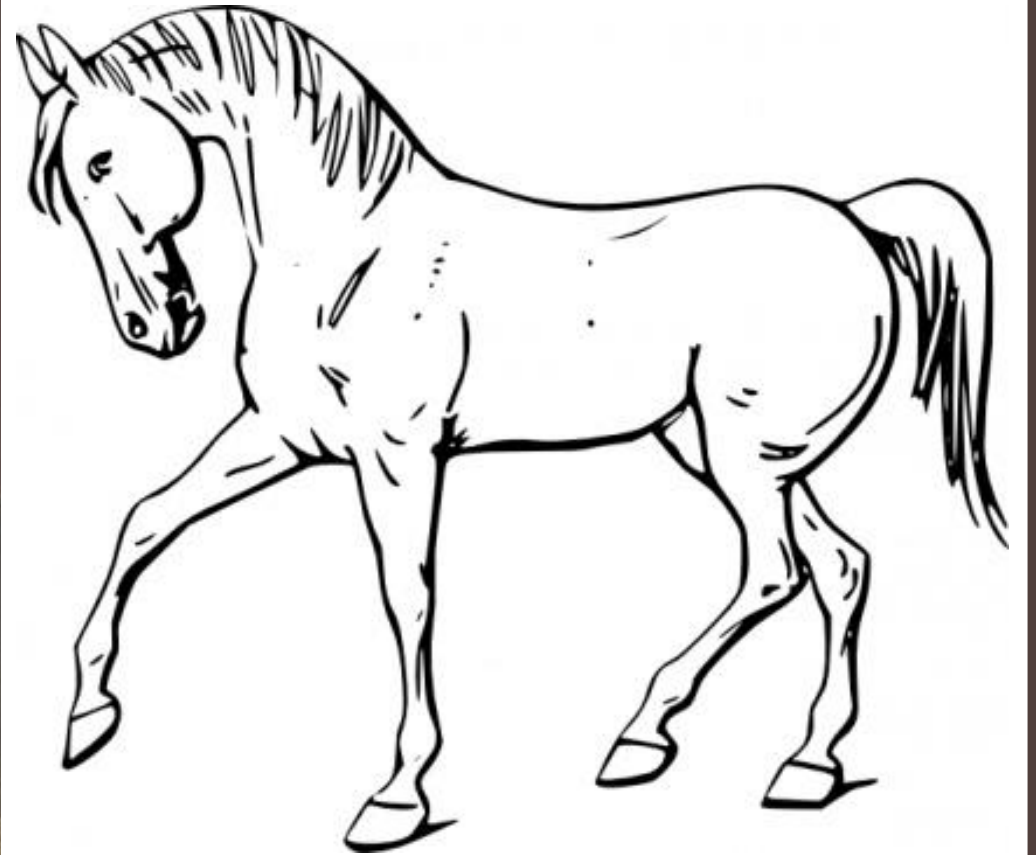
ÚMERO (BRAÇO)

RÁDIO E ULNA (ANTEBRAÇO)

**PORÇÃO DISTAL (MÃO) –
CARPO, METACARPO,
FALANGES E SESAMÓIDES**



<https://animaltherapymedia.co.uk>



<https://pt.vector.me>

COMPONENTES
DOS MEMBROS
APARELHO
LOCOMOTOR



Ossos

Articulações

Cavidades Sinoviais

Tendões e
Ligamentos

Músculos

Vasos e nervos

COMPONENTES
DOS MEMBROS
APARELHO
LOCOMOTOR



Ossos

Articulações

Cavidades Sinoviais

Tendões e
Ligamentos

Músculos

Vasos e nervos

Ossos

- Esqueleto
- Suporte mecânico
- Proteção e forma
- Homeostase do cálcio

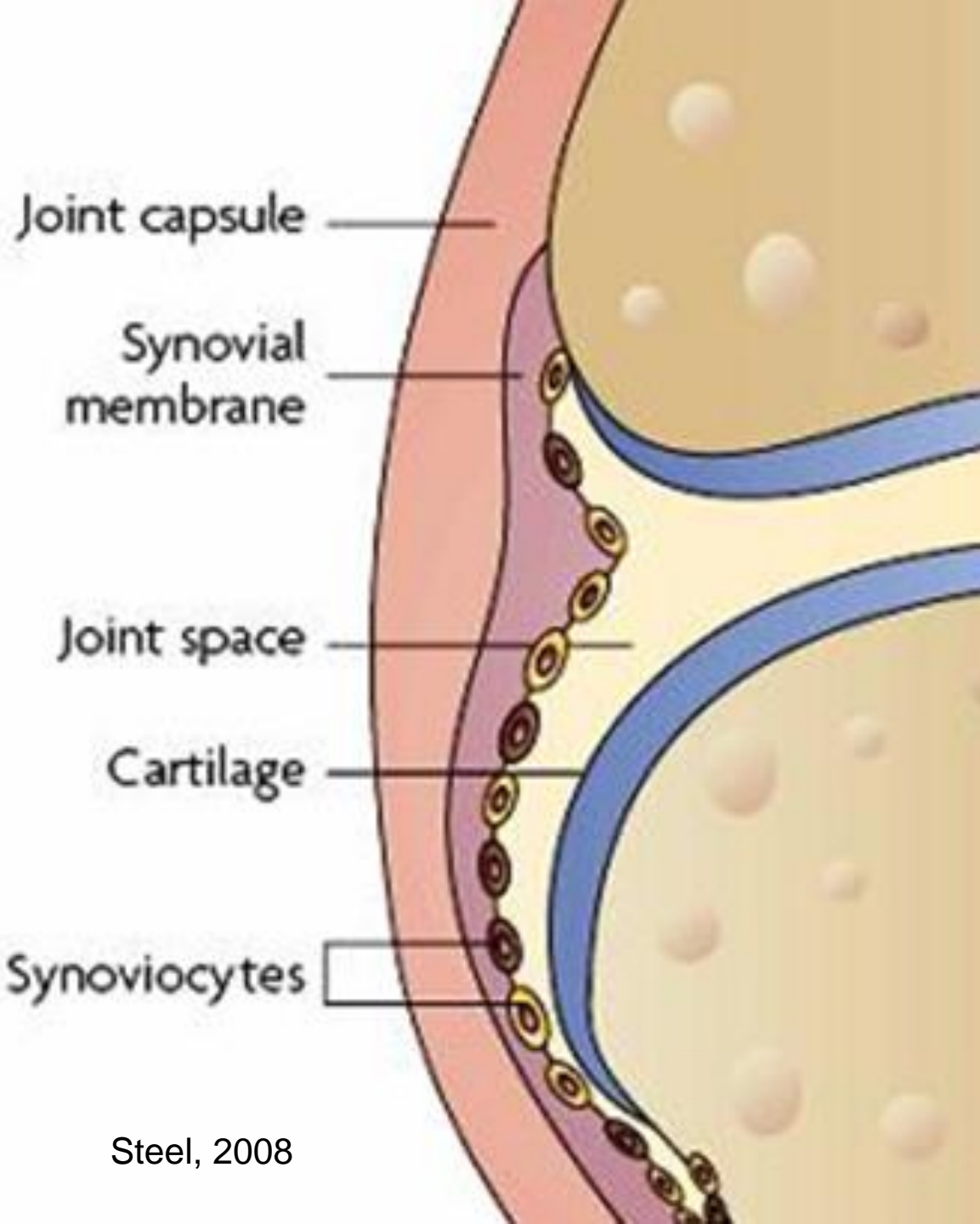
Articulações

- União de dois ou mais ossos (ou cartilagens)
- Móvel, pouco móvel ou imóvel
- Movimento (auxiliado pelos tecido moles)

Vasos e Nervos

- SINSARCOSE
 - União de partes do esqueleto por músculos e ligamentos
 - Membro torácico
- ARTICULAÇÕES FIBROSAS
 - Sindesmose (ossos metacarpianos)
 - Sutura (articulações do crânio)
- ARTICULAÇÕES CARTILAGINOSAS
 - Sincondrose (temporária – placas epifisárias)
 - Sínfise (Fibrocartilagosos – pélvica)
- ARTICULAÇÕES SINOVIAIS
 - Diartroses
- GÍNGLIMO – Movimentos de flexão e extensão

- **SINSARCOSE**
 - União de partes do esqueleto por músculos e ligamentos
 - Membro torácico
- **ARTICULAÇÕES FIBROSAS**
 - Sindesmose (ossos metacarpianos)
 - Sutura (articulações do crânio)
- **ARTICULAÇÕES CARTILAGINOSAS**
 - Sincondrose (temporária – placas epifisárias)
 - Sínfise (Fibrocartilagosos – pélvica)
- **ARTICULAÇÕES SINOVIAIS**
 - Diartroses
- **GÍNGLIMO** – Movimentos de flexão e extensão



DIARTROSES

Articulações sinoviais

- Extremidades ósseas
 - Osso subcondral
- Cartilagem articular
- Cápsula articular
 - Membrana fibrosa externa
 - Membrana sinovial
- Líquido sinovial
- Ligamentos

FECHAMENTO DAS PLACAS EPIFISÁRIAS

ESCÁPULA	Proximal	36 meses
	Distal	18 – 24 meses
RÁDIO	Proximal	24 meses
	Distal	30 -42 meses
METACARPIANO	Proximal	Antes de nascer
	Distal	Até 12 meses
PRIMEIRA FALANGE	Proximal	8-15 meses
	Distal	Antes de nascer até 1 mês

DISPLASIA FISEAL

- DOD (SOD)
- Potros (4 a 24 meses de idade)
- Displasia das placas de crescimento (epifisárias)
- Distal de rádio
- Aumento de volume/deformidade anatômica na região da placa epifisária



Kumar et al., (2019). Clinical occurrence and radiographic diagnosis of distal limb lameness in equine

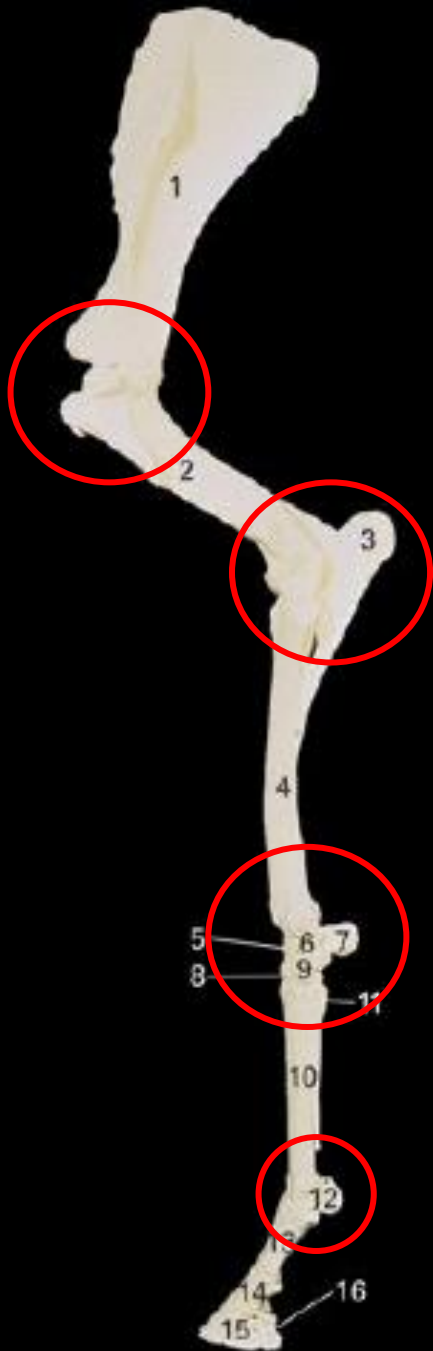


Van Thielen, B., Willekens, I., Van der Schicht, A., Pestieau, P., Verhelle, F., Goossens, P., et al. (2017). *Radiography of the distal extremity of the manus in the donkey foal: Normal images and quantitative characterization from birth to 2 years of age: A pilot study. Anatomia, Histologia, Embryologia*, 47(1), 71–83.



MEMBRO TORÁCICO

VISTA LATERAL



1. Escápula
2. Úmero
3. Ulna
4. Radio
5. Carpo intermédio
6. Carpo ulnar
7. Osso acessório do carpo
8. Terceiro osso do carpo
9. Quarto osso do carpo
10. Metacarpo (terceiro)
11. Quarto metacarpiano (metacarpiano lateral)
12. Sesamóide proximal lateral
13. Primeira falange (proximal)
14. Segunda falange (medial)
15. Terceira falange (distal)
16. Osso Navicular (Sesamóide distal)

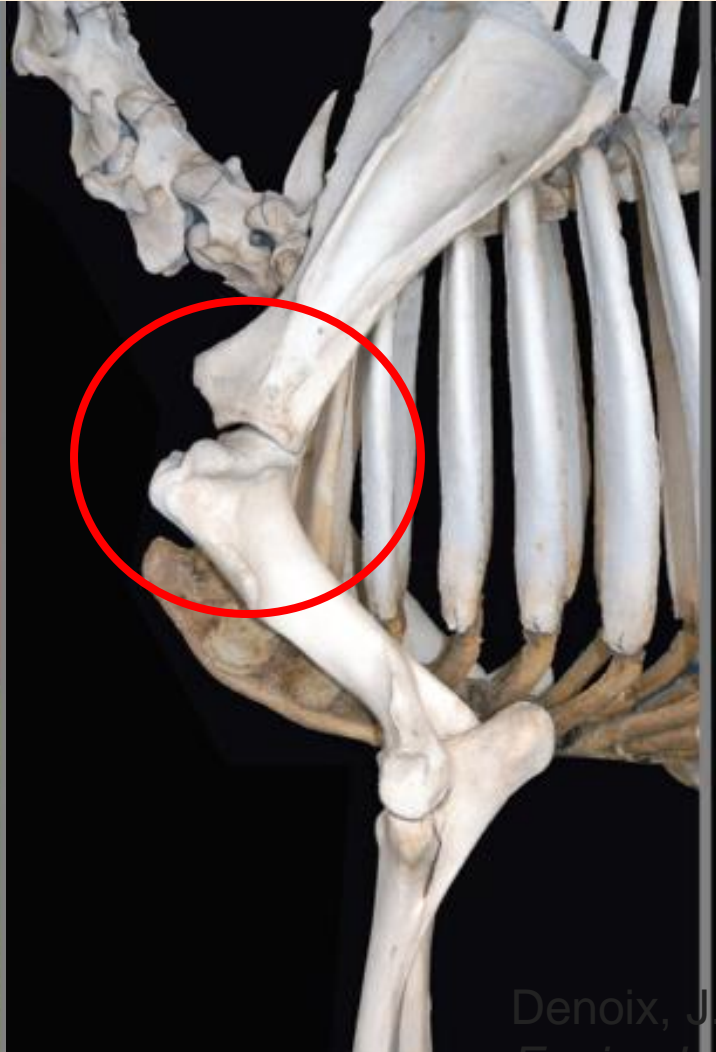
VISTA MEDIAL



1. Escápula
2. Úmero
3. Ulna
4. Radio
5. Osso acessório do carpo
6. Carpo radial
7. Segundo osso do carpo
8. Terceiro osso do carpo
9. Segundo metacarpiano (metacarpiano medial)
10. Metacarpo (terceiro)
11. Sesamóide proximal medial
12. Primeira falange (proximal)
13. Segunda falange (medial)
14. Osso Navicular (Sesamóide distal)
15. Terceira falange (distal)

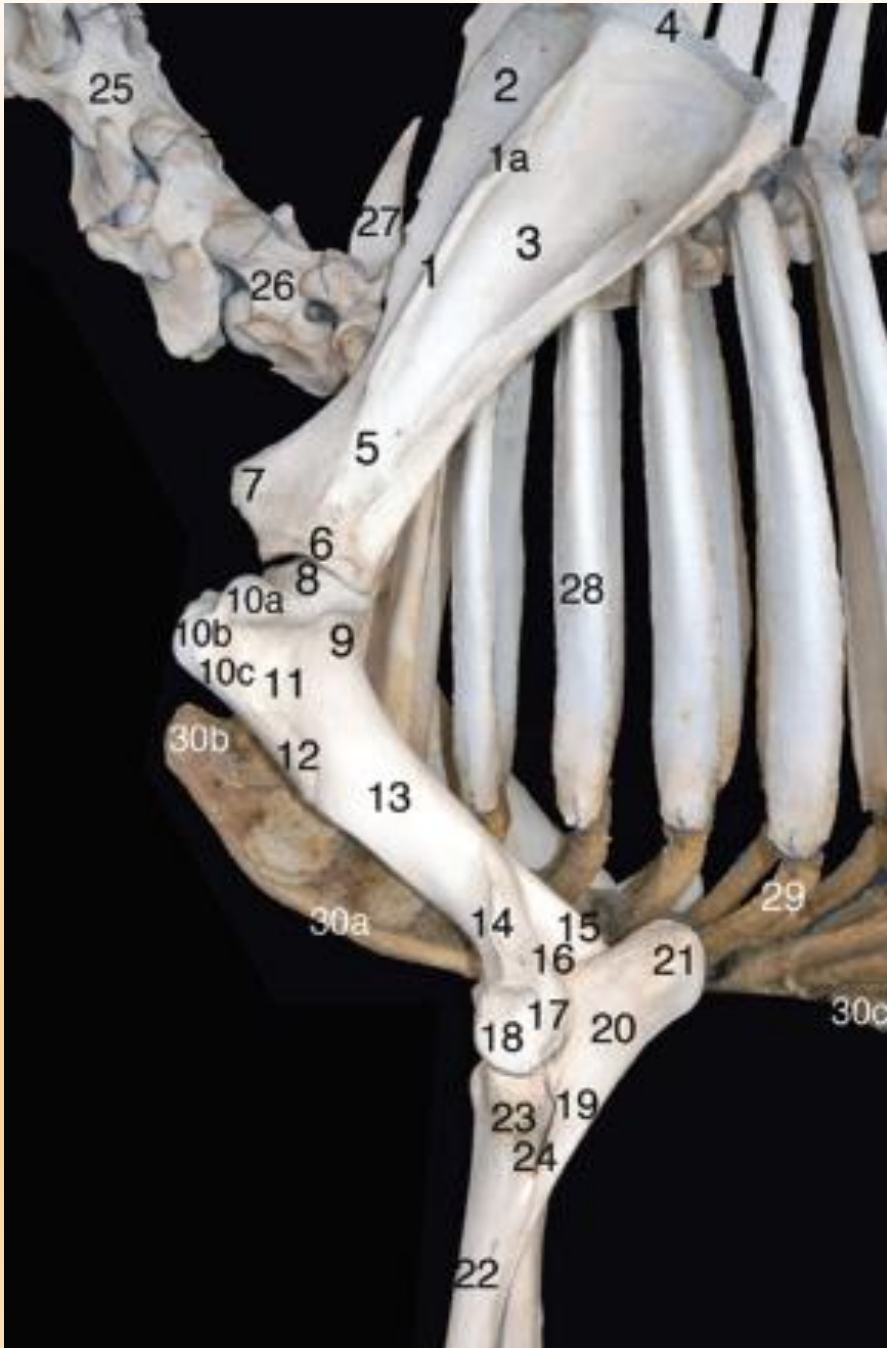


CÍNGULO ESCAPULAR - OMBRO



ARTICULAÇÃO ESCAPULO-UMERAL

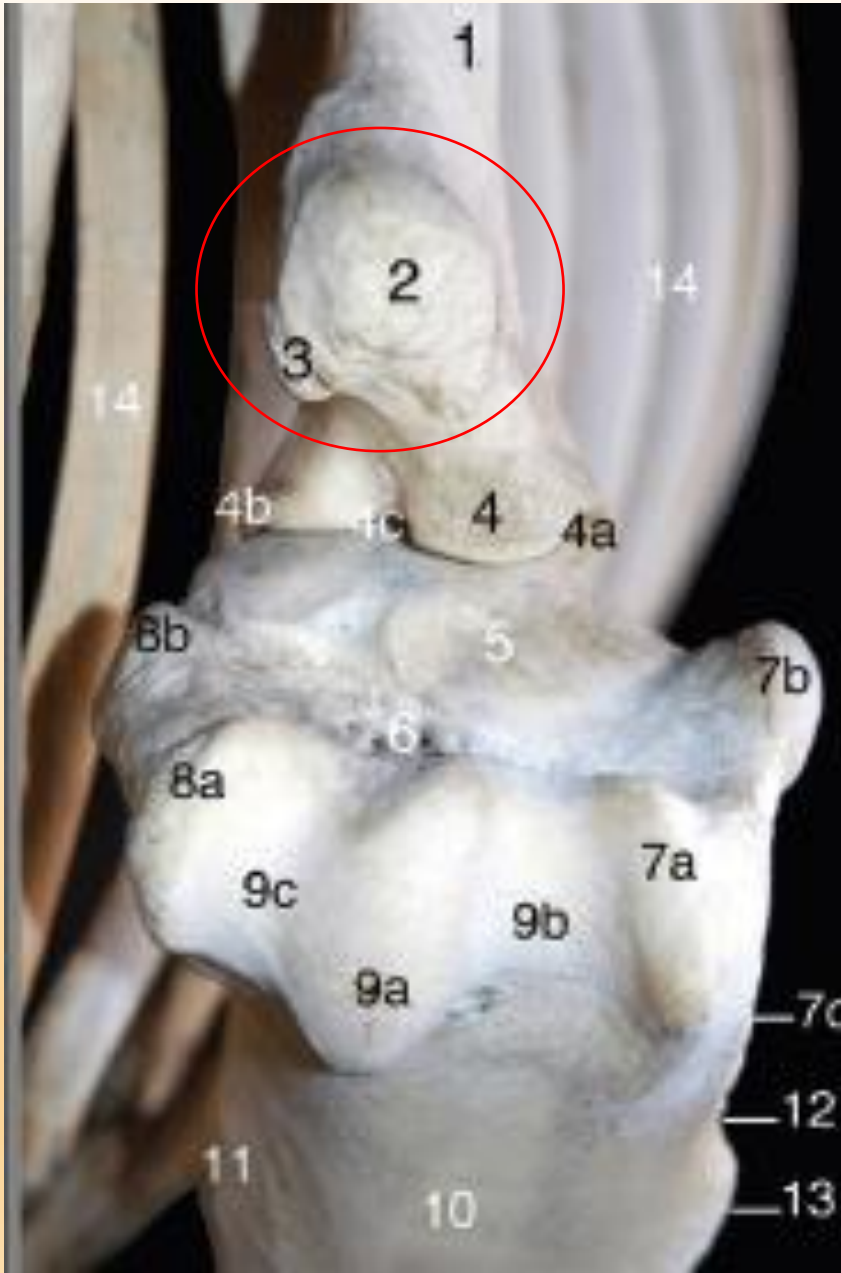
- OCD
- Cistos
- Osteoartrite
- Infiltrações
 - Guiada (US)
 - “Cega”
- Fraturas



Scapula: 1- Spine of the scapula, 2- Supraspinatus fossa; 3- Infraspinatus fossa; 5- Neck of the scapula, **6- Glenoid cavity; 7- Tuberculum supraglenoidale.**

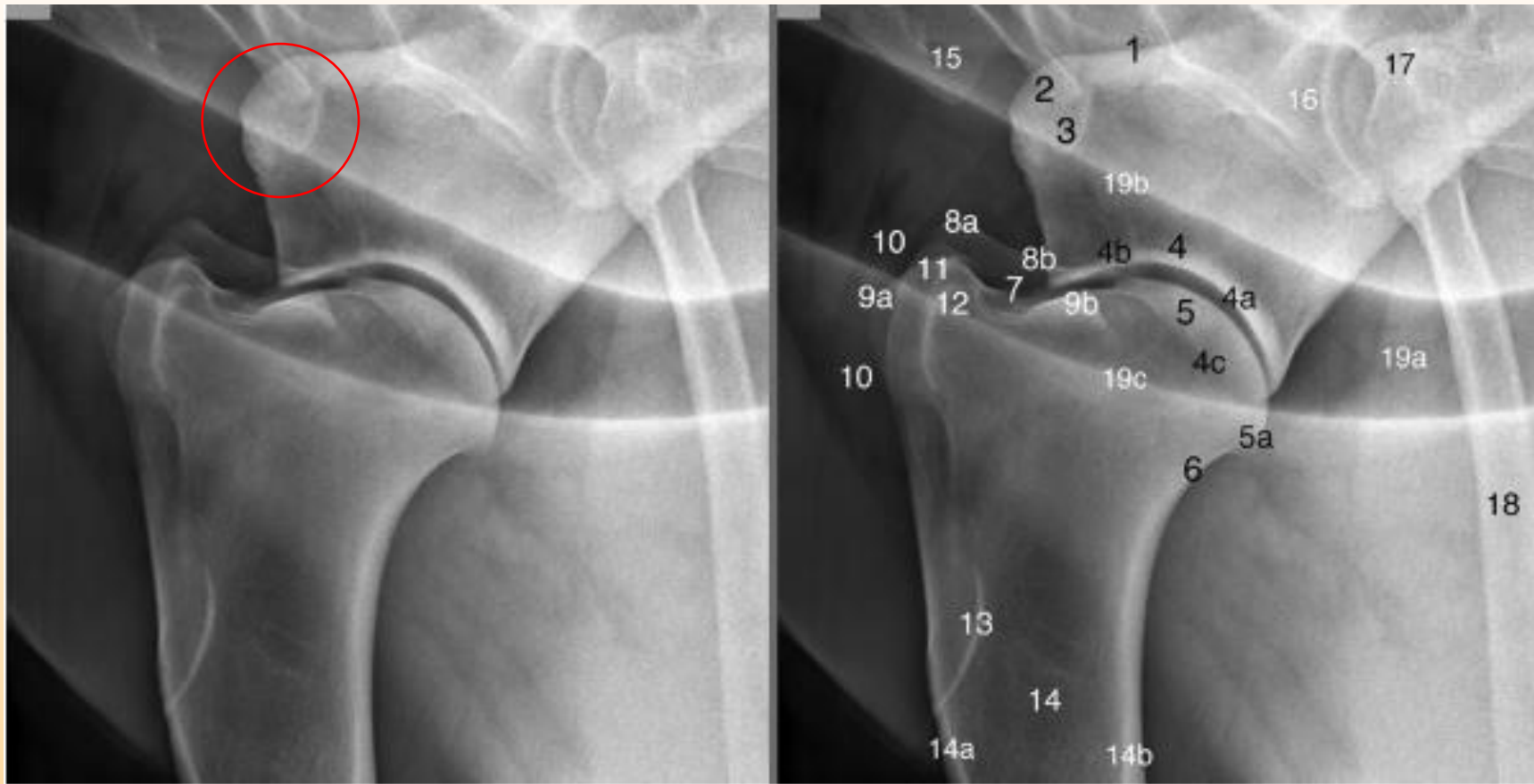
Humerus: 8- Head; 9- Neck; 10- Major tuberculum, 12- Deltoid tuberosity; 14- Supracondylar crest; 15- Medial epicondyle; 16- Olecranon fossa; 17- Lateral epicondyle; 18- Humeral condyle.

Denoix, J. M. (2019). *Essentials of Clinical Anatomy of the Equine Locomotor System*



Scapula: 2- Tuberculum supraglenoidale (palpável); **3- Coracoid process; 4- Glenoid cavity.**

Humerus: 5- Head; 6- Synovial space between the head and tubercles of the humerus; 7- Major tuberculum, 8- Minor tuberculum, 13- Deltoid tuberosity;

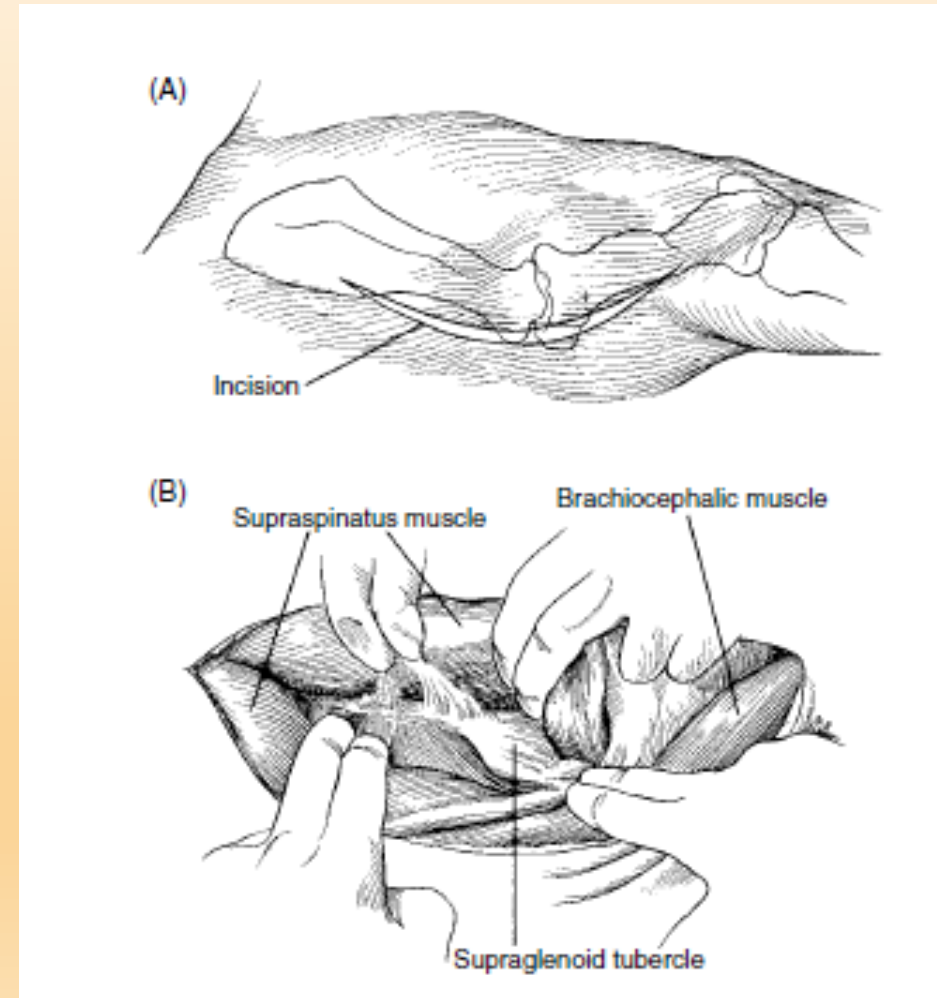


Scapula: 2- Tuberculum supraglenoidale; 3- Coracoid process; 4- Glenoid cavity,
Humerus: 5- Head, 6- Neck; 7- Synovial space between the head and tubercles of
the humerus; 8- Minor tuberculum, 9- Major tuberculum, 13- Deltoid tuberosity; 14-
Body of the humerus, 14a- cranial cortex, 14b- caudal cortex;

Denoix, J. M.
(2019). *Essentials of
Clinical Anatomy of the
Equine Locomotor
System*



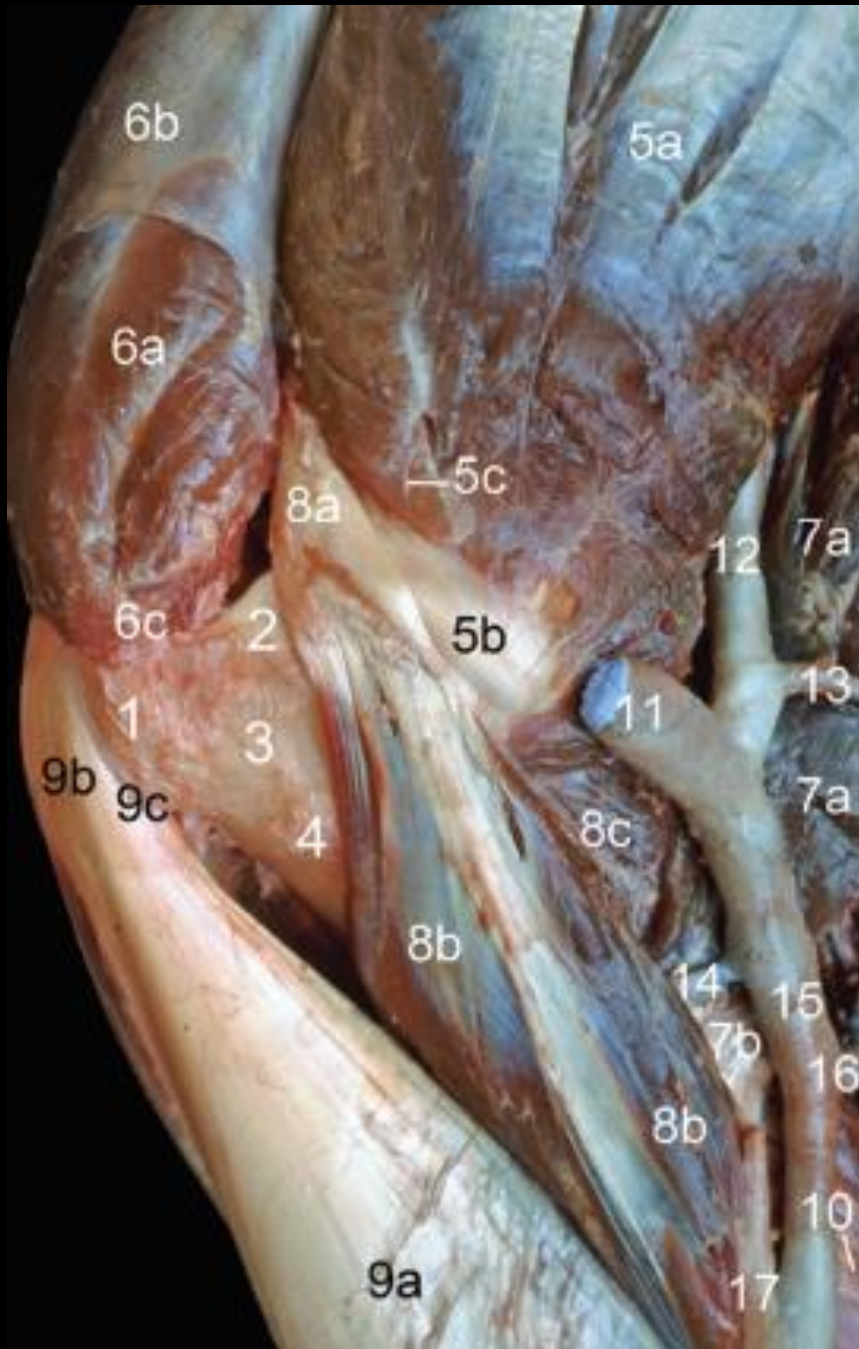
Fraturas da escápula podem ocorrer no corpo, **tubérculo supraglenóide**, ou **cavidade glenóide**



Fractures of the Scapula (Adams & Nixon, 2020)



Fractures of the Scapula (Adams & Nixon, 2020)



9- Biceps brachii muscle, 9c- bicipital Bursa space.

11- Axillary artery;

12- Subscapular artery;

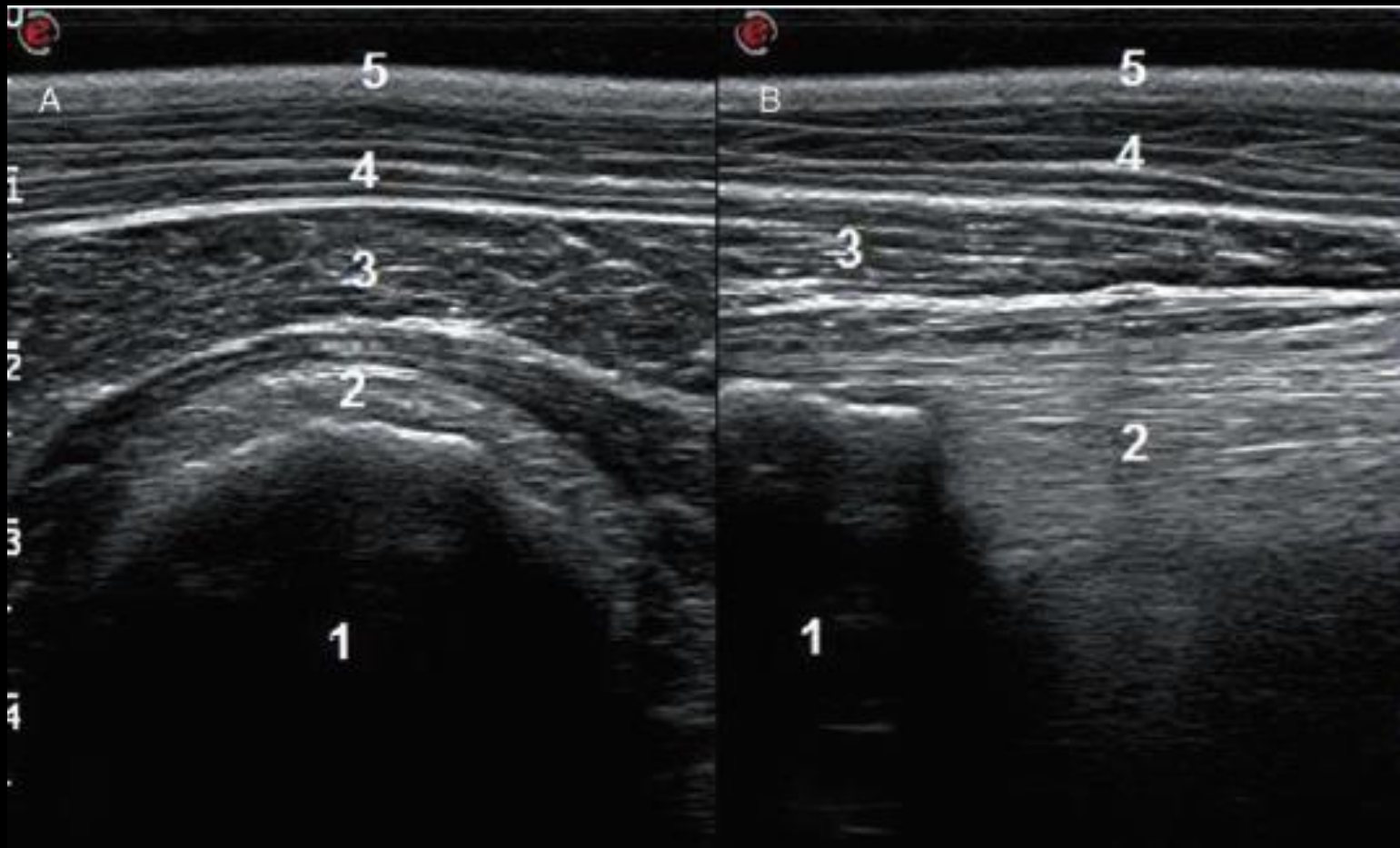
15- Brachial (humeral) artery;

17- Median nerve.

Bolsa bicipital fica entre o tendão do músculo bicipital (bíceps brachii) e o sulco intertubercular do úmero,

- Normalmente não é visível no US

Denoix, J. M. (2019). *Essentials of Clinical Anatomy of the Equine Locomotor System*

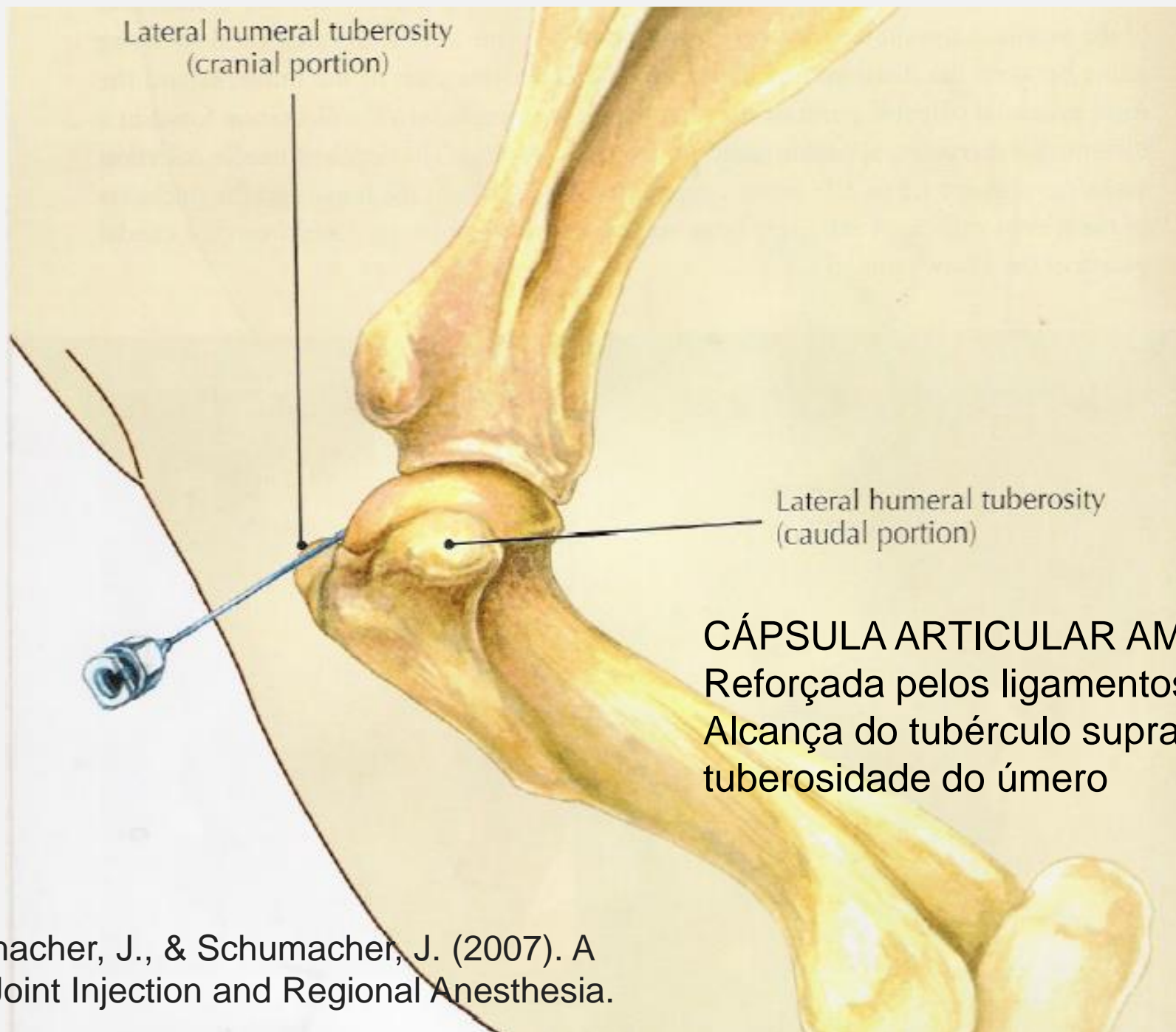


Kidd, J. A., Lu, K. G., & Frazer, M. L. (Eds.). (2014). *Atlas of equine ultrasonography*. John Wiley & Sons.

Normal origin of the biceps brachii tendon.

Ultrasound scans of the origin of the biceps brachii tendon on the supraglenoid tubercle

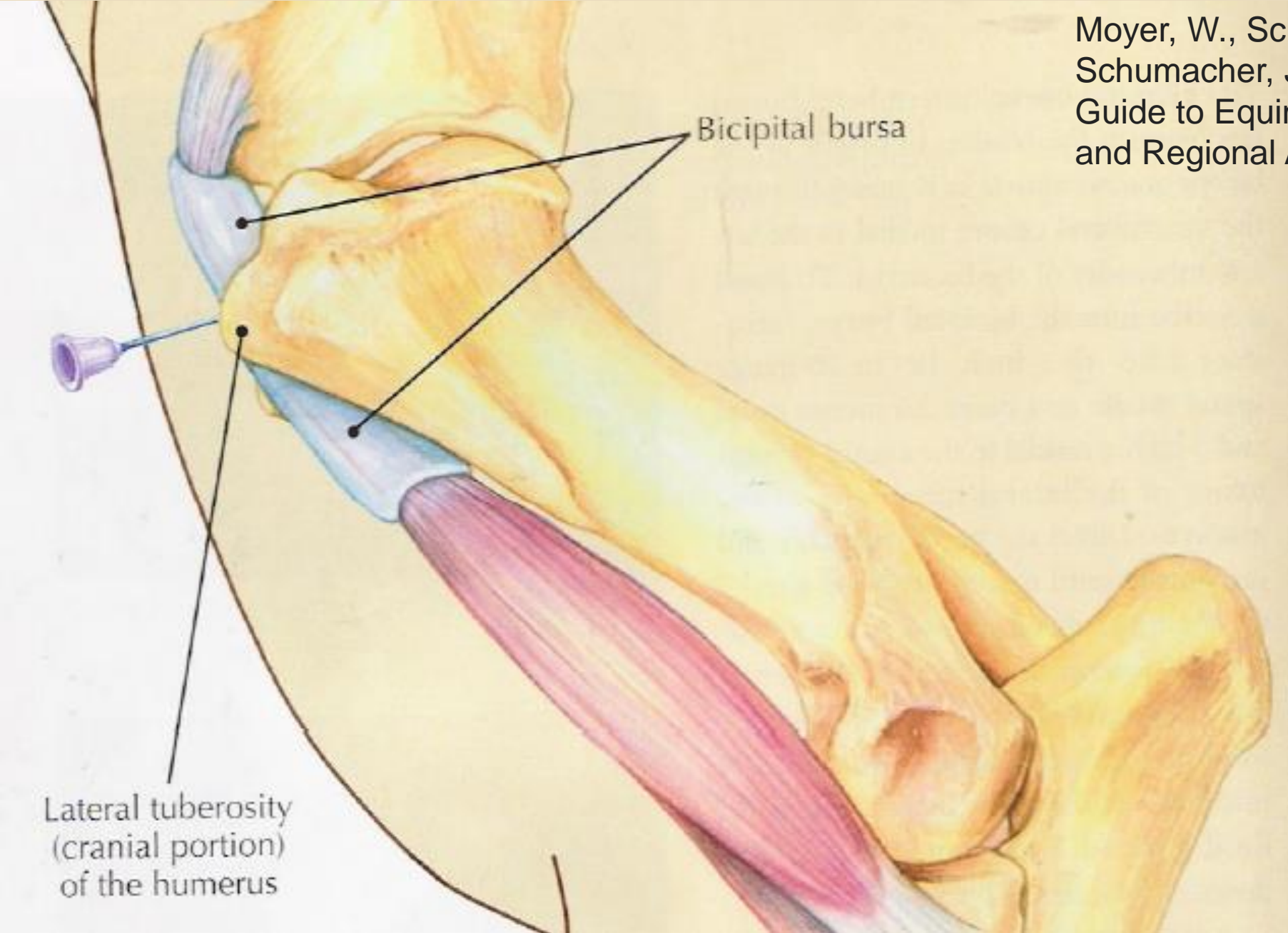
1: supraglenoid tubercle; 2: proximal tendon of the biceps brachii; 3: supraspinatus muscle; 4: brachiocephalicus muscle.



CÁPSULA ARTICULAR AMPLA
Reforçada pelos ligamentos glenoumerais
Alcança do tubérculo supraglenóide até depois da
tuberosidade do úmero

Moyer, W., Schumacher, J., & Schumacher, J. (2007). A Guide to Equine Joint Injection and Regional Anesthesia.

Moyer, W., Schumacher, J., & Schumacher, J. (2007). A Guide to Equine Joint Injection and Regional Anesthesia.



ÚMERO



FRATURA DE ÚMERO

- Impotência funcional do membro
- Edema
- Rebaixamento do membro
- Crepitação
- Paralisia do nervo radial



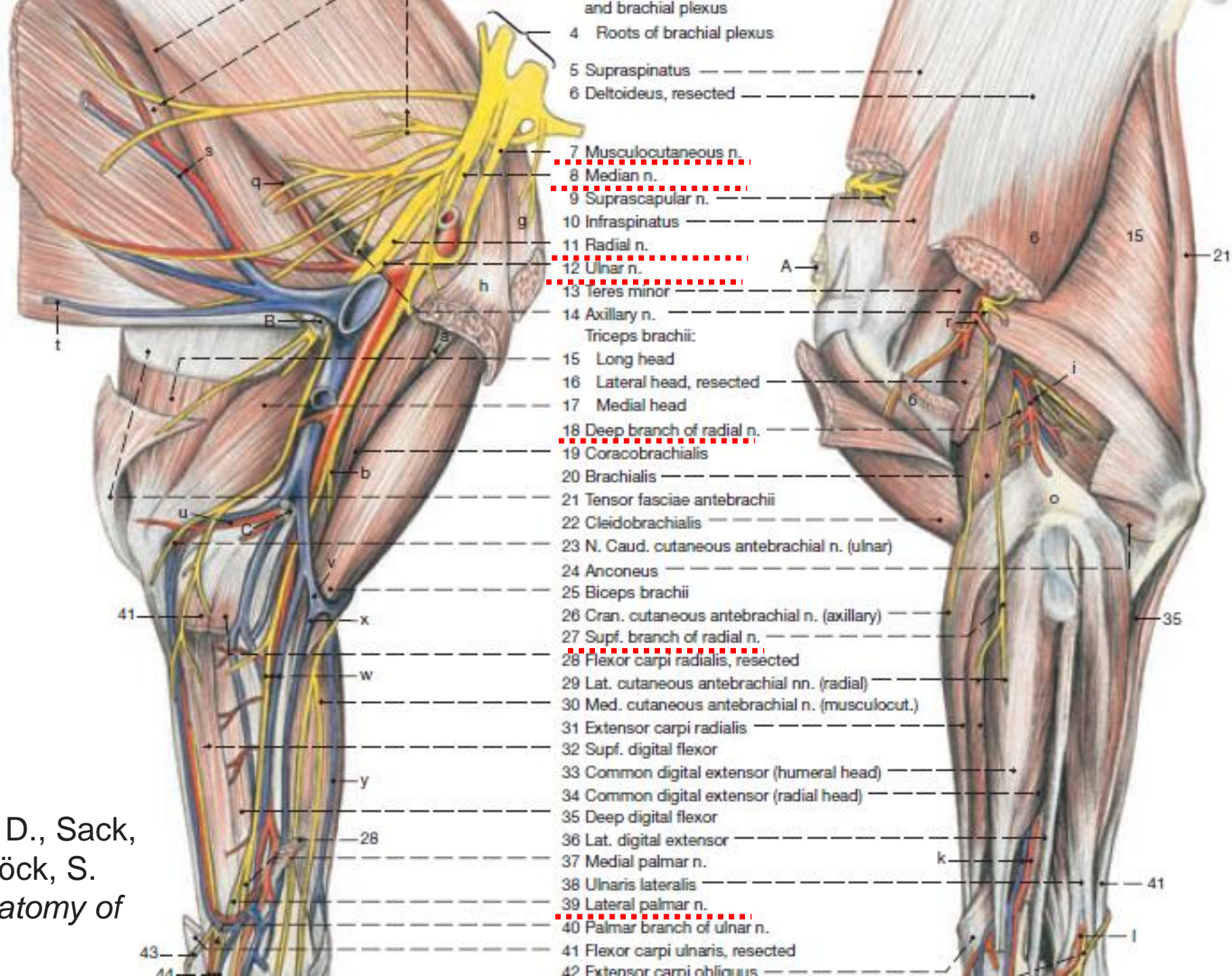
1. Intertuberal groove
2. Greater tubercle
3. Head
4. Neck
5. Tricipital line
6. Deltoid tuberosity
7. Radial fossa
8. Lateral epicondyloid crest
9. Olecranon fossa
10. Medial epicondyle
11. Lateral epicondyle
12. Capitulum
13. Trochlea
14. Coronoid fossa

ÚMERO



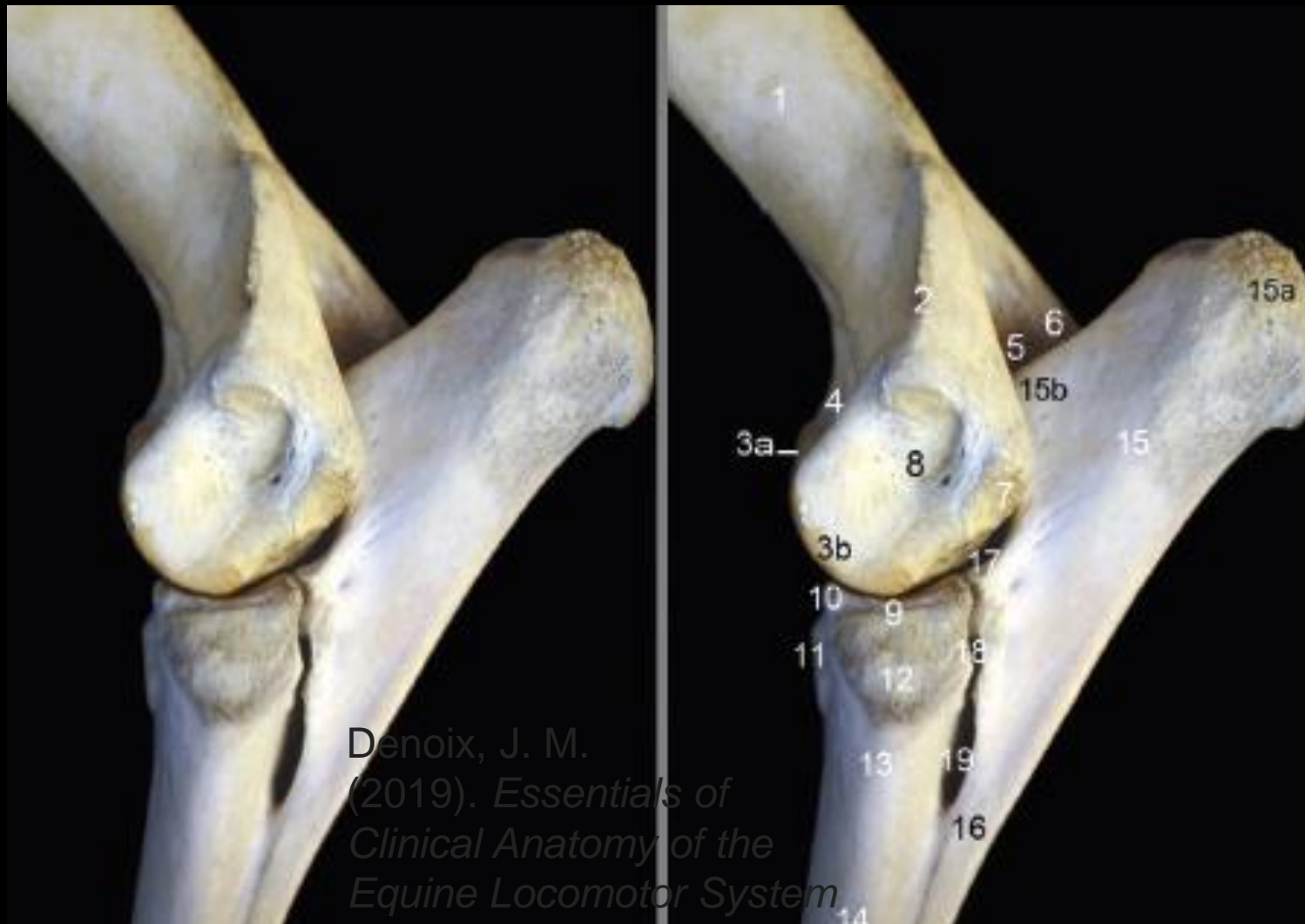
Teixeira Neto, 2000

- PARALISIA DO NERVO RADIAL
 - Nervo misto
 - Inervação do conjunto extensor
 - Impotência funcional – arrasta a pinça
 - Compressão
 - Decúbito prolongado
 - Mau posicionamento na mesa cirúrgica
 - Traumas (Fratura de úmero)
 - Processos inflamatórios e infecciosos



Budras, K. D., Sack, W. O., & Röck, S. (2012). *Anatomy of the Horse*

ARTICULAÇÃO UMERORRADIOULNAR

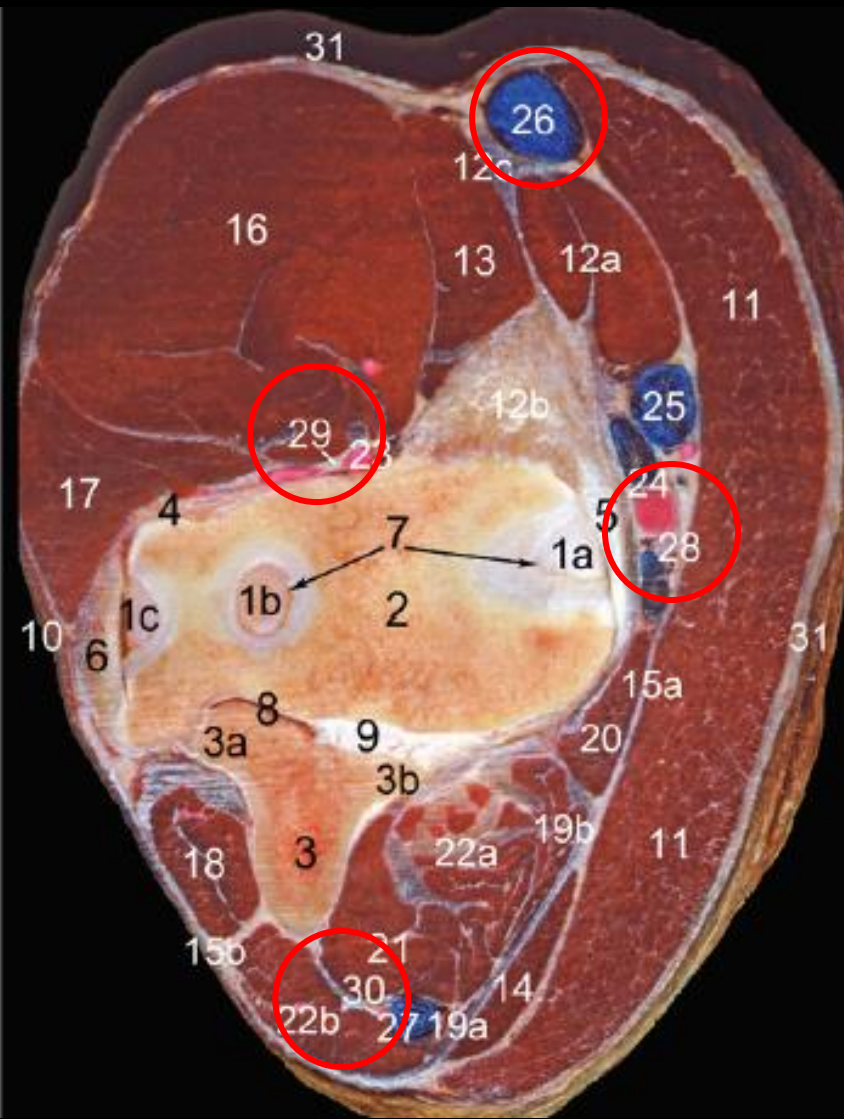


Humerus: 2- Supracondylar crest; 3- Humeral condyle, 3a- trochlea (medial ridge), 3b- capitulum; 4- Coronoid fossa; 5- Olecranon fossa; 6- Medial epicondyle; 7- Lateral epicondyle;

Radius: 9- Fovea capitis; 10- Coronoid process; 11- Radial tuberosity; 12- Lateral tuberosity; 13- Proximal metaphysis (neck); 14- Body.

Ulna: 15- Olecranon, 15a- olecranon tuberosity, 15b- anconeal process.

Denoix, J. M.
(2019). *Essentials of
Clinical Anatomy of the
Equine Locomotor System*



Bones: 1- Humerus, 1a- medial trochlear ridge, 1b- lateral trochlear ridge; 1c- capitulum; 2- Radius (subchondral bone and articular cartilage of the radial fossa); 3- Ulna (base of olecranon).

Arteries and nerves:

- 26- Cephalic vein
- 28- Median nerve
- 29- Deep ramus of the radial nerve;
- 30- Ulnar nerve

Gínglimo

Bursa entre a parte (mais delgada) da cápsula articular na fossa do olecrano e músculo ancôneo



Denoix, J. M. (2019). *Essentials of Clinical Anatomy of the Equine Locomotor System*



RÁDIO E ULNA



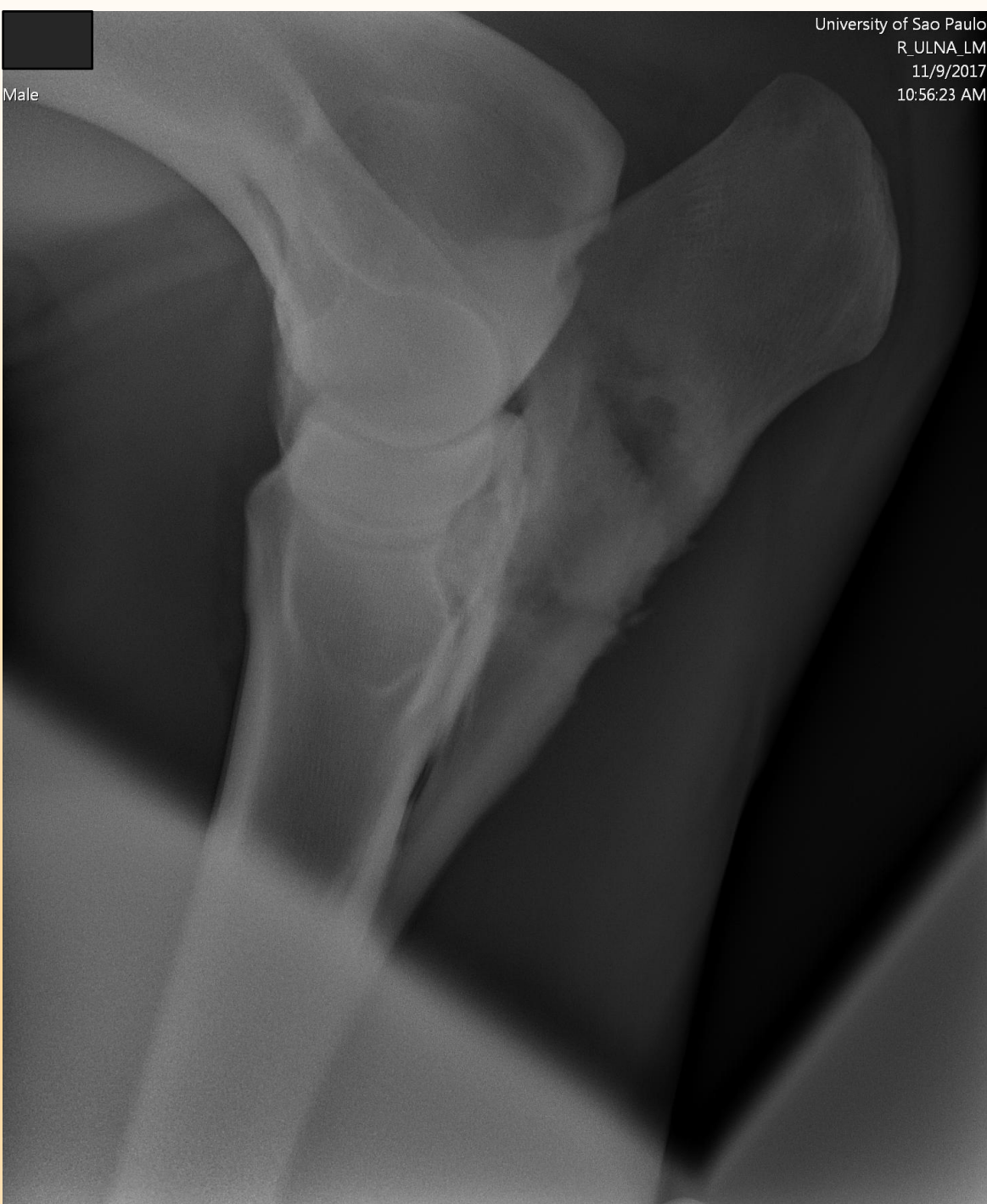


RÁDIO E ULNA - FRATURAS

- Olecrano – comum principalmente em animais jovens
 - Fraturas por avulsão
 - Redução complicada pela inserção muscular
- Fraturas de margens articulares
- Rádio – fraturas traumáticas com grande energia envolvida
 - Complexas, cominutivas
 - Cunha, espiral
 - Expostas

University of Sao Paulo
R_ULNA_LM
11/9/2017
10:56:23 AM

Male



University of Sao Paulo
R_ULNA_LM
11/9/2017
10:49:45 AM

Male



BLOQUEIO ALTO

NERVO MEDIANO

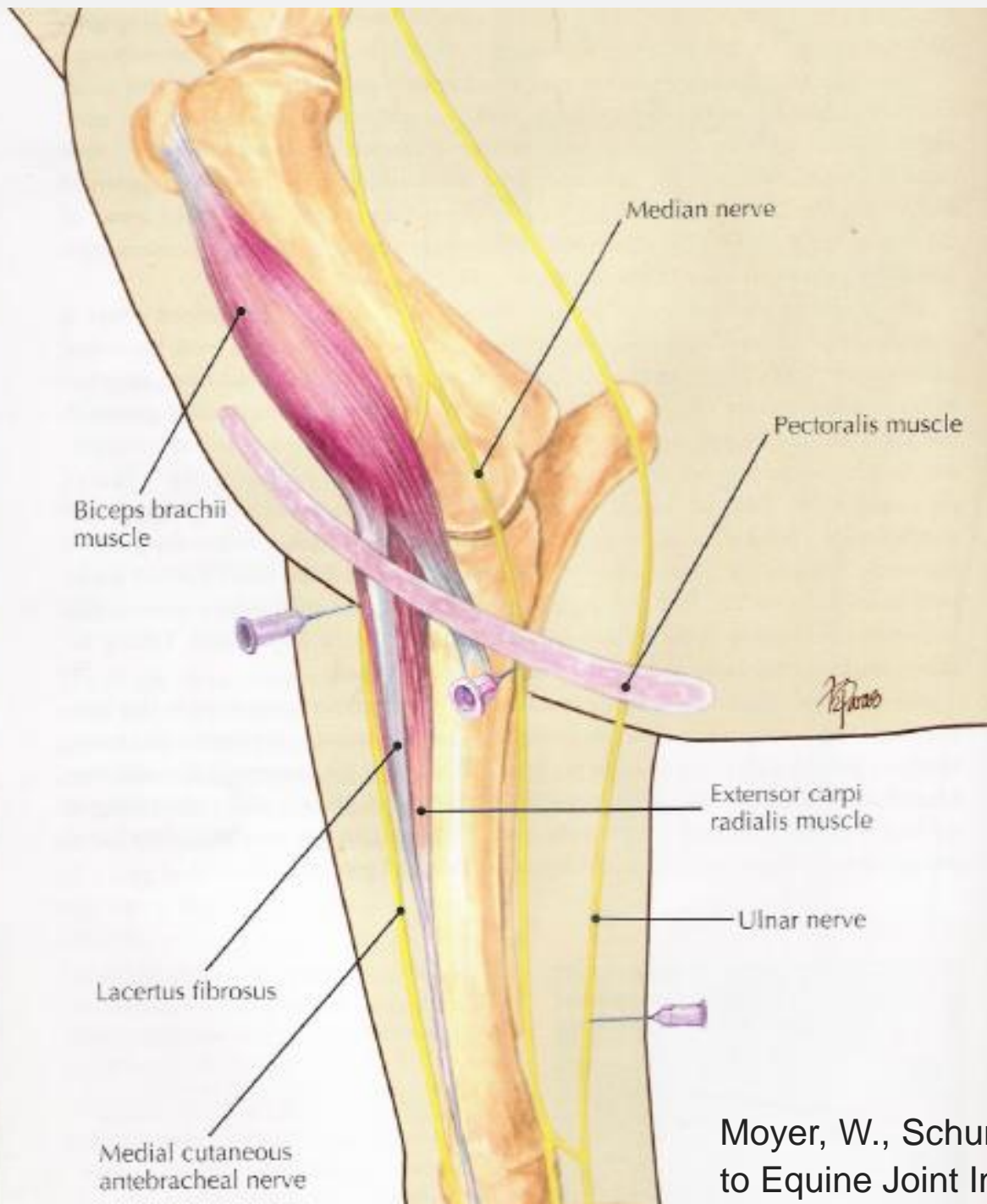
Dessensibiliza parcialmente o carpo, a porção distal do antebraço e as estruturas inervadas pelos nervos palmares medial e lateral

NERVO ULNAR

Dessensibiliza a face lateral do membro torácico, distal ao local da injeção, até o boleto. Parte do carpo, ossos metacárpicos e LSB

NERVO MUSCULOCUTÂNEO

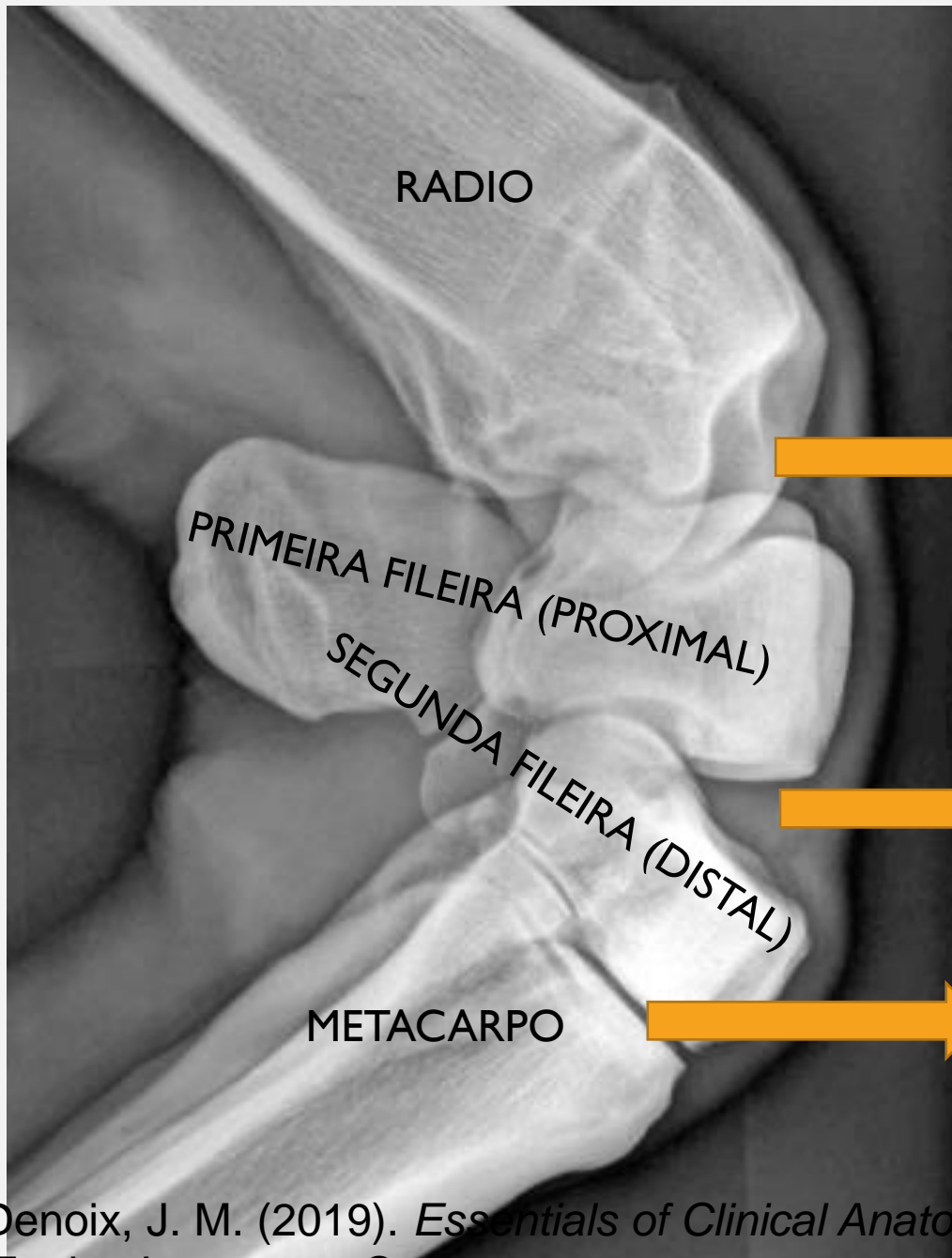
Anestesia destes 3 nervos proporciona a dessensibilização da maioria das estruturas do membro (carpo, metacarpo e dígito)



Moyer, W., Schumacher, J., & Schumacher, J. (2007). A Guide to Equine Joint Injection and Regional Anesthesia.

OS OSSOS DO CARPO





ANTEBRAQUIOCÁRPICA
(RADIOCÁRPICA)

ARTICULAÇÃO
INTERCÁRPICA
(MEDIOCARPAL)

CARPOMETACÁRPICA

CÁPSULA ARTICULAR Comum inserida margem articular do rádio e do metacarpo.

Parte profunda inserida também nos ossos do carpo

Dorsalmente – retináculo extensor
Palmar – ligamento cárpico palmar e retináculo flexor
Palmar – túnel do carpo

MEMBRANA SINOVIAL Forma 3 sacos, um para cada articulação

Radiocárpico - maior

Intercárpico – comunica com o carpometacárpico

Carpometacárpico - pequeno



Denoix, J. M. (2019). *Essentials of Clinical Anatomy of the Equine Locomotor System*

EQUINE CARPUS JOINT (LEFT)



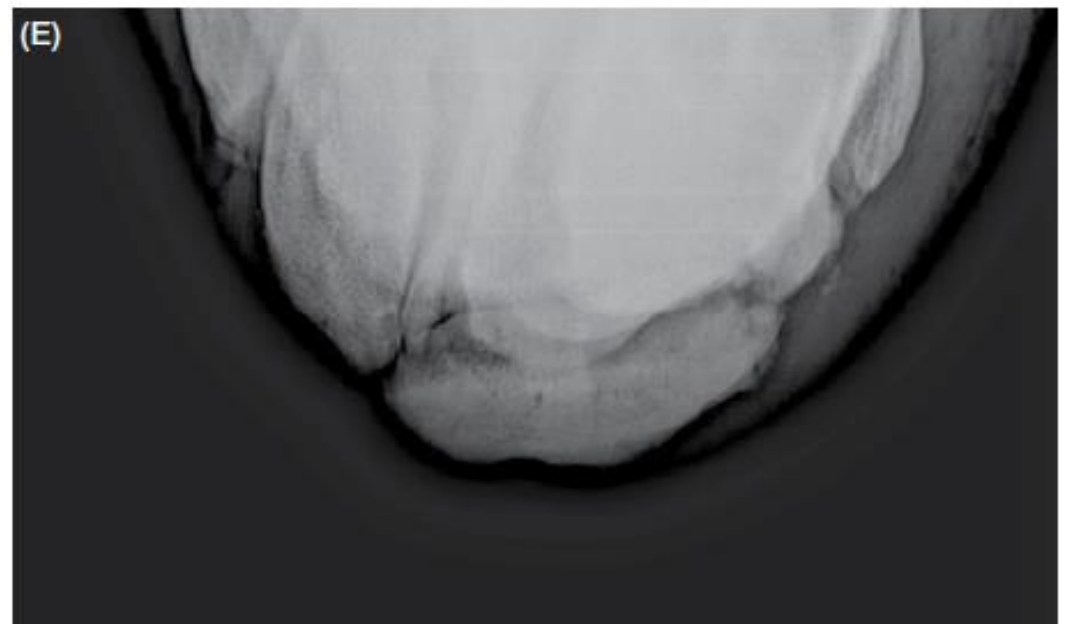
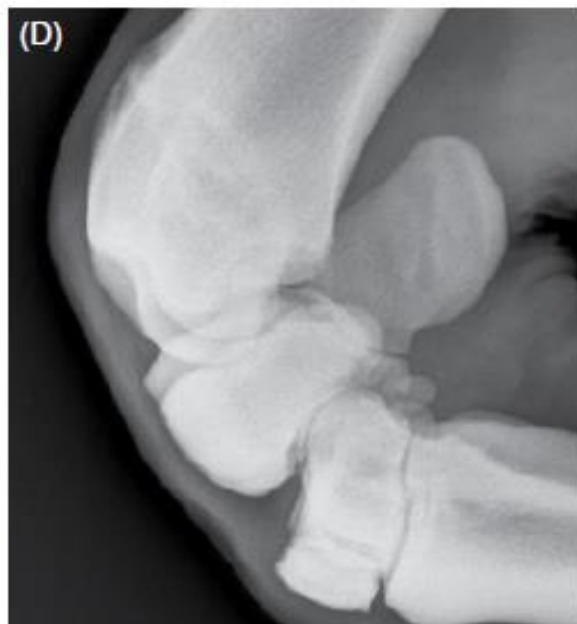


Denoix, J. M. (2019). *Essentials of Clinical Anatomy of the Equine Locomotor System*

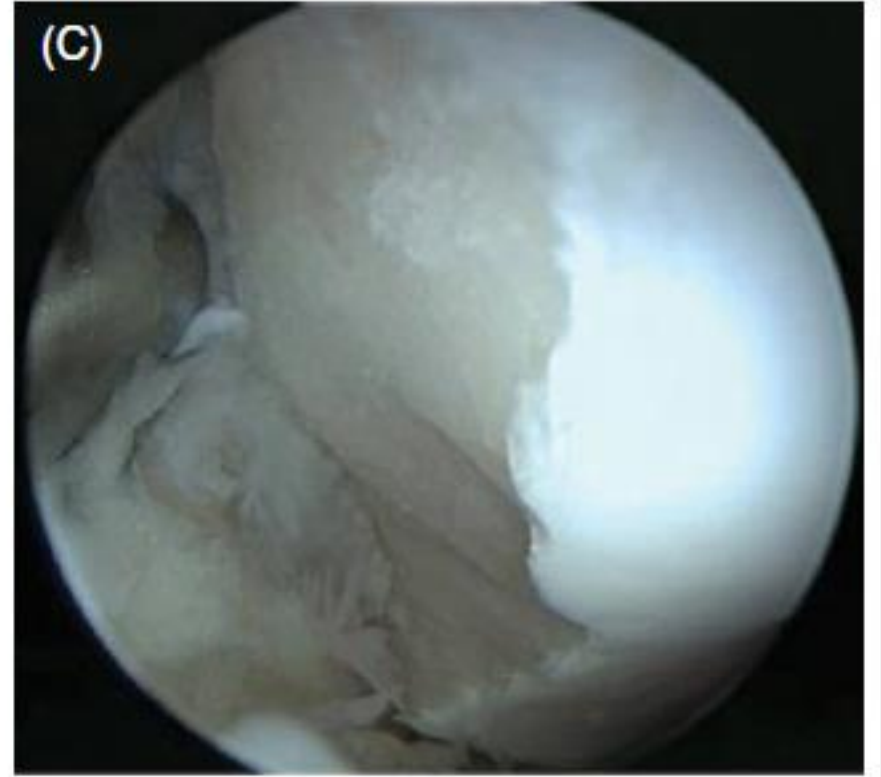
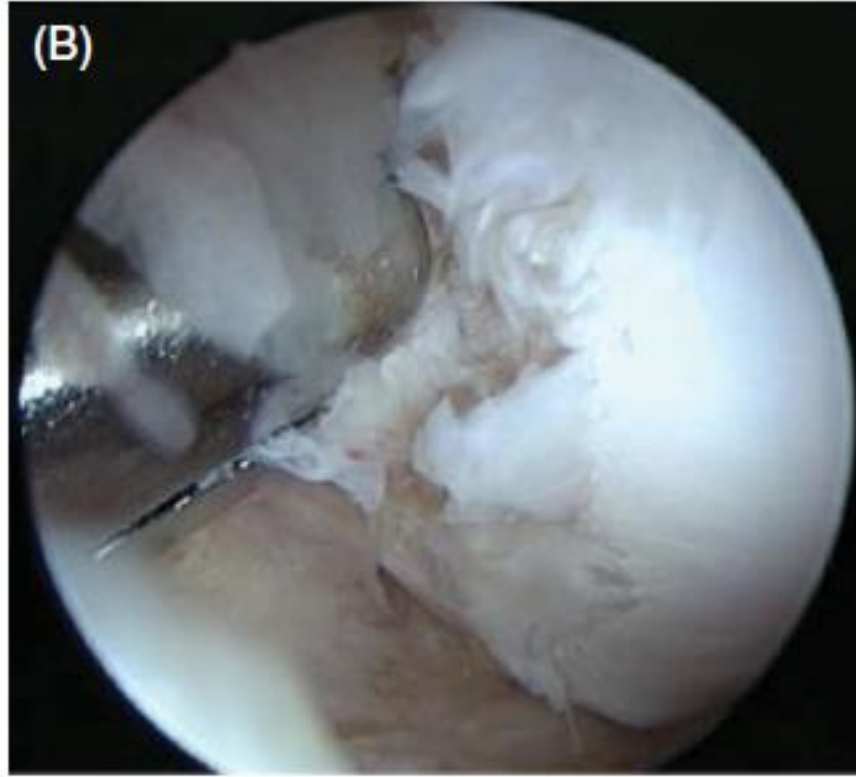
Fraturas
Fragmentos
OCD
Cistos subcondrais
Osteoartrite

Cavalos de corrida

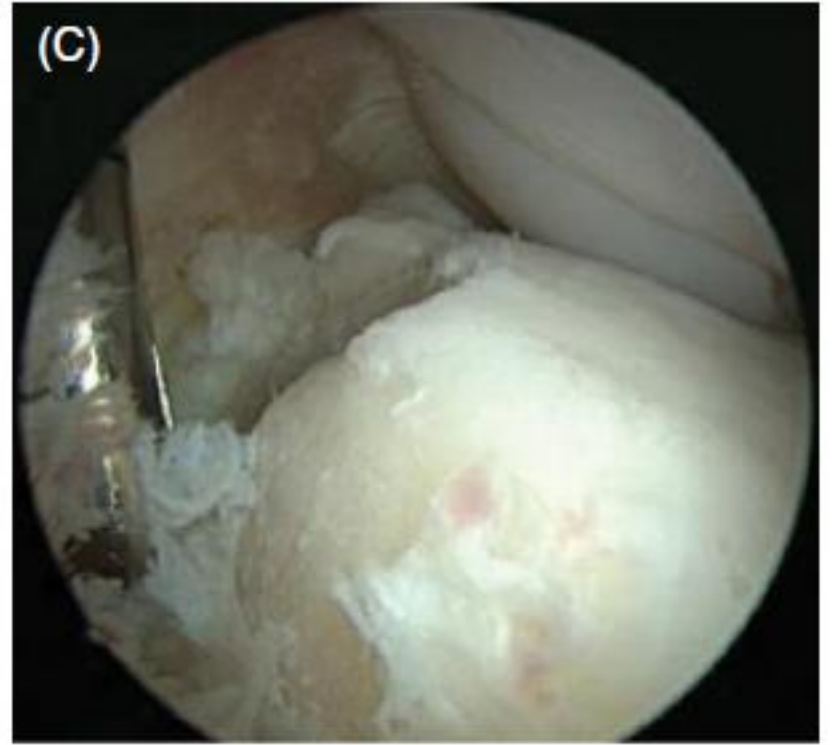
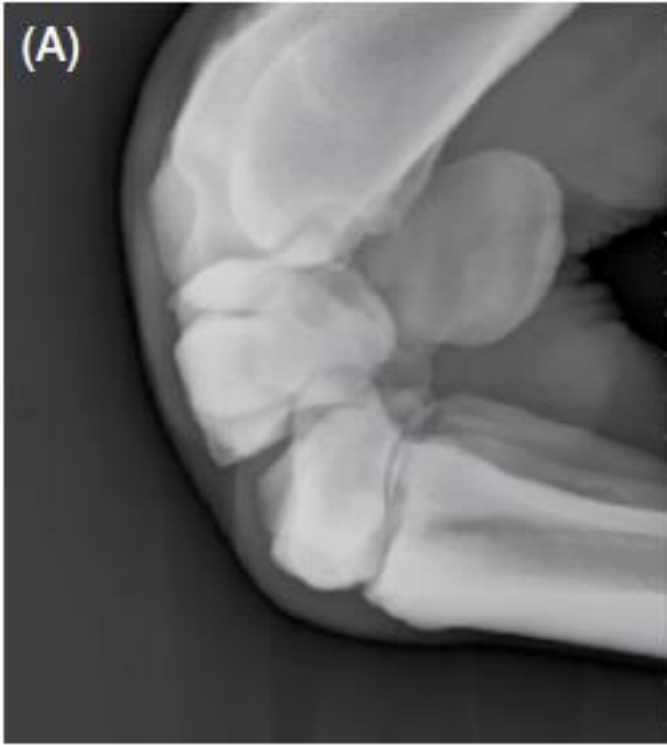
Artroscopia
Infiltrações



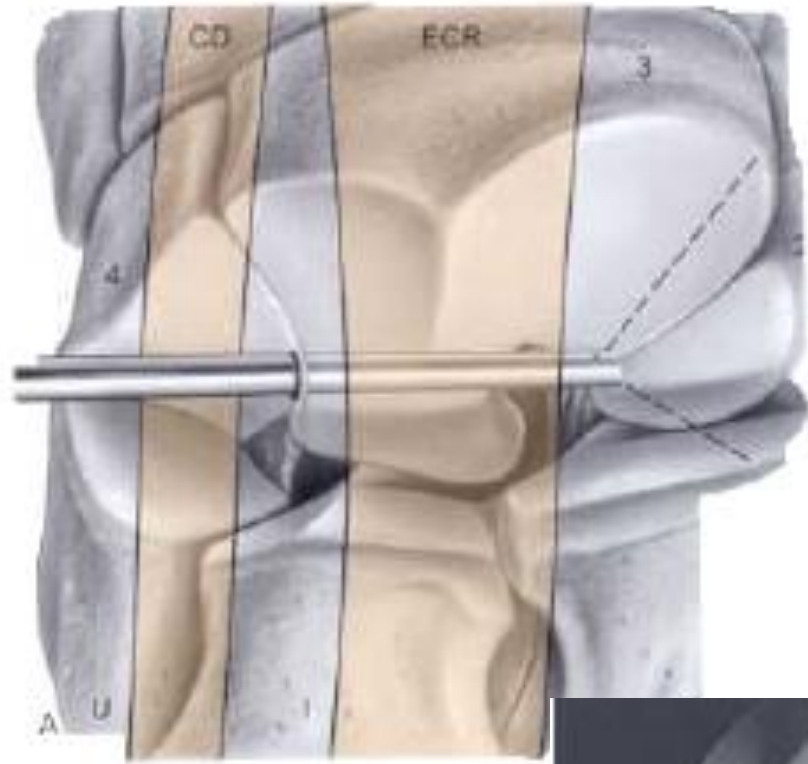
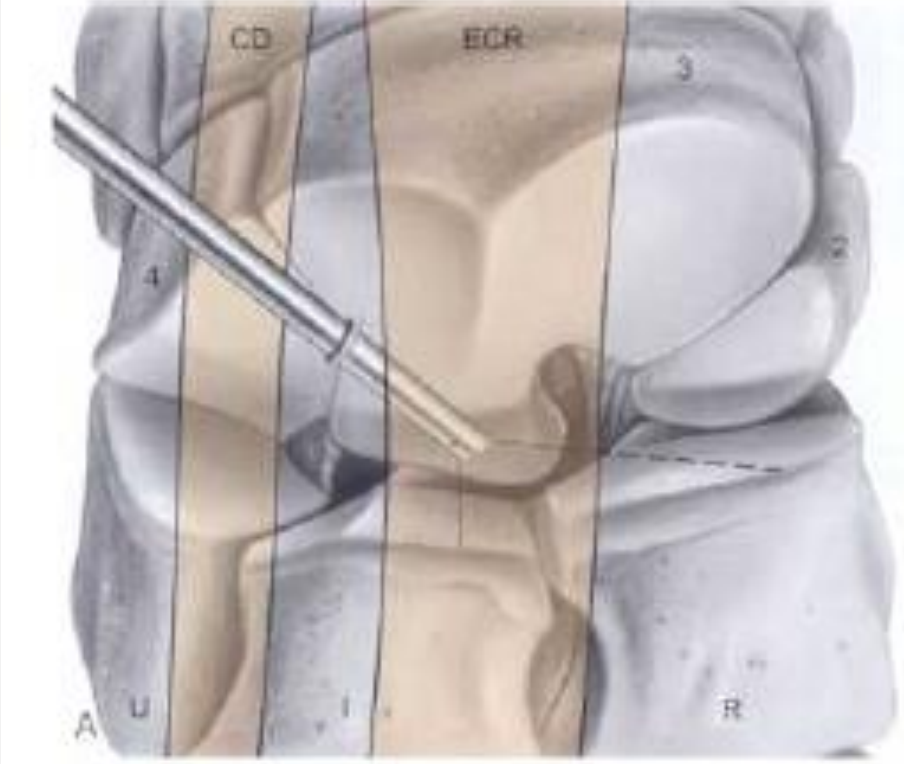
Fractures of the Carpus
C.Wayne McIlwraith, 2020



Fractures of the Carpus
C.Wayne McIlwraith, 2020

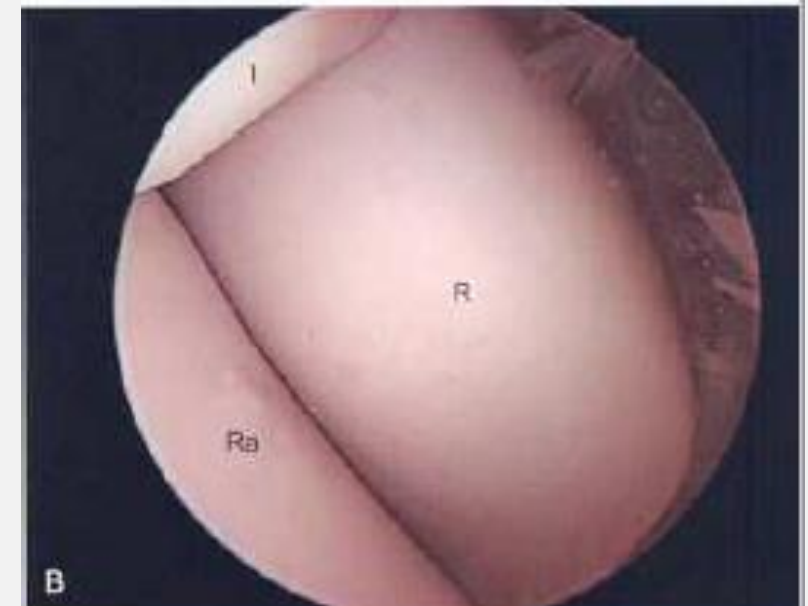
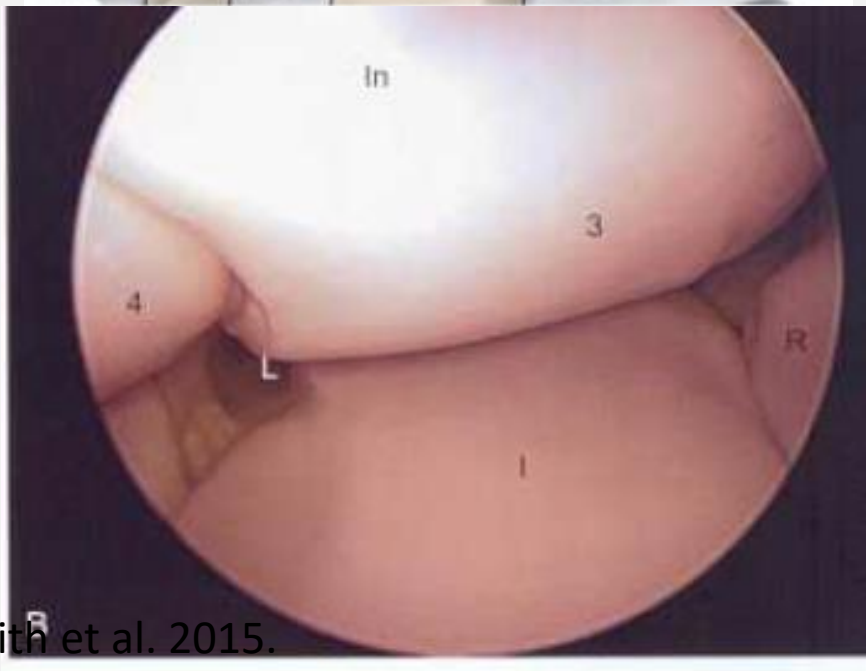
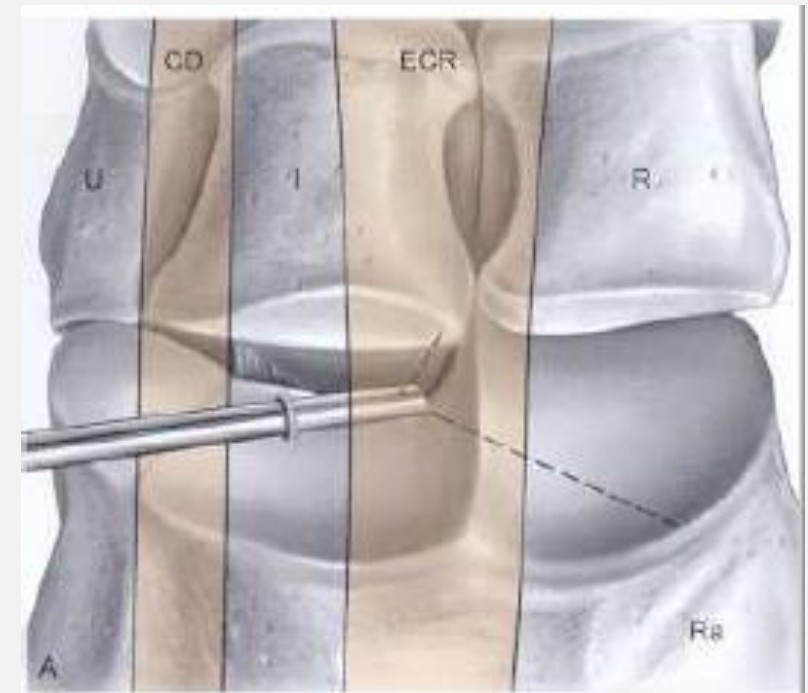
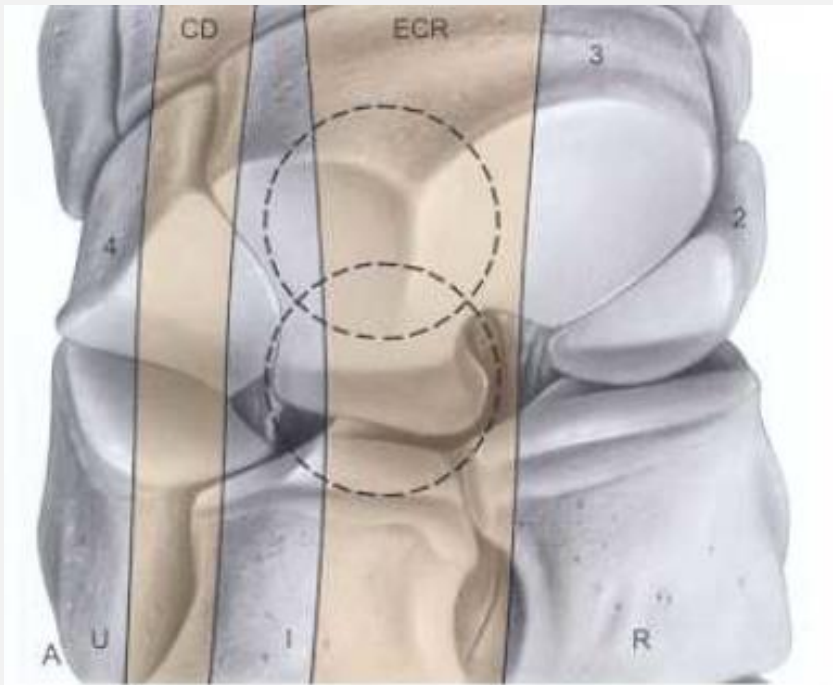


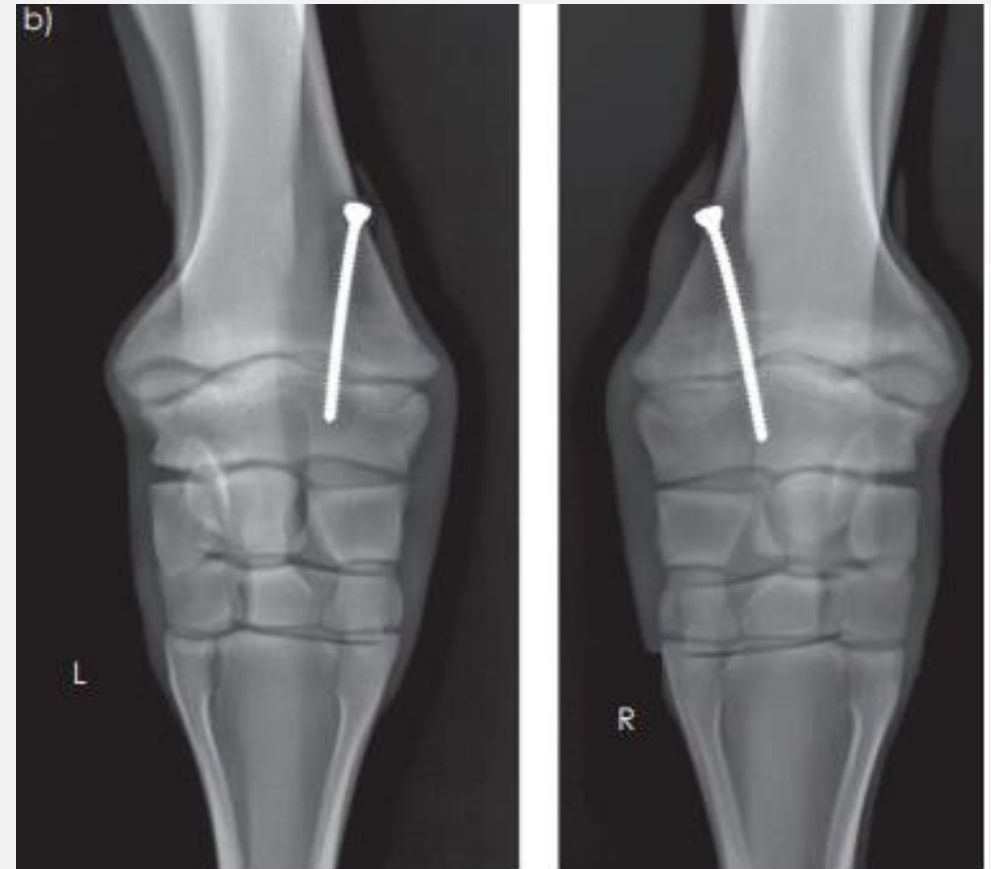
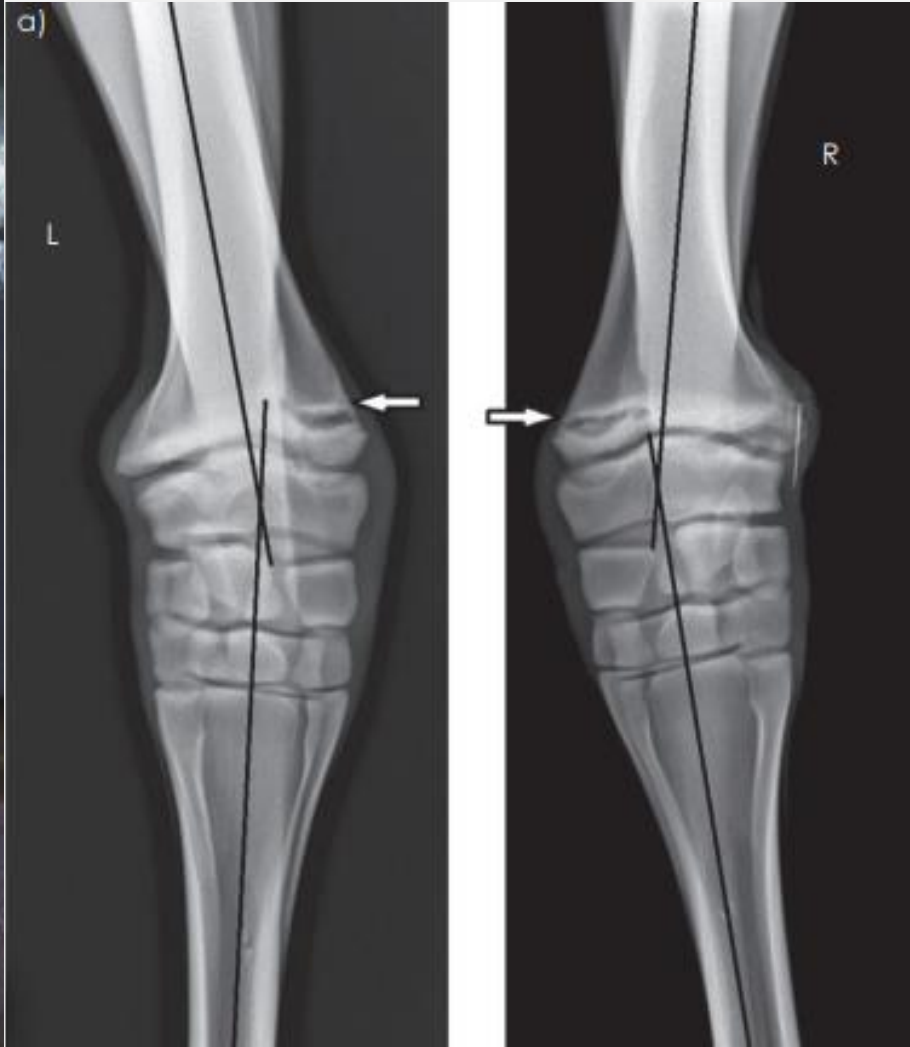
Fractures of the Carpus
C.Wayne McIlwraith, 2020



McIlwraith et al. 2015.



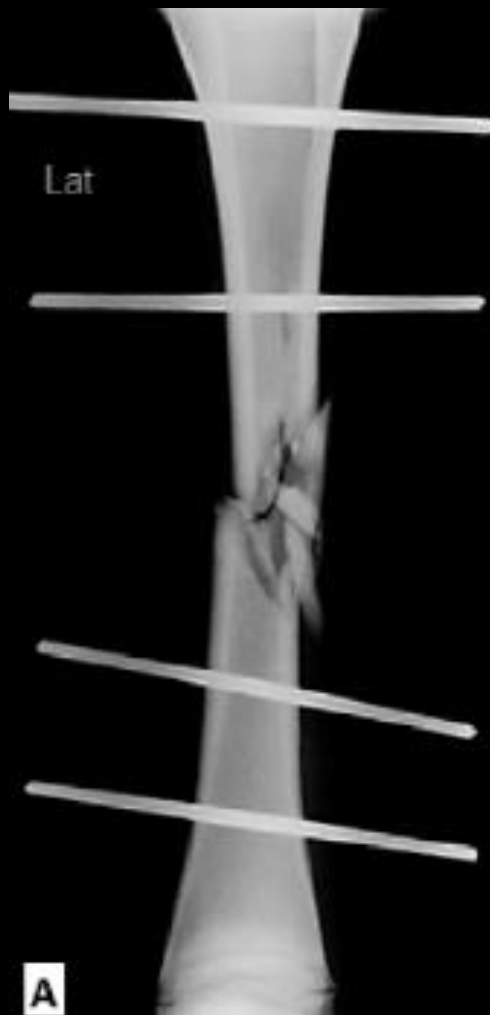




Gray, A., Randleff-Rasmussen, P., & Lepage, O. M. (2018). Single transphyseal screws for the correction of moderate to severe angular limb deformities in 28 Thoroughbred foals. *Equine Veterinary Education*, 30(2), 88-93.

METACARPO/TARSO

- Pouca cobertura muscular
- Fraturas
- Fraturas condilares
- Periostites
- Fissuras

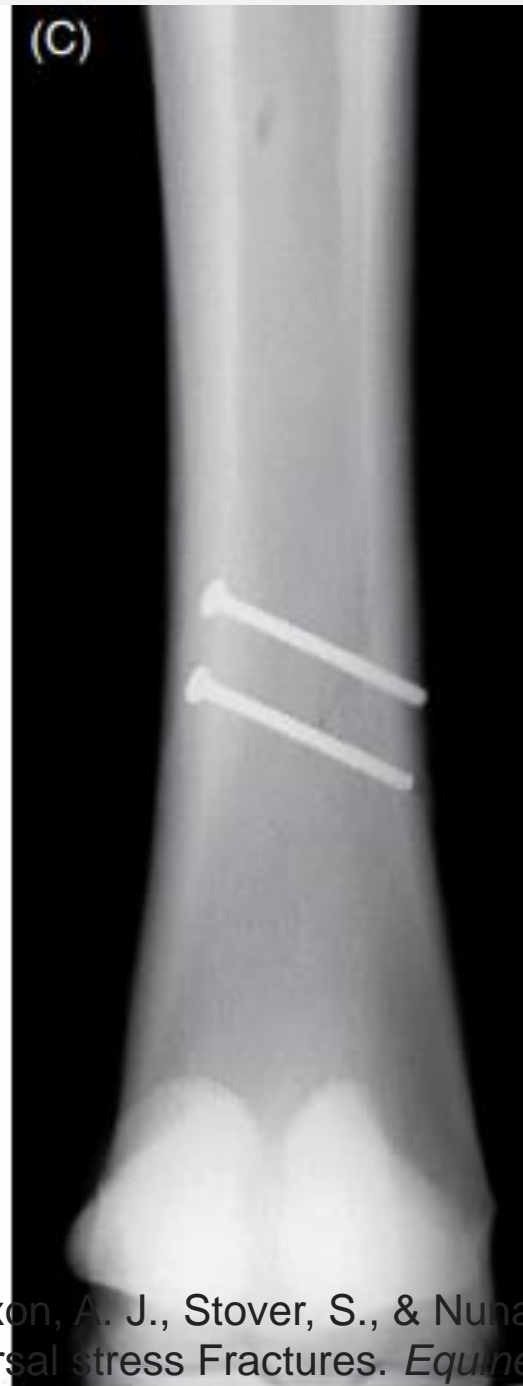


SINDESMOSES





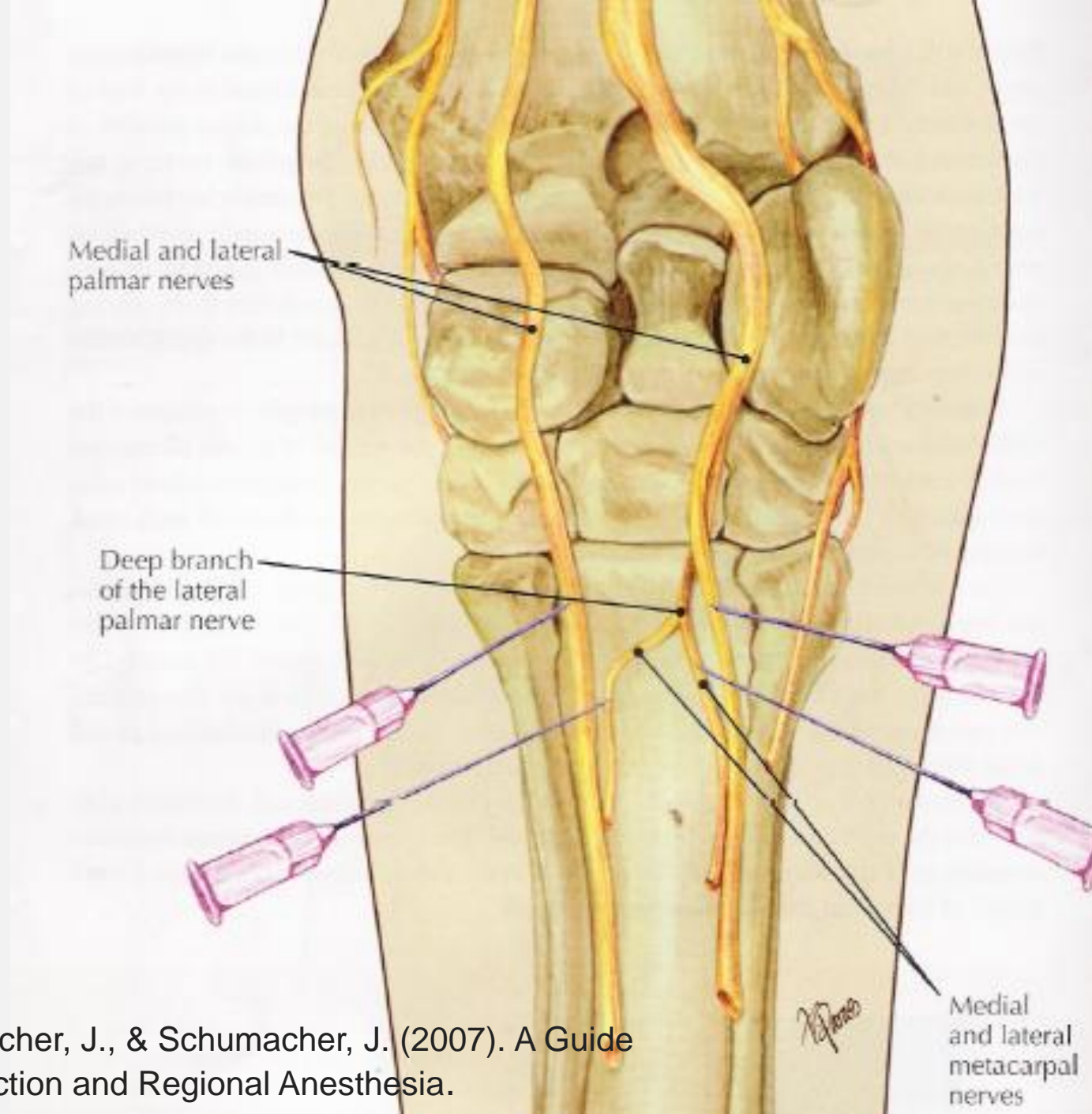
VCI – FMVZ, USP



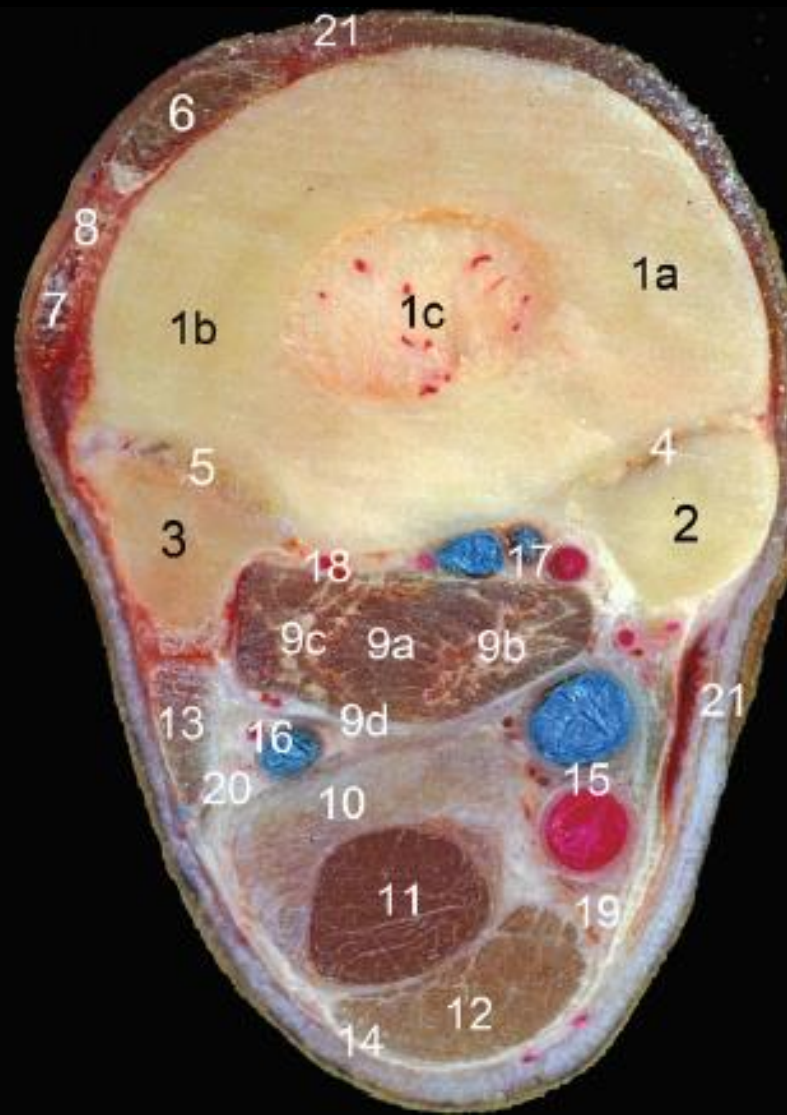
Nixon, A. J., Stover, S., & Nunamaker, D. (2019). third Metacarpal dorsal stress Fractures. *Equine Fracture Repair*, 452-464.

Hinchcliff, K. W., Kaneps, A. J., & Geor R. J.
(2013). *Equine Sports Medicine and Surgery*





Moyer, W., Schumacher, J., & Schumacher, J. (2007). A Guide to Equine Joint Injection and Regional Anesthesia.



Bones and joints: 1- Third metacarpal bone, 2- Second metacarpal bone; 3- Fourth metacarpal bone

Vessels and nerves:

- 15- Medial palmar common digital artery and vein;**
- 16- Lateral palmar common digital artery and vein;**
- 17- Medial metacarpal artery and vein;**
- 18- Lateral metacarpal artery and vein;**
- 19- Medial palmar common digital nerve;**
- 20- Lateral palmar common digital nerve**

ARTICULAÇÃO METACARPO/METATARSO FALANGEAS



Yamada et al., 2020

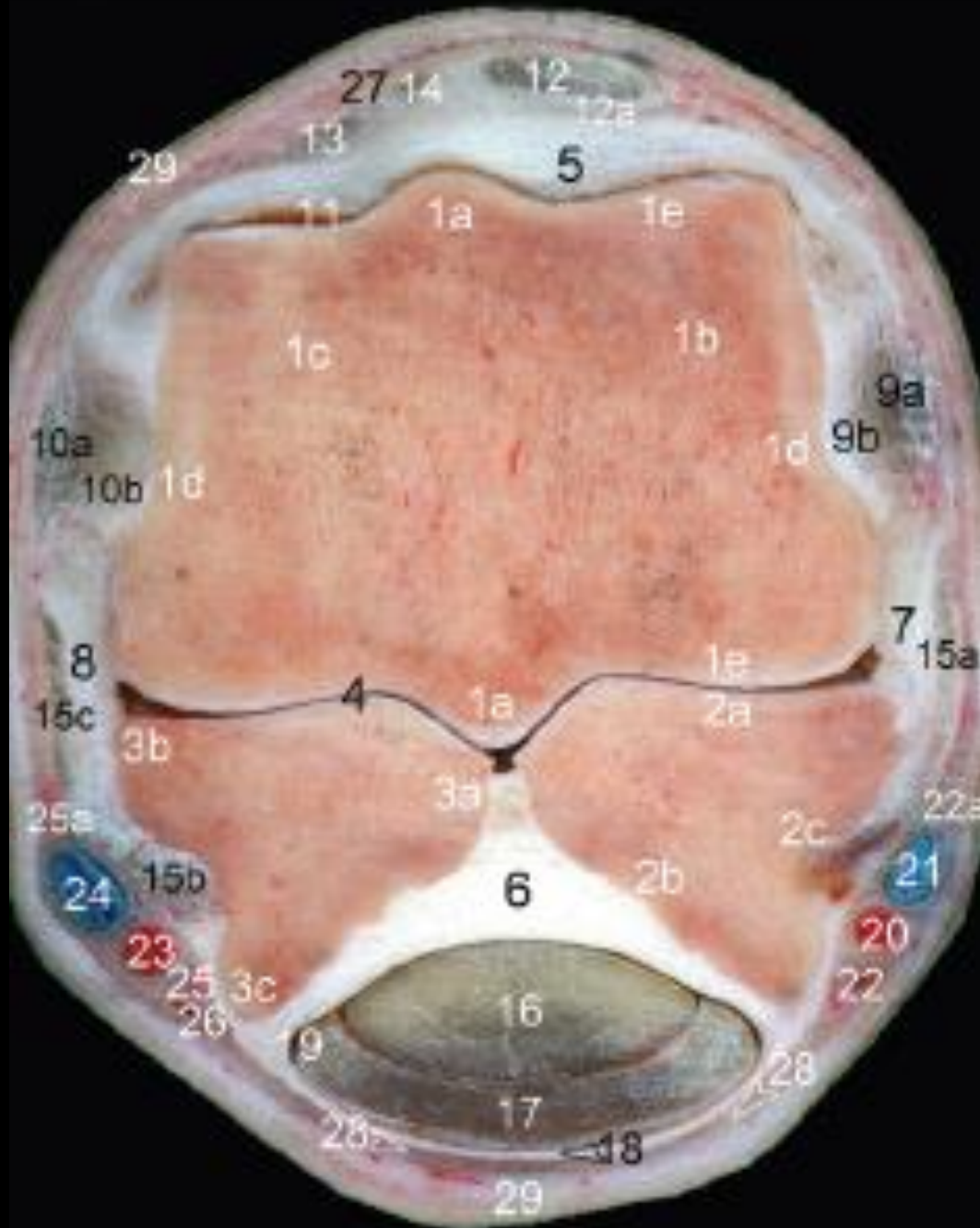
- Fragmentos
- Fraturas
- OCD
- Cistos

- Osteoartrites

- Infiltrações
- Artroscopias
- Cavalos de salto



- 4. Forame nutrício
- 5. IV Metacarpiano
- 6. II Metacarpiano
- 7. Sesamóide Proximal Lateral
- 8. Sesamóide Proximal Medial
- 9. Face abaxial
- 10. Face (superfície) axial
- 11. Ápice
- 12. Base



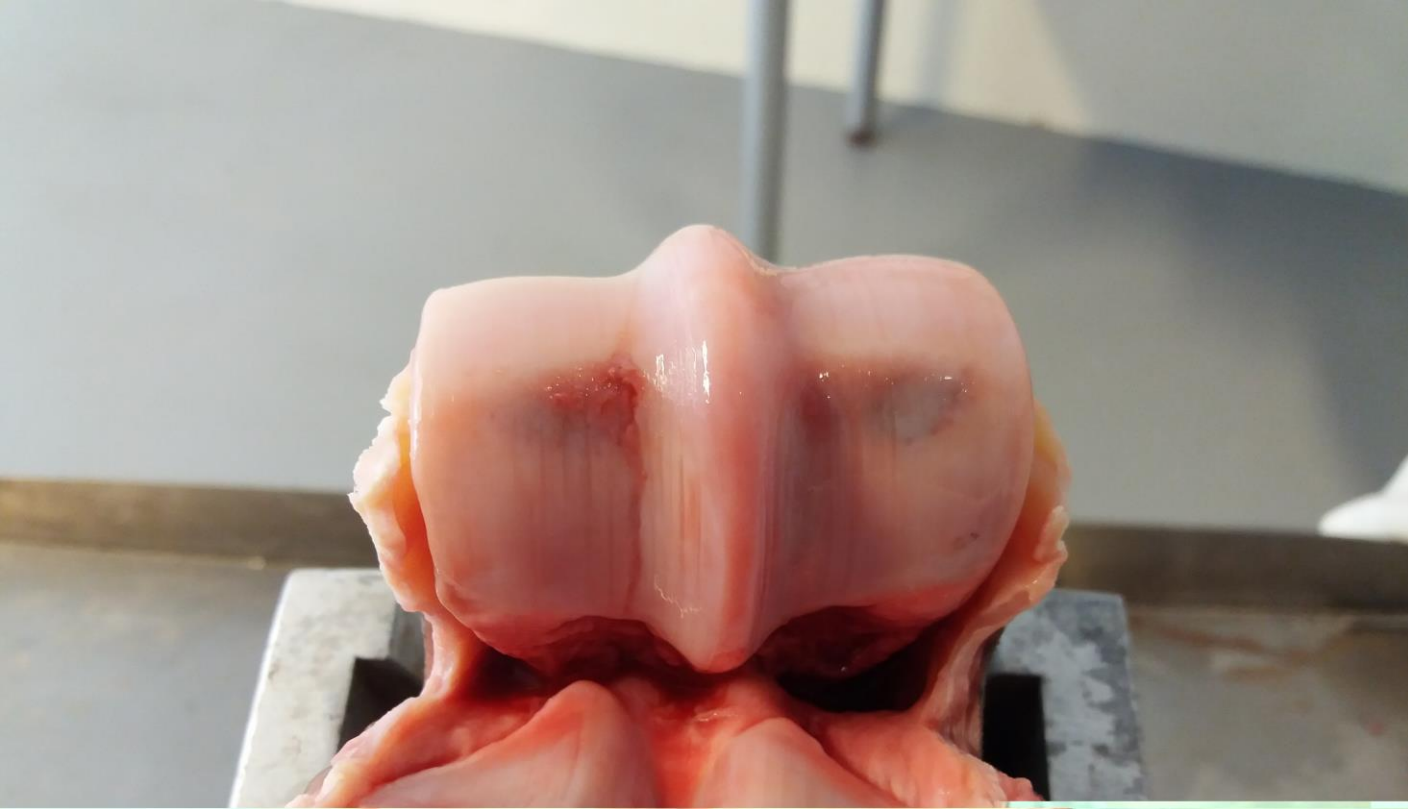
Bones and joints: 1- Metacarpal condyle, 1a- sagittal ridge, 1b-medial part (medial condyle), 1c- lateral part (lateral condyle), 2- Medial proximal sesamoid bone (body), 3- Lateral proximal sesamoid bone (body), **3a- axial margin, 3b- abaxial margin, 3c- palmar margin**

Vessels and nerves: **20- Medial proper digital artery;** **21- Medial proper digital vein;** **22- Medial proper digital nerve**
23- Lateral proper digital artery; **24- Lateral proper digital vein;** **25- Lateral proper digital nerve**

VCI – FMVZ, USP



VCI – FMVZ, USP



Cápsula articular espessa e ampla
Inserida no porção distal do
metacarpo/tarso e início da falange
Capsulite vilonodular





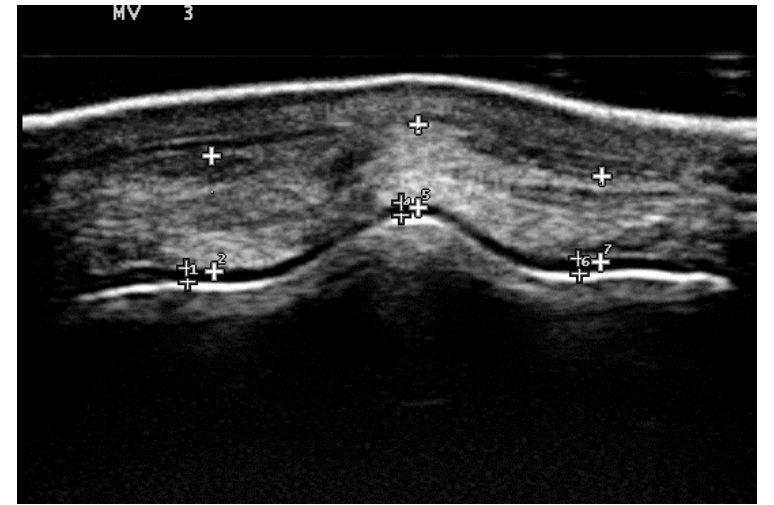
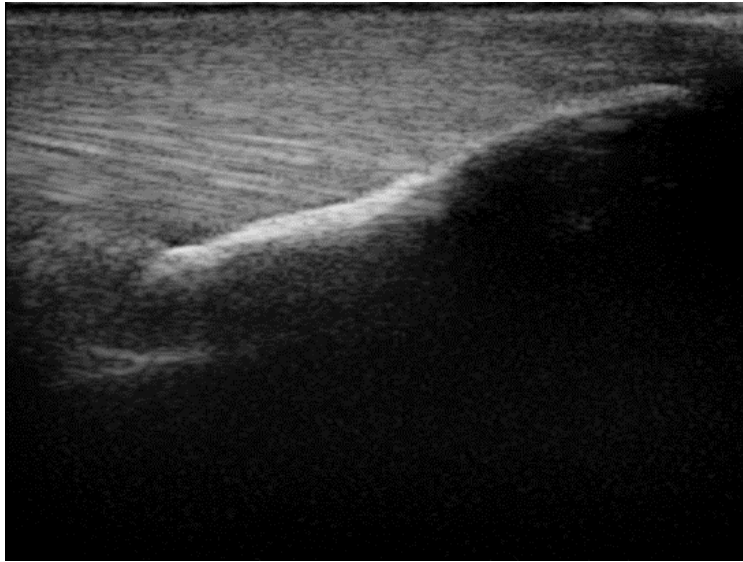
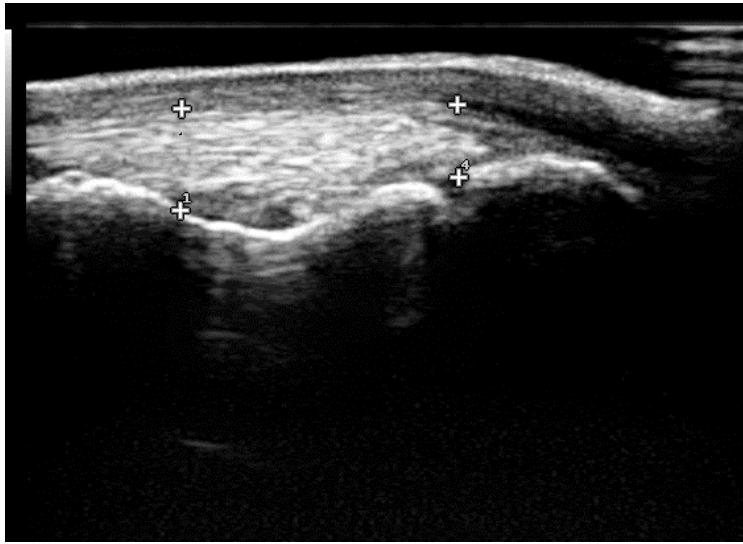
VCI – FMVZ, USP



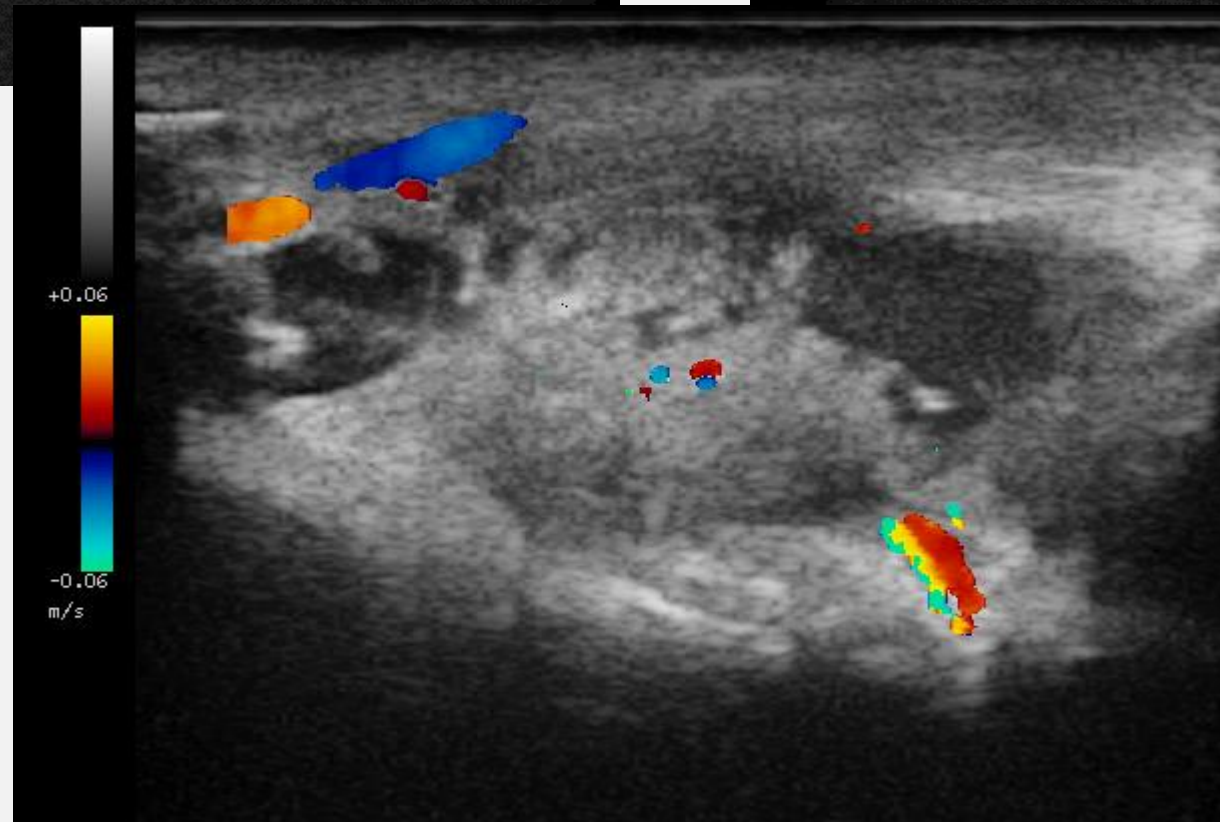
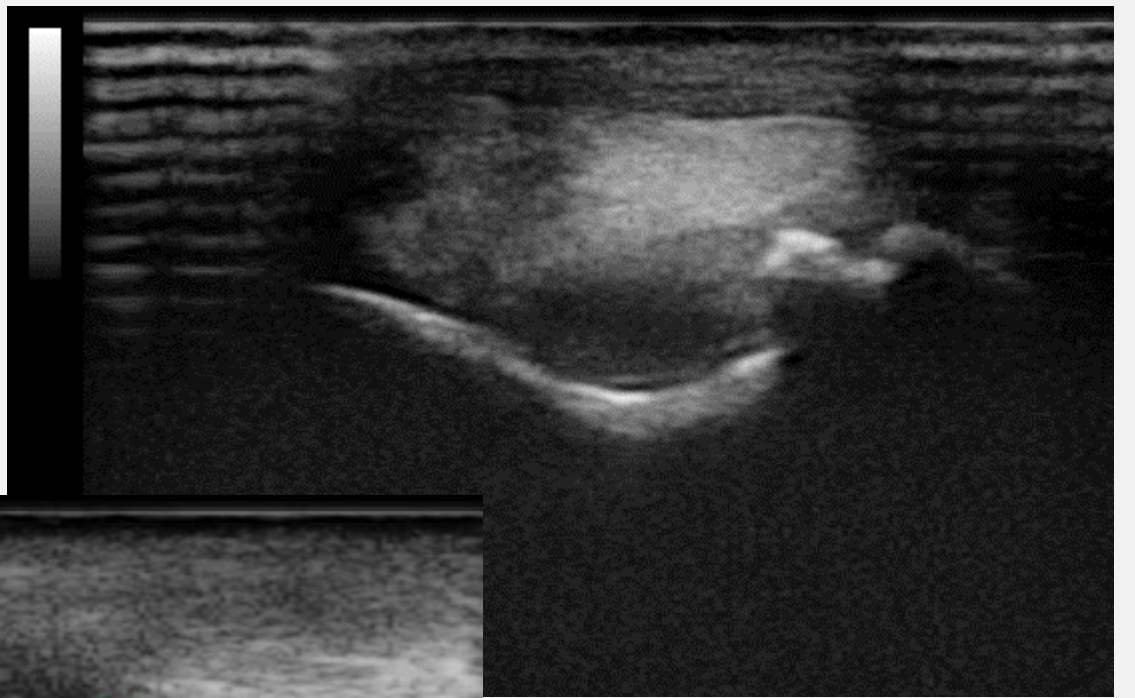
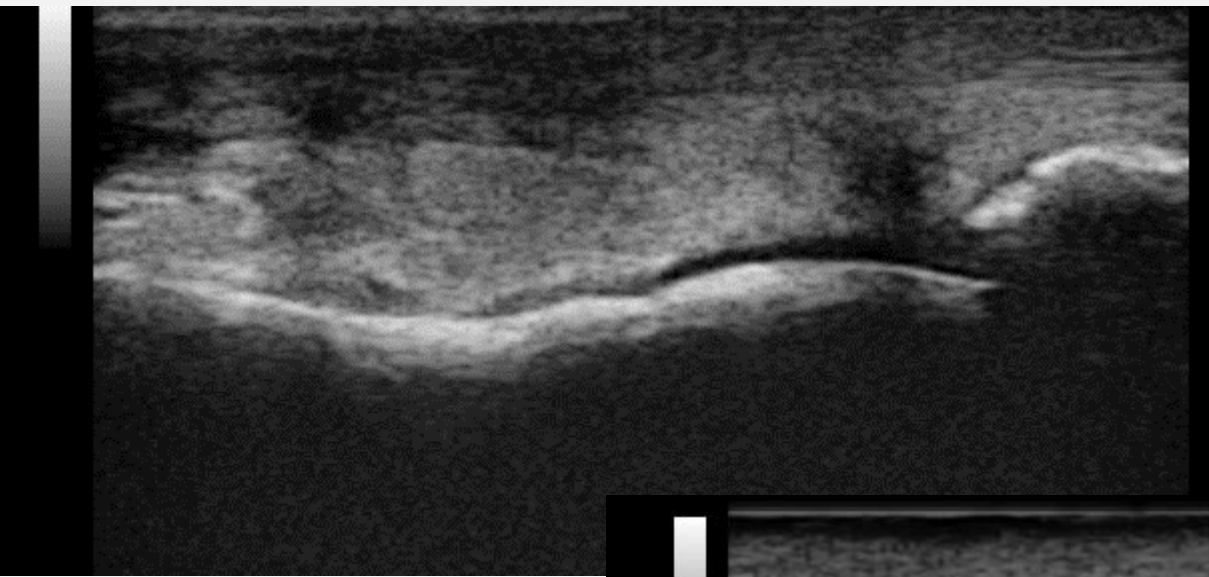
VCI – FMVZ, USP



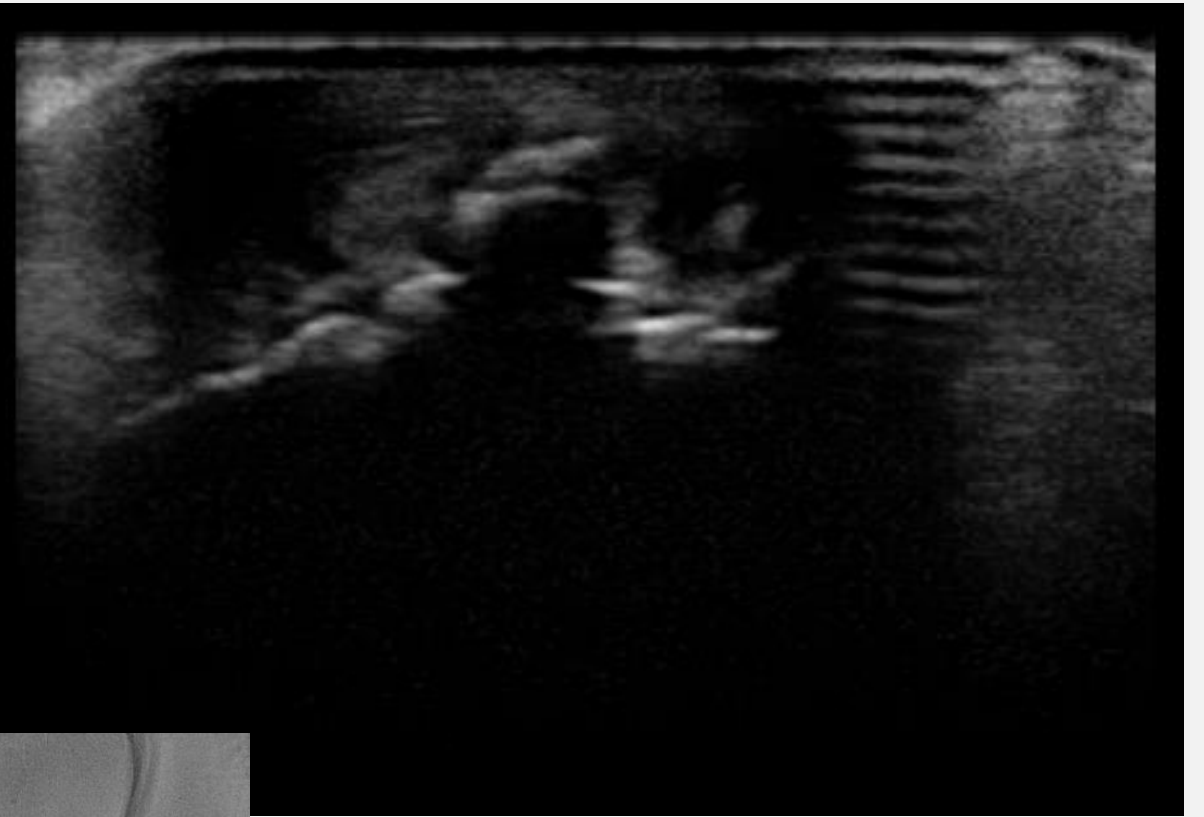
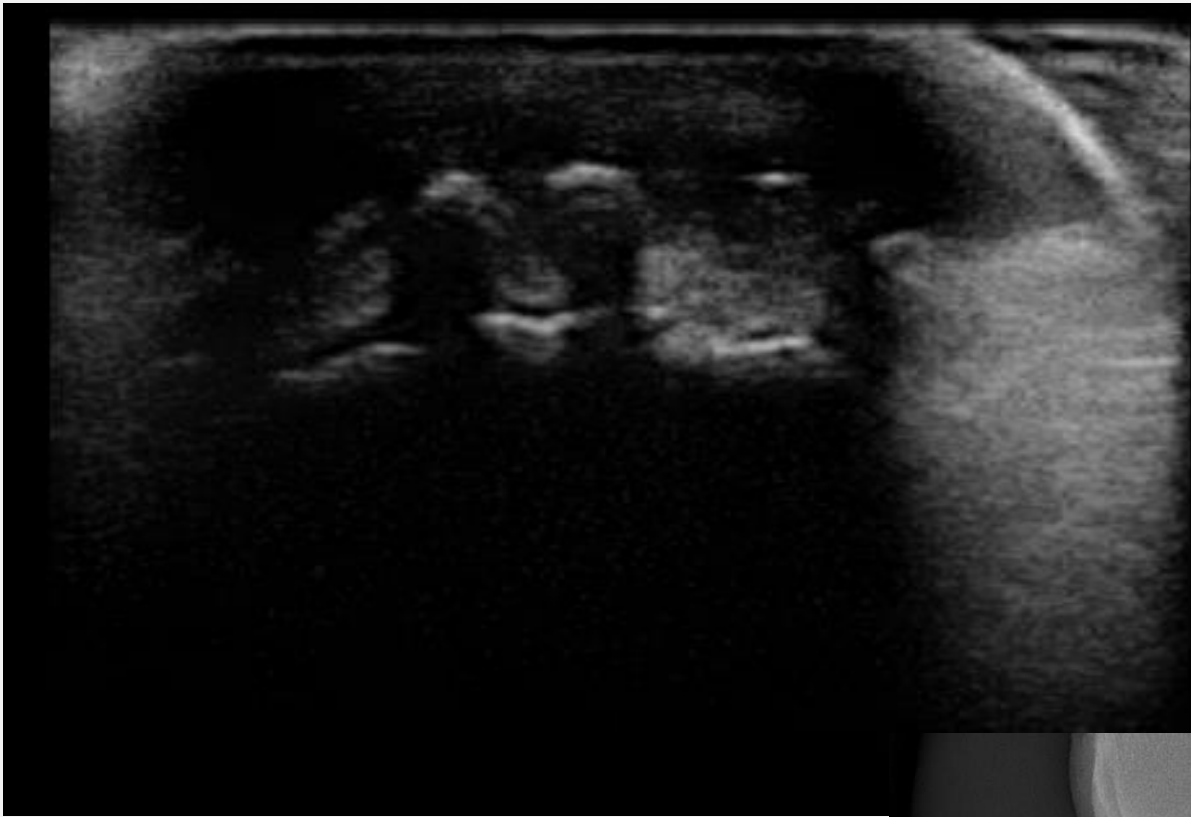
VCI – FMVZ, USP



VCI – FMVZ, USP



Yamada, 2019

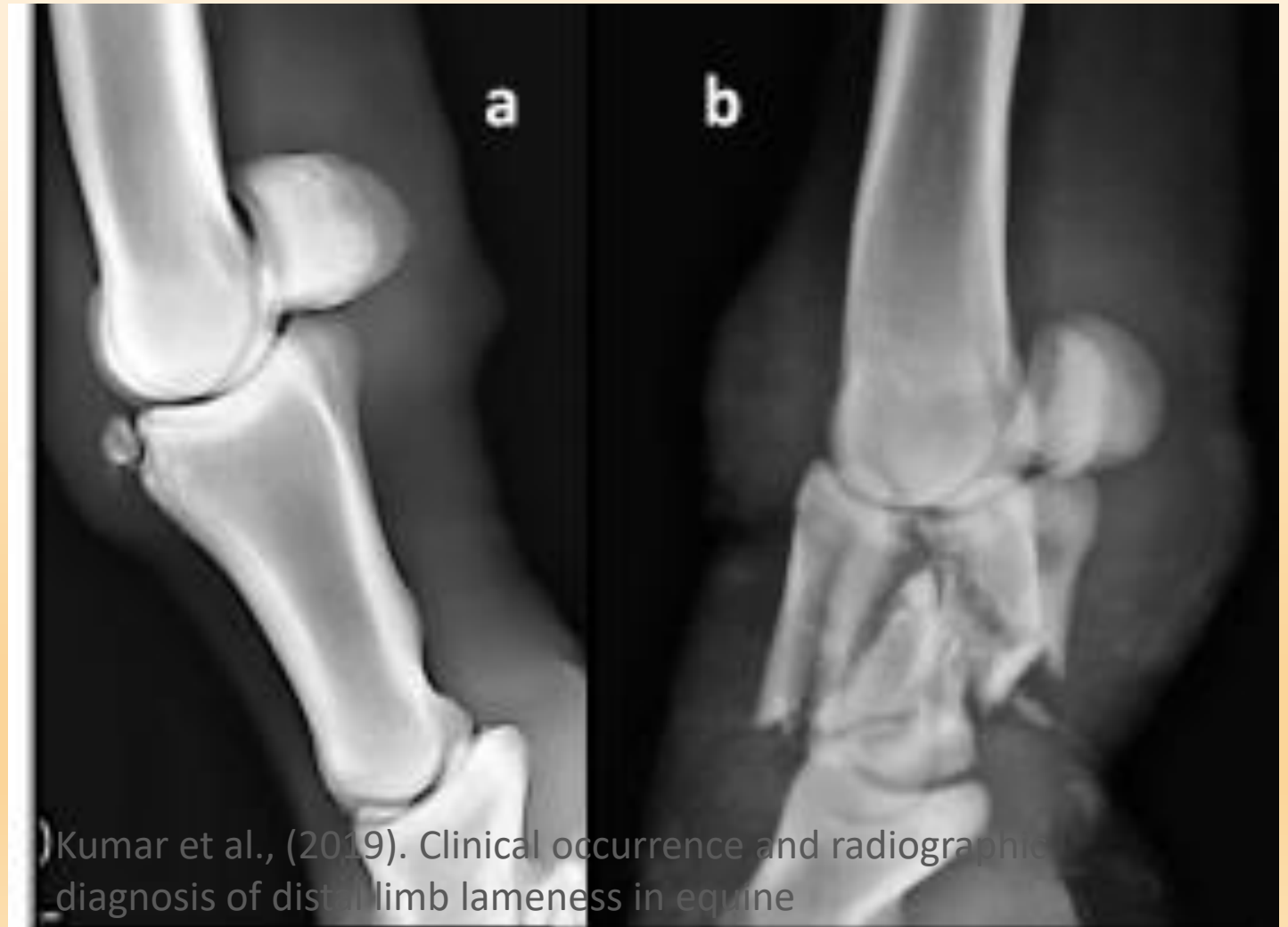






McIlwraith, C. W. (2019). Fractures and Luxations of the Fetlock. *Equine Fracture Repair*, 320-340.

FALANGES E INTERFALANGEANAS





Proximal phalanx

1 Eminences for attachment of collateral ligaments of metacarpophalangeal joint

2 Eminence for attachment of digital extensor tendons

3 Body

4 Eminences for attachment of collateral ligaments of proximal interphalangeal joint

5 Distal articular surface

Middle phalanx

6 Proximal articular surface

7 Extensor process

8 Distal articular surface

Distal sesamoid (navicular) bone

9 Articular surface

Distal phalanx

10 Medial palmar process

11 Lateral palmar process

12 Medial parietal sulcus

13 Lateral parietal sulcus

14 Articular surface

15 Extensor process

16 Parietal surface

17 Crena

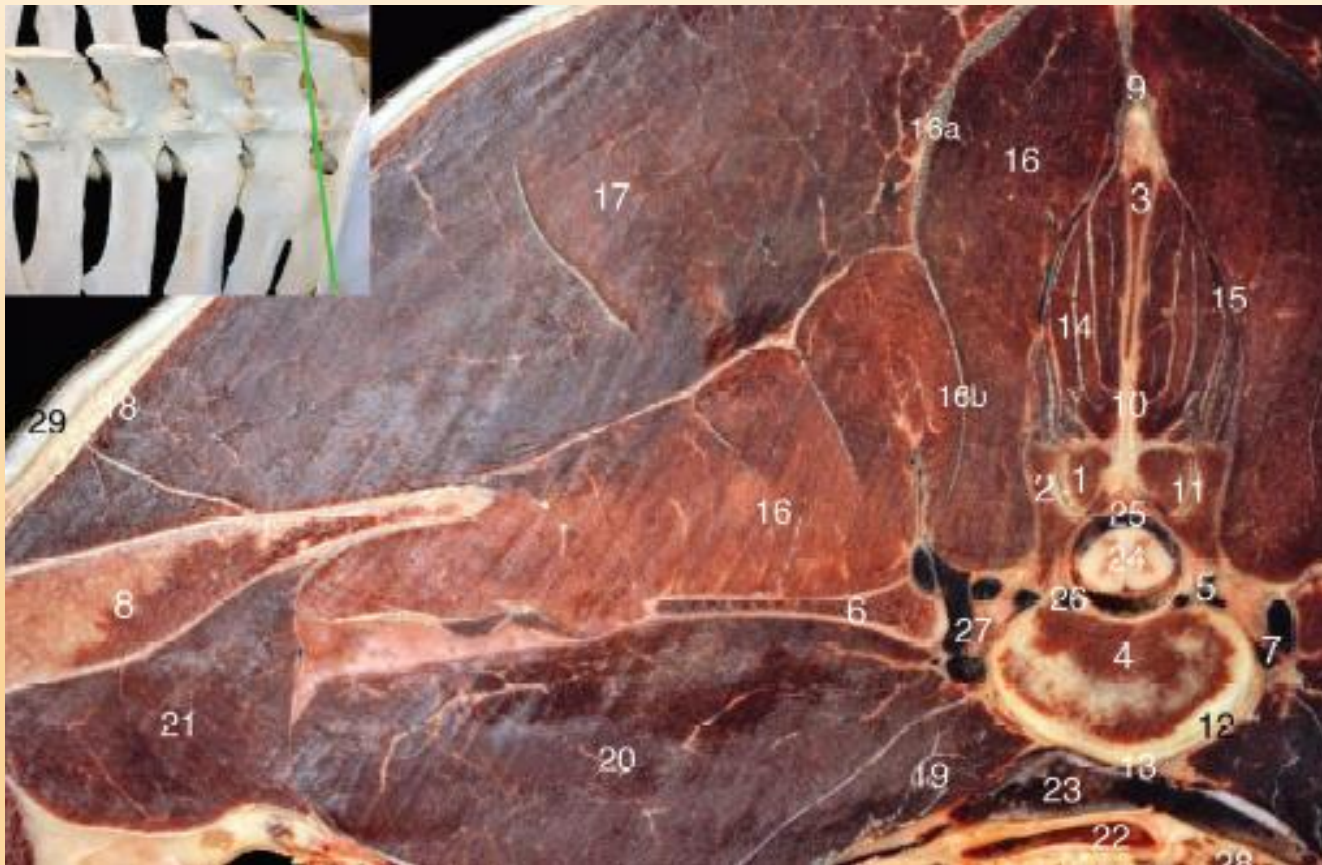
18 Solar border



MEMBRO PÉLVICO



CONTRIBUINTES AXIAIS PARA A LOCOMOÇÃO



- 11- Articular process joint between L5 and L6;
- 12- Intervertebral disc;
- 14- Multifidus muscle;
- 17- Gluteus medius muscle;
- 19- Psoas minor muscle;
- 20- Psoas major muscle;

Denoix, J. M. (2019). *Essentials of Clinical Anatomy of the Equine Locomotor System*

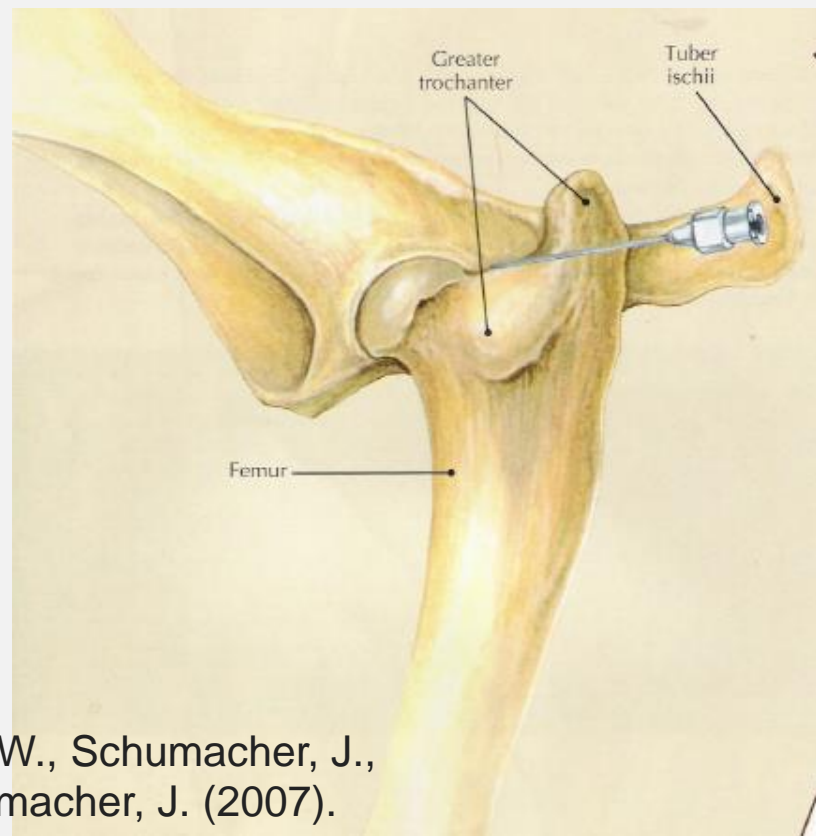
CÍNGULO PÉLVICO



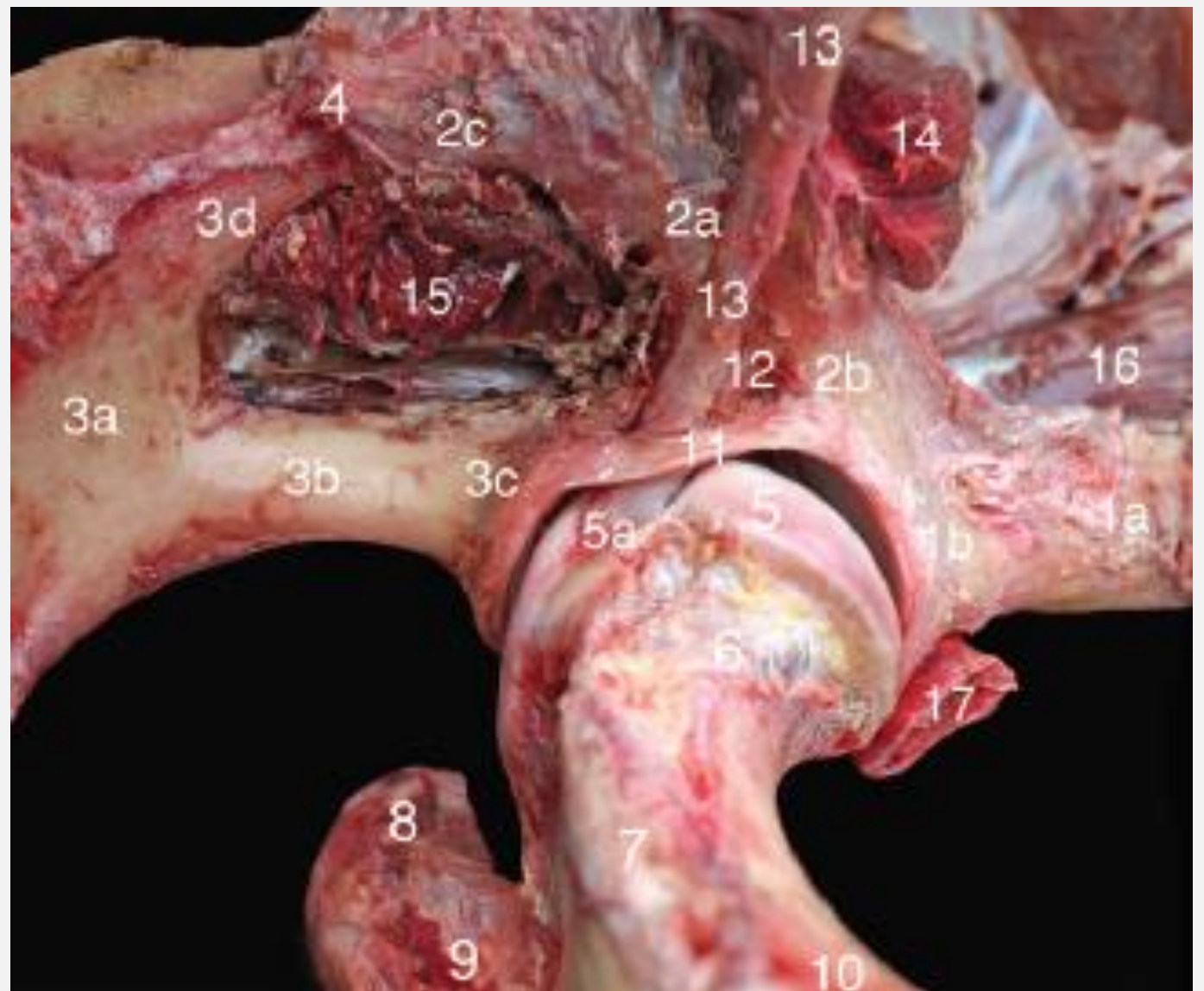
1- Sacral tuber; 2- Tuber coxae; 3a- Tuber ischiadicum, 4a- Greater trochanter; 5- Third trochanter; 13- Sacrum



Denoix, J. M. (2019). *Essentials of Clinical Anatomy of the Equine Locomotor System*



Moyer, W., Schumacher, J.,
& Schumacher, J. (2007).

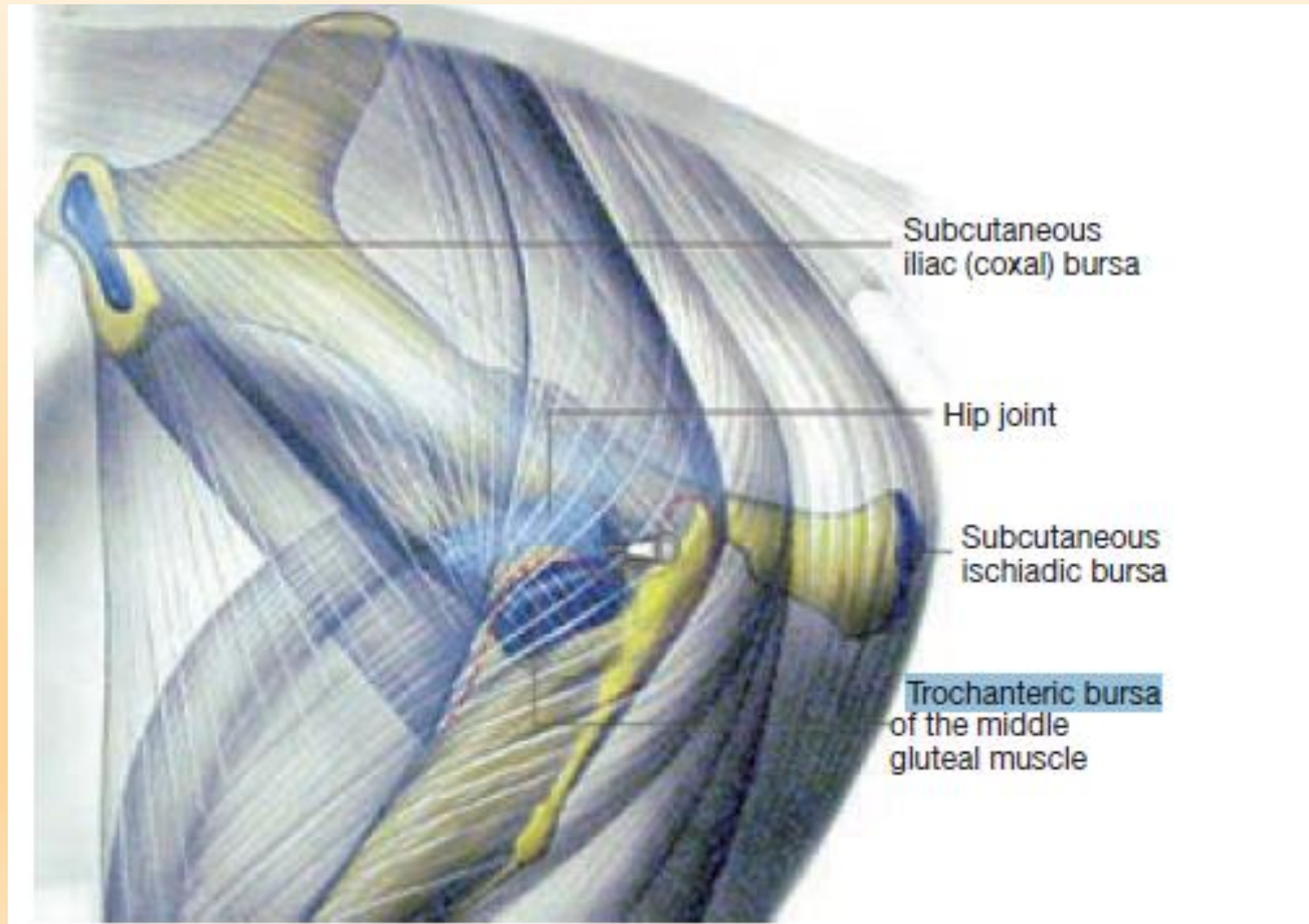


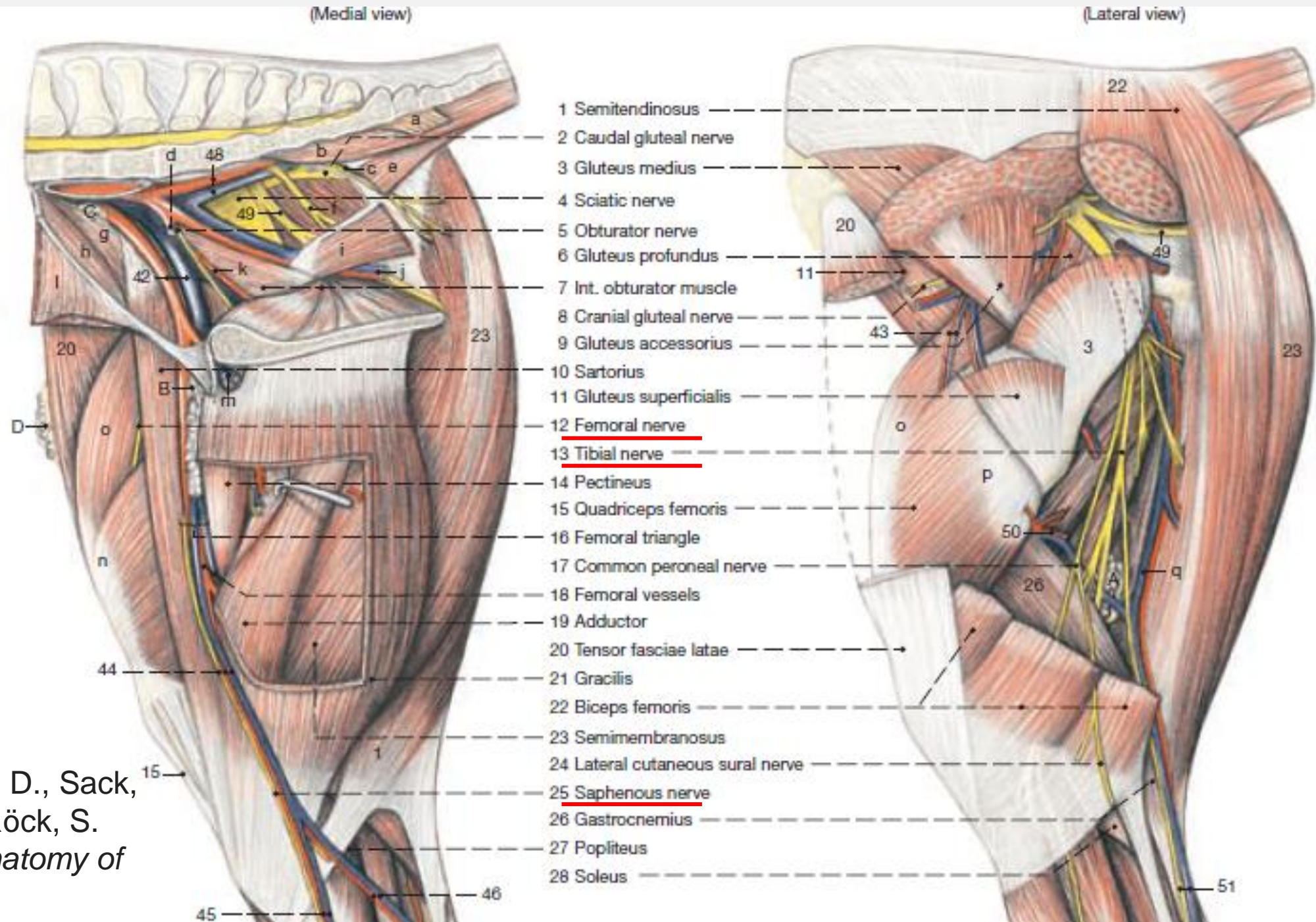
1- Left ilium, 3- Left ischium, 4- Pelvic
symphysis; **5- Femoral head, 5a- Fovea**
capitis; 6- Femoral neck; 7- Lesser
trochanter;
8- Greater trochanter; 9- Trochanteric
fossa; 10- Body of the femur.

Denoix, J. M. (2019). *Essentials of
Clinical Anatomy of the Equine
Locomotor System*

FÊMUR

- Fraturas
- Paralisia do nervo femoral
- Bursite trocantérica
 - Claudicação do membro pélvico
 - Traumas





Budras, K. D., Sack, W. O., & Röck, S. (2012). *Anatomy of the Horse*

FEMOROTIBIOPATELAR

<https://www.ivalalearn.com/>

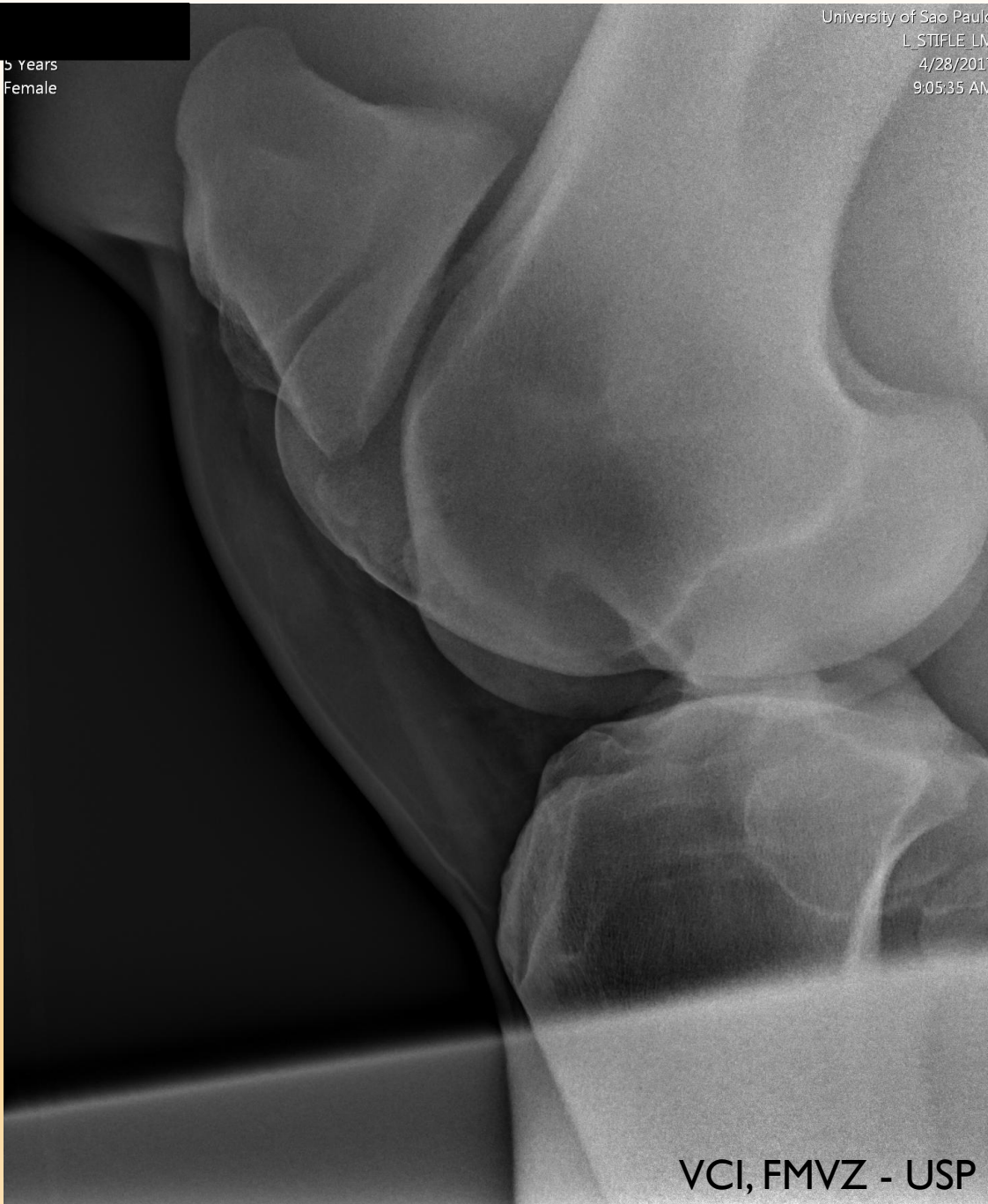
EQUINE STIFLE JOINT (LEFT)



Cistos
OCD
Fixação dorsal da
patela

5 Years
Female

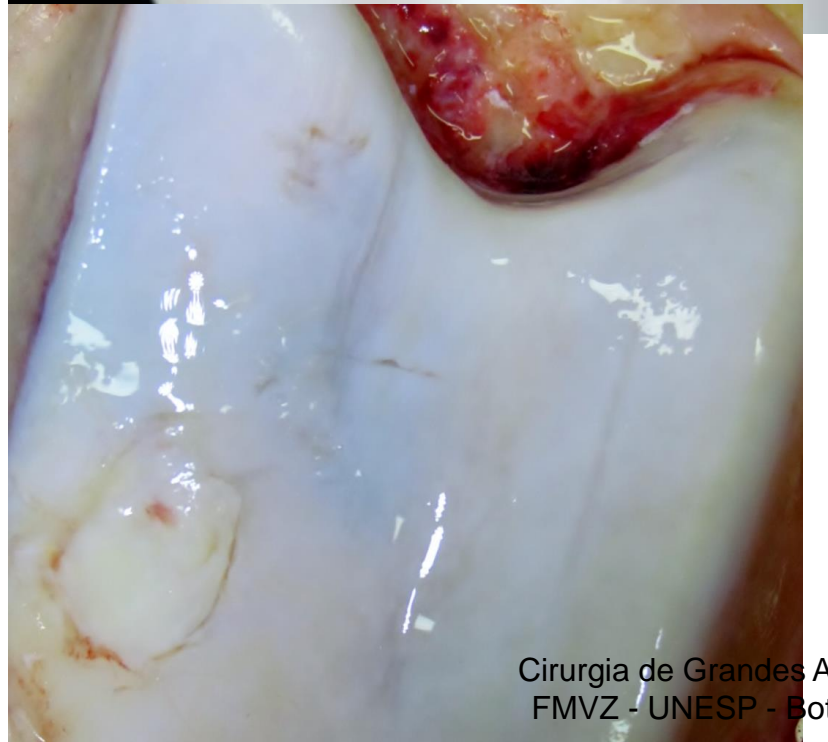
University of Sao Paulo
L STIFLE LM
4/28/2017
9:05:35 AM

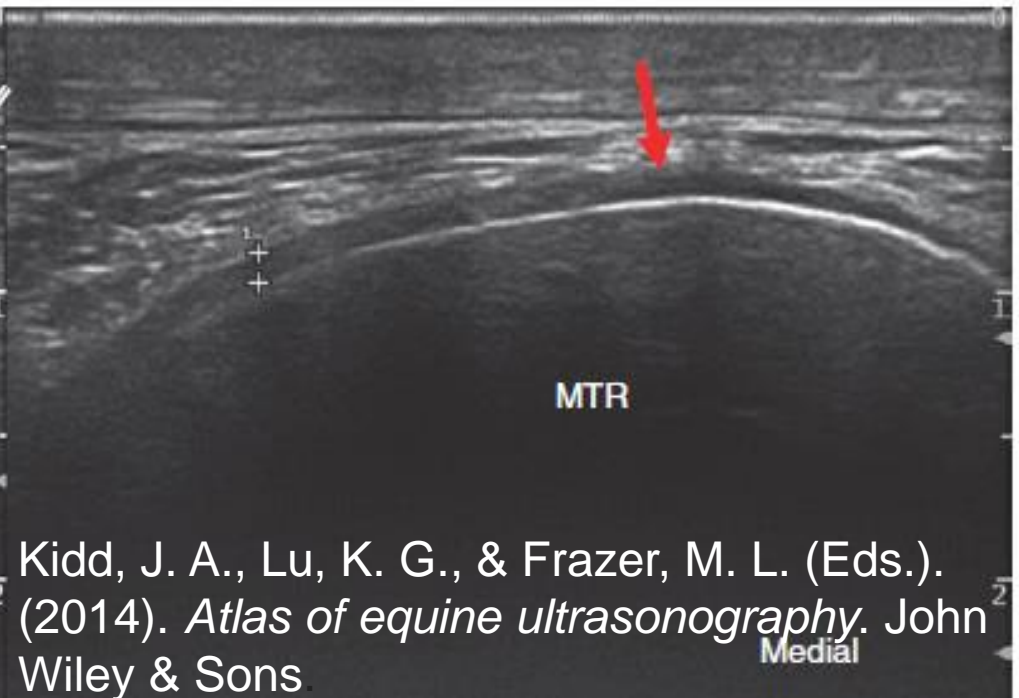
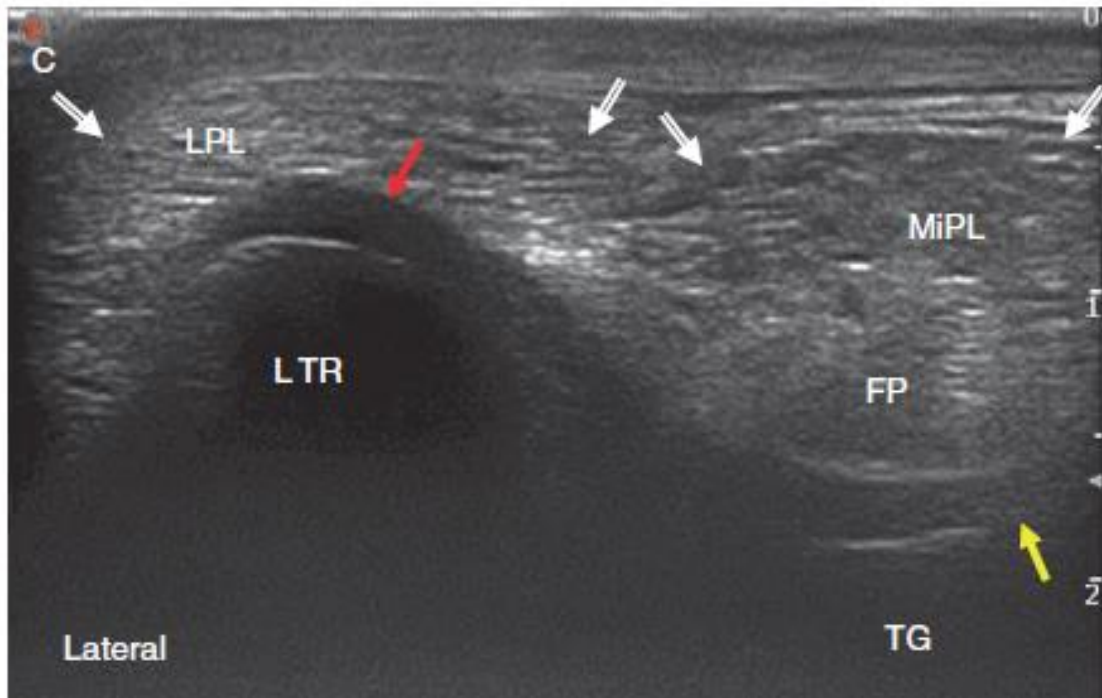
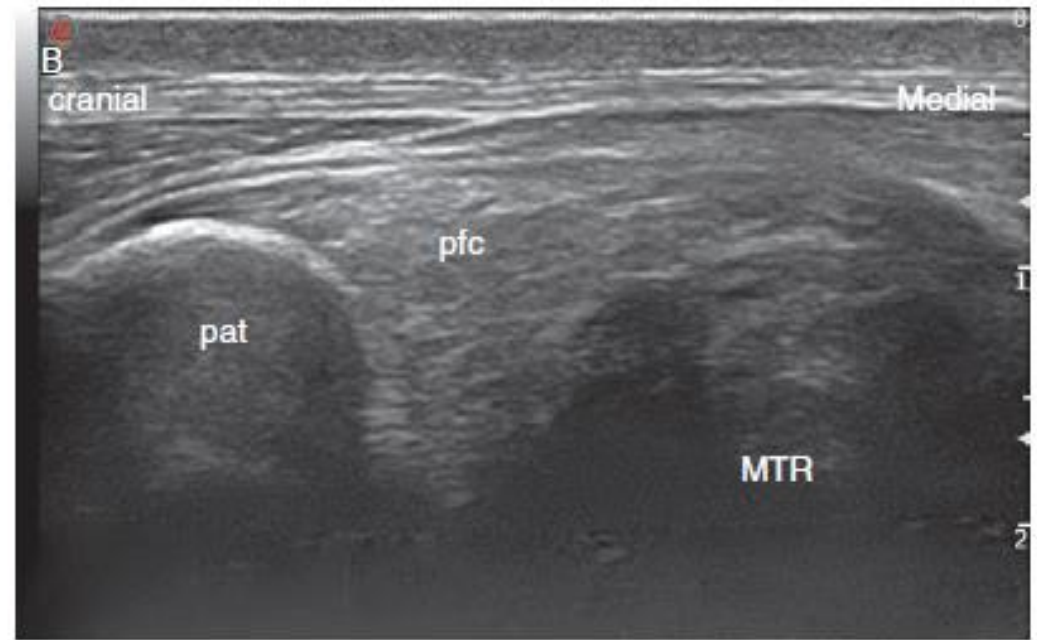
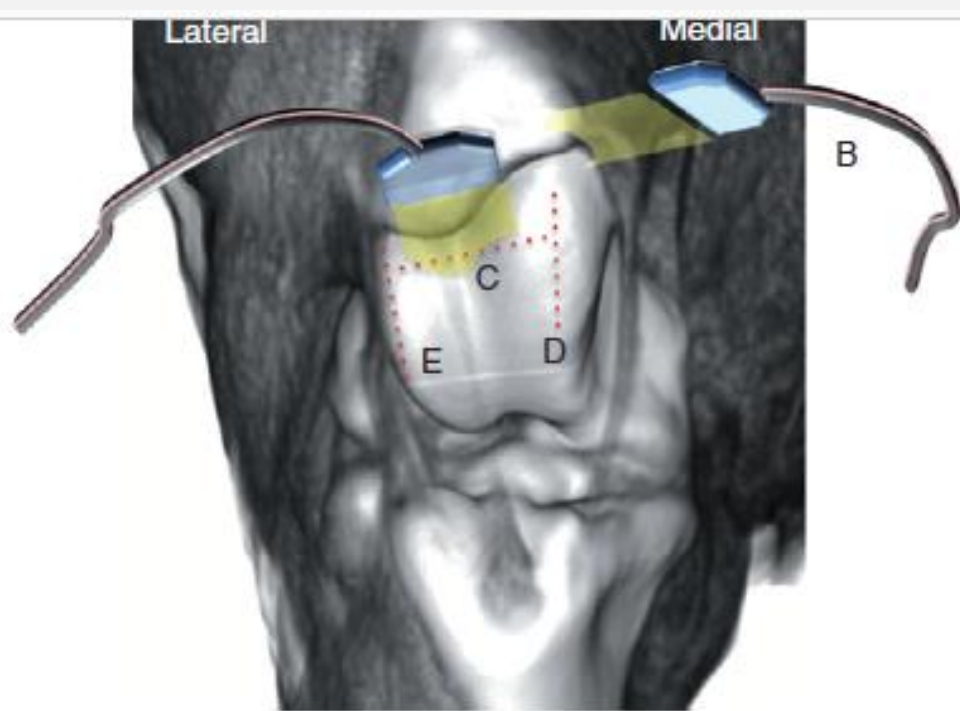


FEMOROPATELAR FEMOROTIBIAL

Cápsula articular ampla
Sacos sinoviais distintos, mas
pode haver comunicação entre
os compartimentos
femoropatelaes e femorotibiais

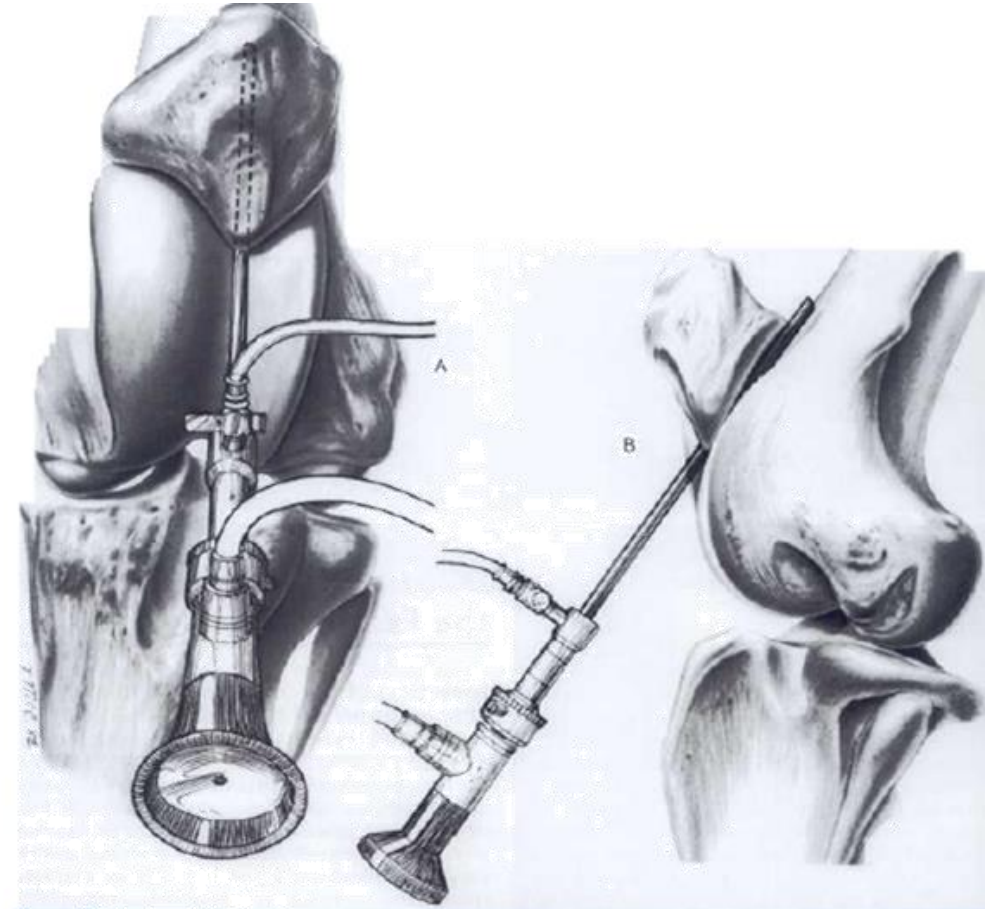
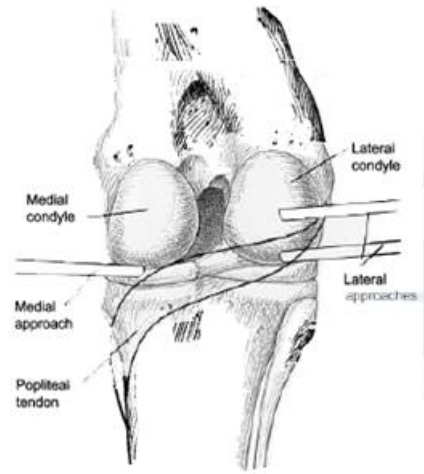
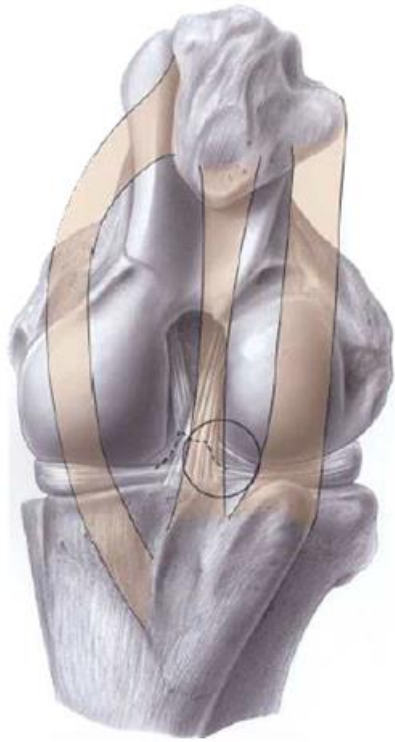
Femoropatelar cranial (corpo) e
lateral
Femorotibial Medial e Lateral
(distintos)





Kidd, J. A., Lu, K. G., & Frazer, M. L. (Eds.). (2014). *Atlas of equine ultrasonography*. John Wiley & Sons

FEMOROPATELAR FEMOROTIBIAL

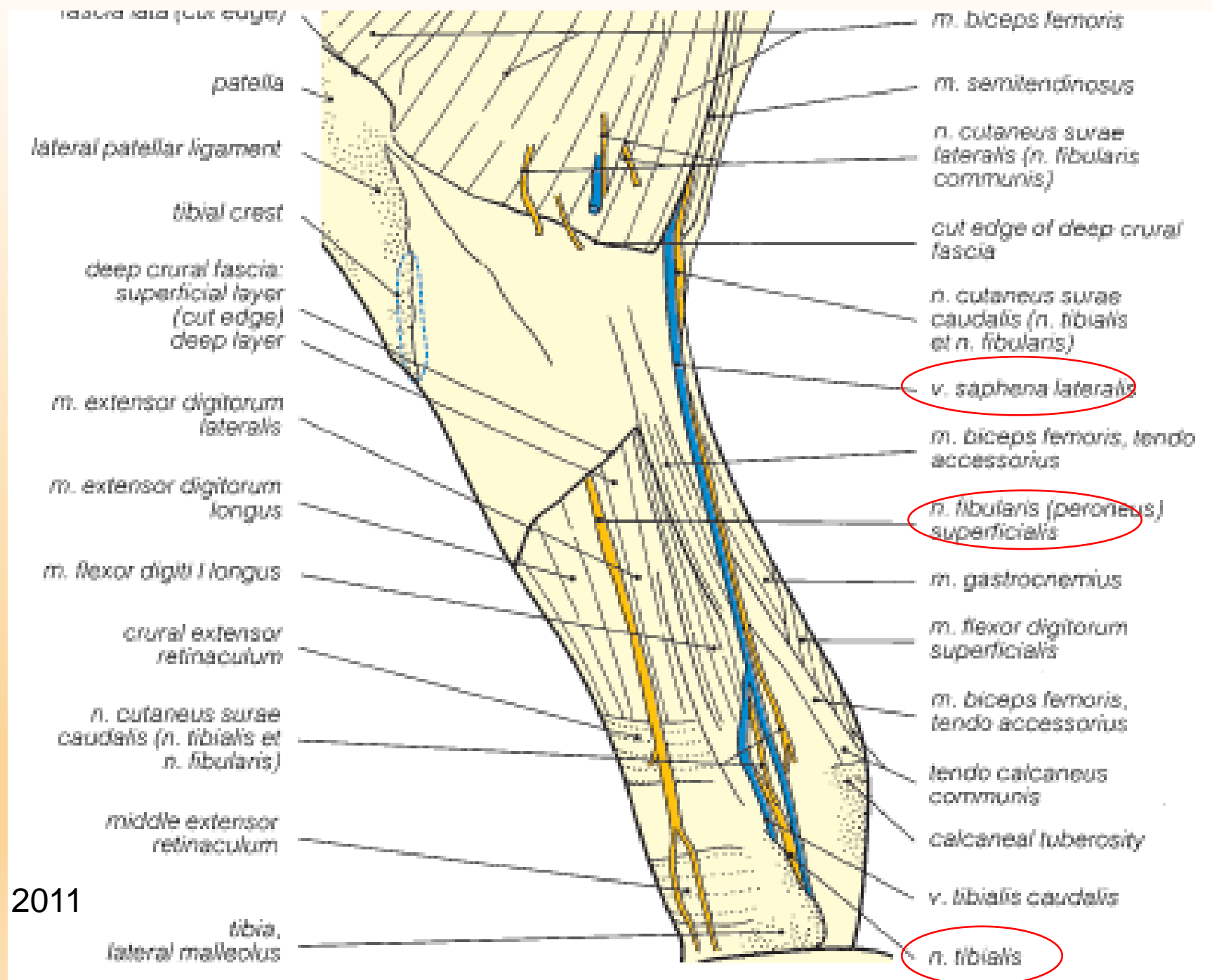


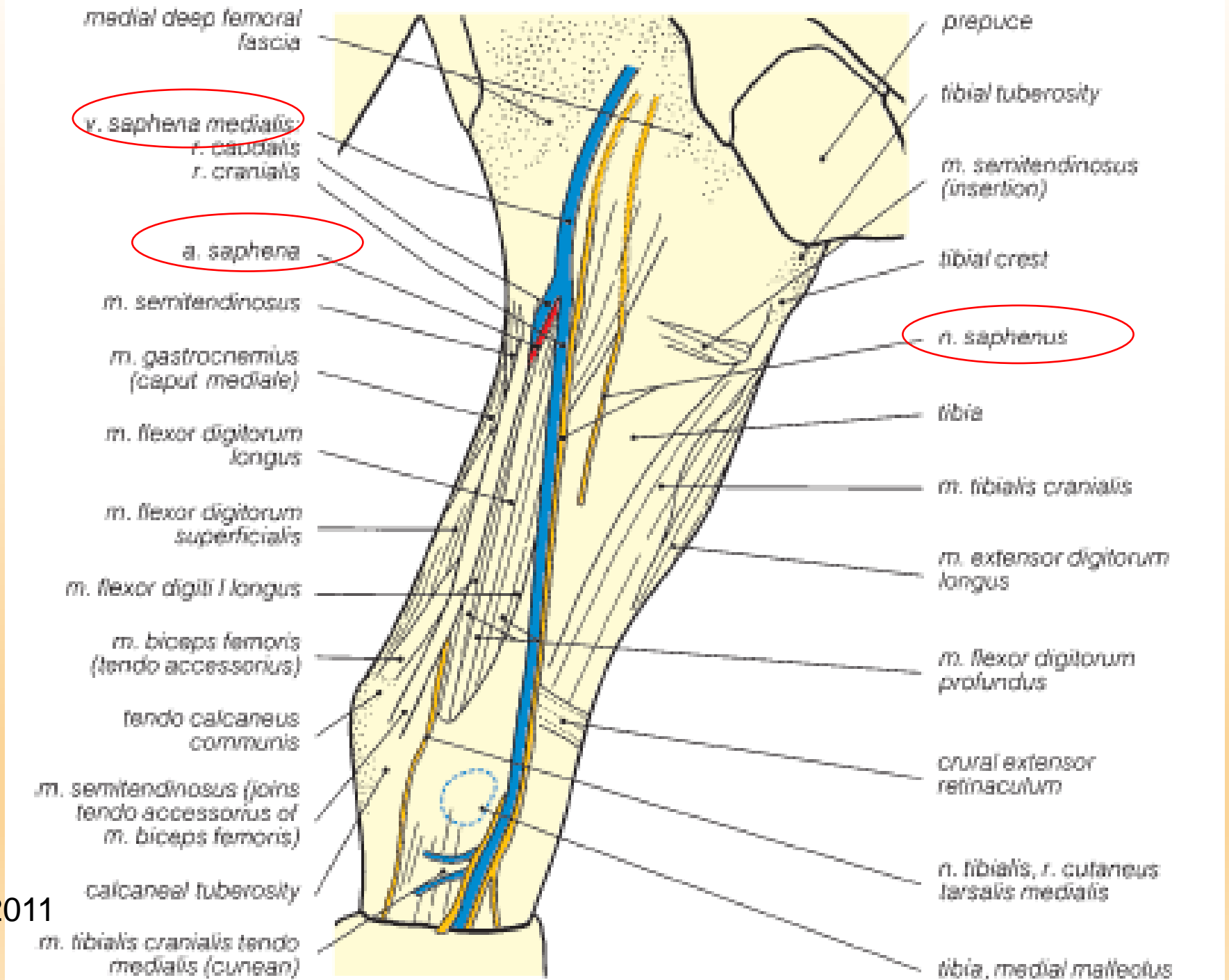
TÍBIA/FÍBULA

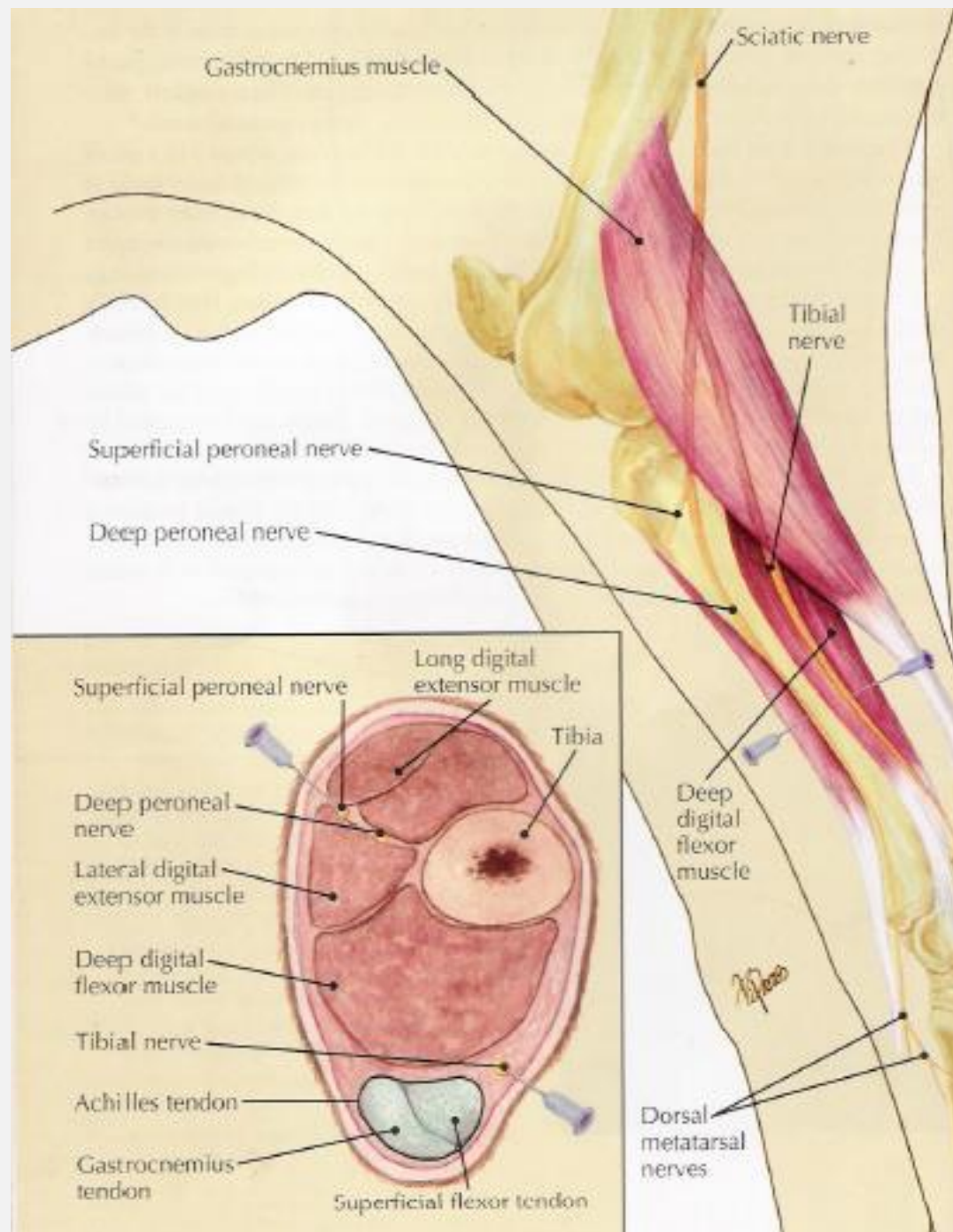
- Fraturas
- Miopatia fibrótica ossificante



1. Intercondylar eminence
2. Tibial tuberosity
3. Extensor sulcus
4. Head of fibula
5. Lateral condyle
6. Cranial border
7. Shaft of fibula
8. Interosseous space
9. Groove for tendon of M. extensor digitorum lateralis
10. Lateral malleolus







Moyer, W., Schumacher, J., & Schumacher, J. (2007). A Guide to Equine Joint Injection and Regional Anesthesia.

OSSOS DO TARSO



- 1 Calcaneal tuber
- 2 Calcaneus
- 3 Talus
- 4 Distal tuberosity of talus
- 5 Trochlea
- 6 Central tarsal bone
- 7 Third tarsal bone
- 8 Vascular canal
- 9 Fourth tarsal bone



- 1 Calcaneal tuber
- 2 Calcaneus
- 3 Tarsal groove for tendon of M. flexor digitorum profundus
- 4 Talus
- 5 Sustentaculum tali
- 6 Central tarsal bone
- 7 Fourth tarsal bone
- 8 Vascular canal
- 9 First and second tarsal bones (fused)



Osteoartrite

OCD

Cistos

Fragmentos/Fraturas

Fratura do Calcâneo

Infiltrações/Artroscopia

Cavalo de apartação, tambor e baliza

Articulação tarsocrural - gínglimo (tróclea do talus – tíbia)

Quatro sacos sinoviais

tibiotársico

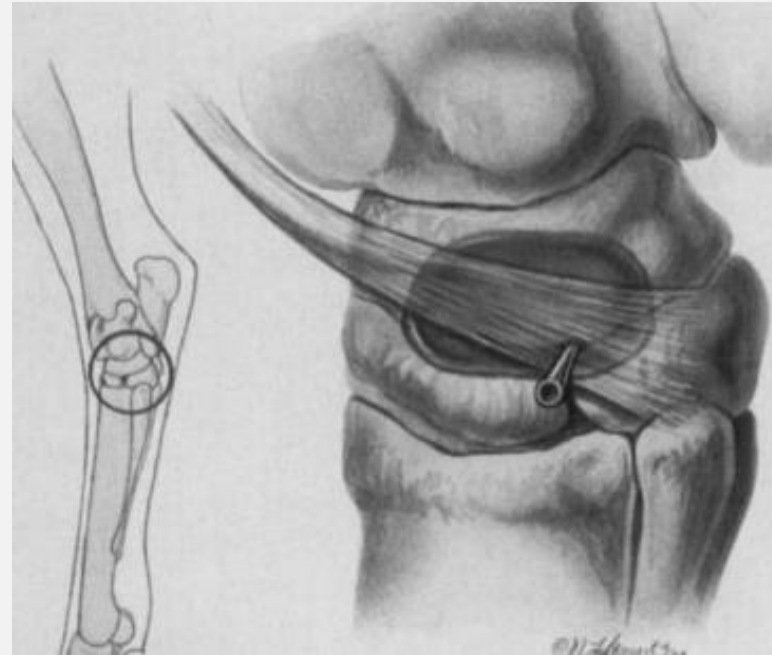
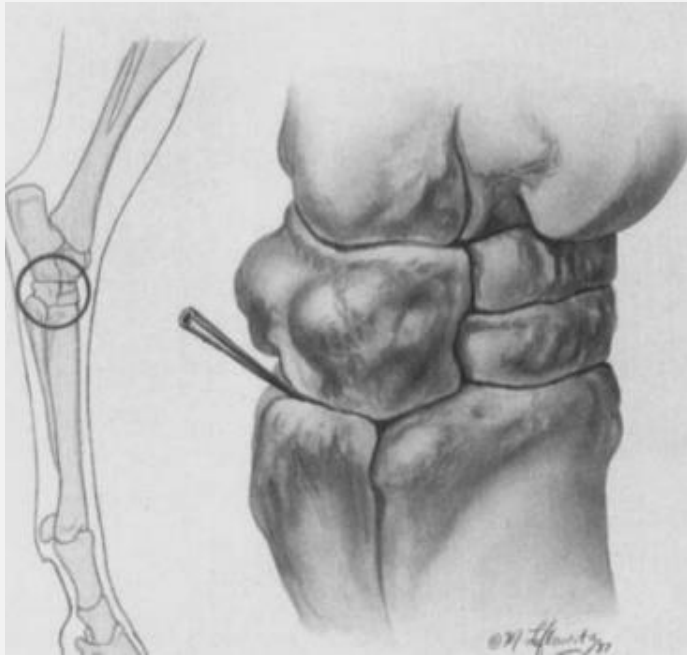
intertársico proximal

intertársico distal

tarsometatarsico

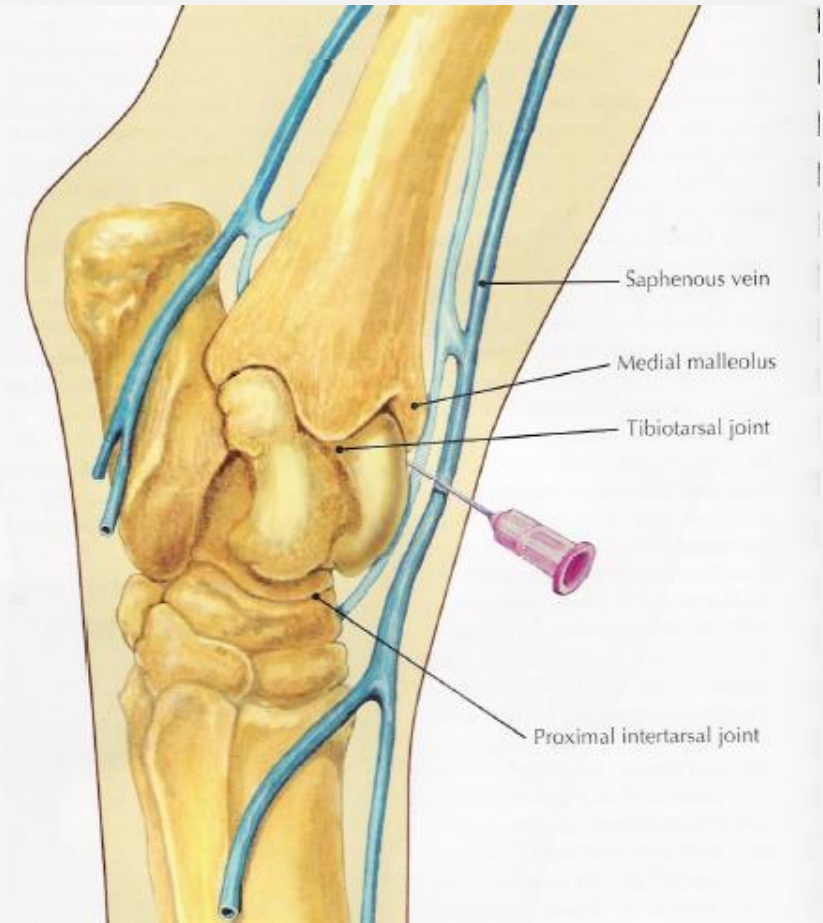


Nixon, A. J. (2019). Fractures and luxations of the hock. *Equine fracture repair*, 613-647.

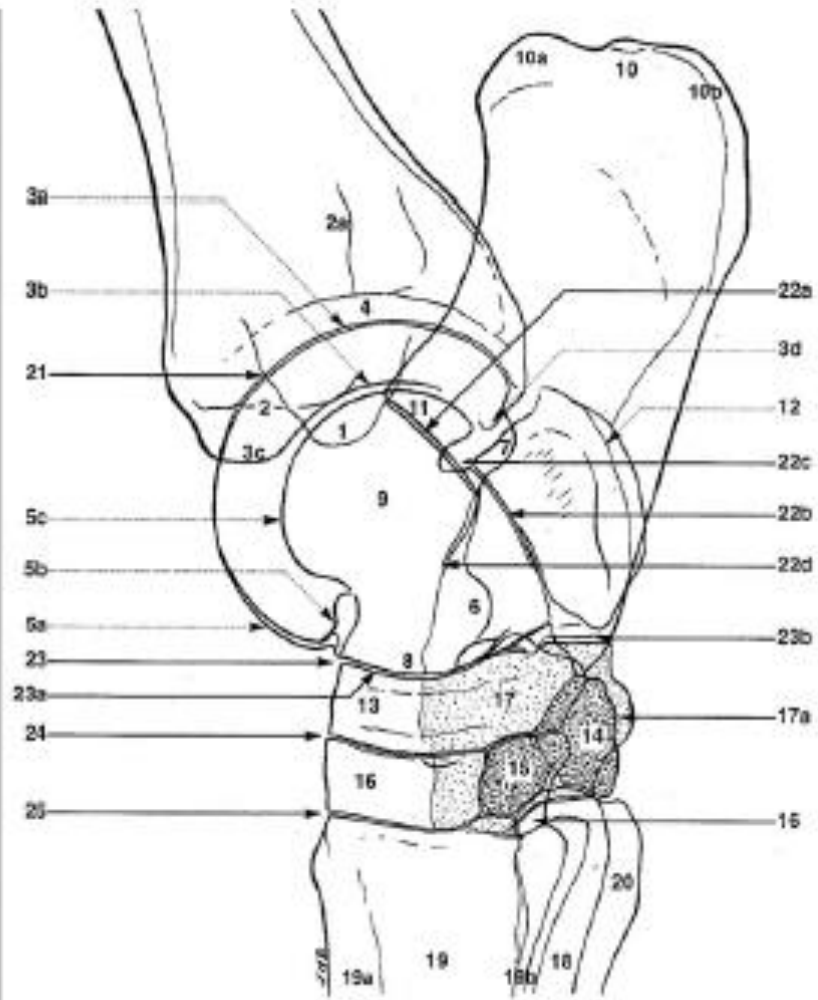


KRAUS-HANSEN, A. E., JANN, H. W., KERR, D. V., & FACKELMAN, G. E. (1992). Arthrographic analysis of communication between the tarsometatarsal and distal intertarsal joints of the horse. *Veterinary Surgery*, 21(2), 139-144.

Tibiotársica comunica com a
intertársica proximal



Moyer, W., Schumacher, J., & Schumacher, J. (2007). *A Guide to Equine Joint Injection and Regional Anesthesia*.



Tibia: 1- Medial malleolus; 2- Lateral malleolus

Talus: 5- Trochlea of the talus, 5a- medial trochlear ridge, 5b- lateral trochlear ridge, 5c- intermediate groove; 9- Body of the talus

Calcaneus: 10- Tuber calcanei, 11- Coracoid process; 12- Sustentaculum tali;

Distal tarsus: 13- Central tarsal bone; 14- First tarsal bone; 15- Second tarsal bone; 16- Third tarsal bone; 17- Fourth tarsal bone

Metatarsus: 18- Second metatarsal bone; 19- Third metatarsal bone, 20- Fourth metatarsal bone

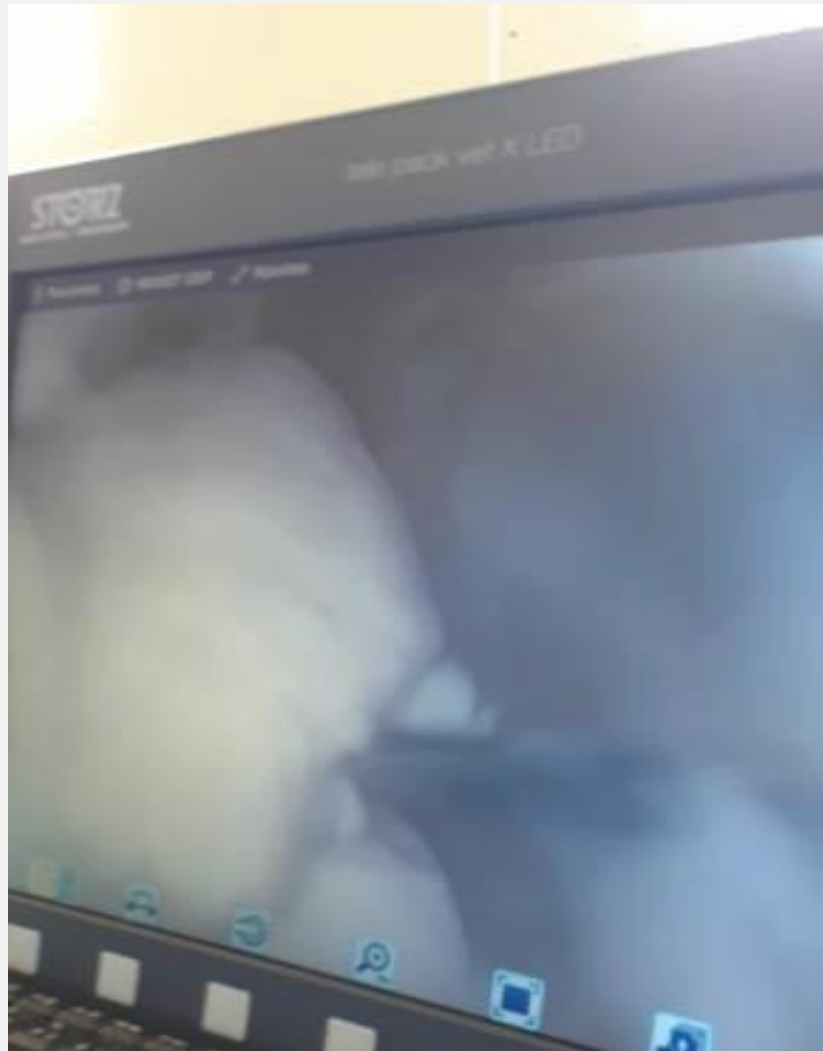
4 Lateromedial radiographic view of the left tarsus.



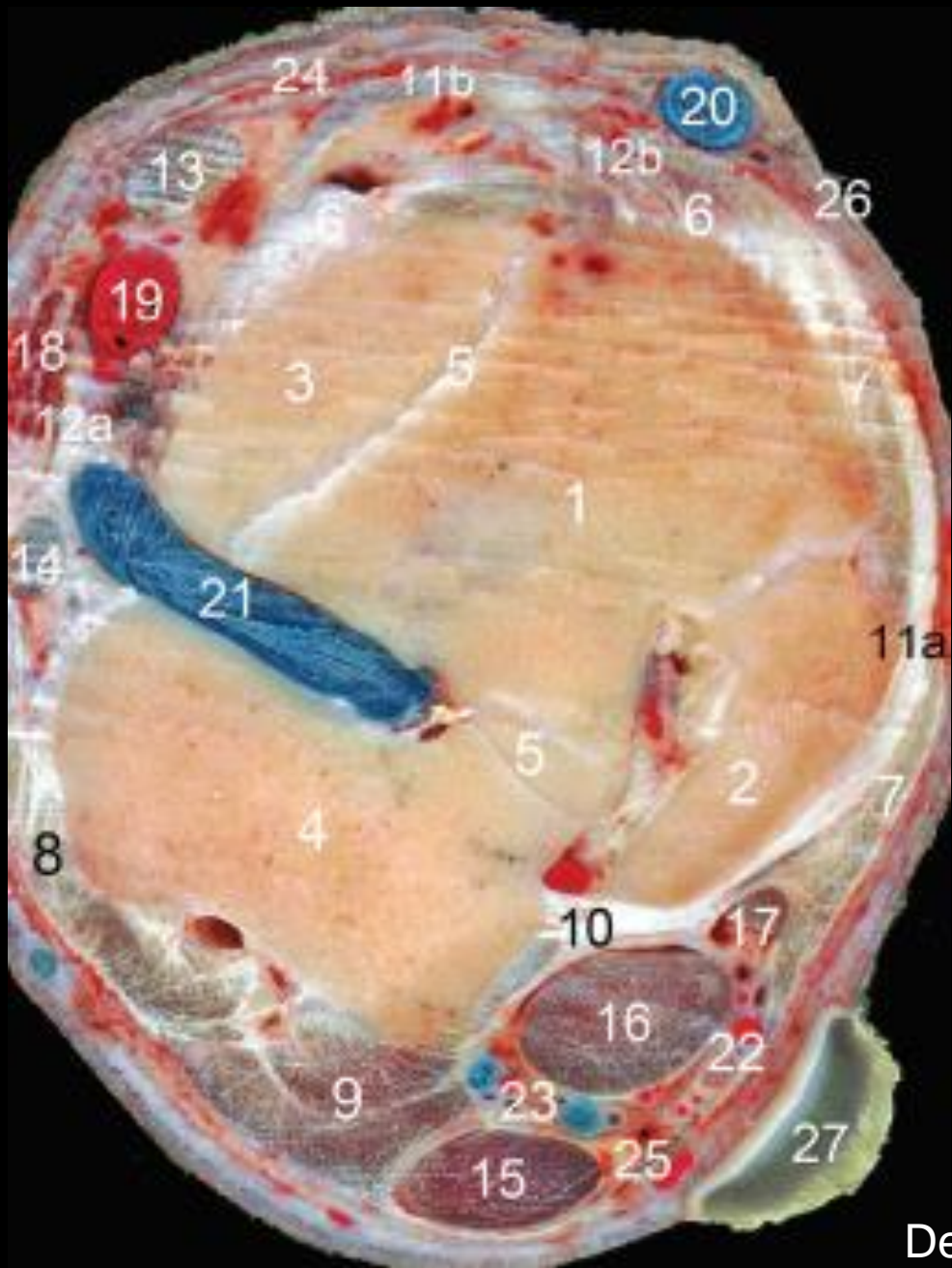
Colega veterinário



VCI, FMVZ - USP



VCI, FMVZ - USP



- 20- Medial saphenous vein (cranial root)**
- 22- Medial plantar artery and nerve;**
- 23- Lateral plantar artery, vein and nerve**

Denoix, J. M. (2019). *Essentials of Clinical Anatomy of the Equine Locomotor System*

BURSA CALCÂNEO

