

MSK SP5 23 Exam Questions & Answers

Question 1

Correct

Mark 1.00 out of 1.00

Flag question

Edit question

This structure is used to hold tendons in place so that they function properly:

- ☐ a. Dermis
- ☒ b. Retinaculum ✓
- ☐ c. Paratenon
- ☐ d. Fascia

Your answer is correct.

Question 2

Correct

Mark 1.00 out of 1.00

Flag question

Edit question

Umbilical, epigastric, inguinal and femoral are all types of hernias.

- ☒ a. True ✓
- ☐ b. False

Your answer is correct.

Question 3

Correct

Mark 1.00 out of 1.00

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Edit question

The Rotator Interval:

- ☐ a. Is bounded by the edges of the supraspinatus tendon and subscapularis tendon.
- ☐ b. Contains the biceps tendon.
- ☐ c. Has the fibres of the coracohumeral ligament as its roof.
- ☒ d. All of the responses are correct. ✓

Your answer is correct.

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Question 4

Correct

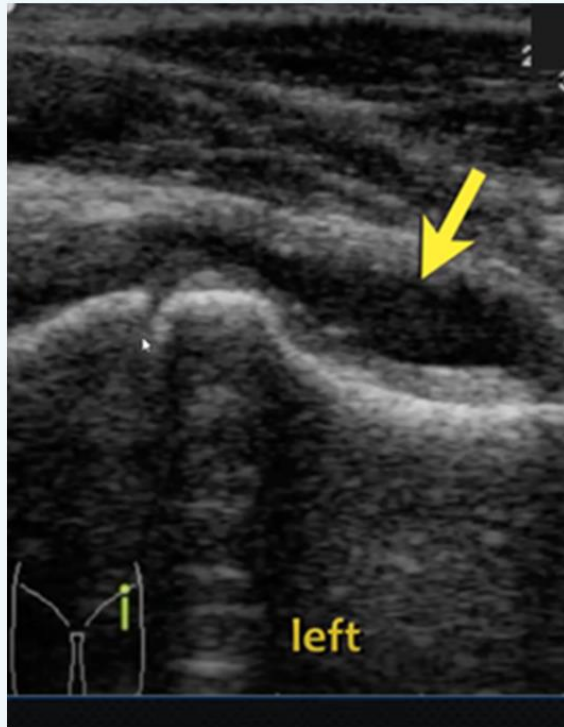
Mark 1.00 out of 1.00

Flag question

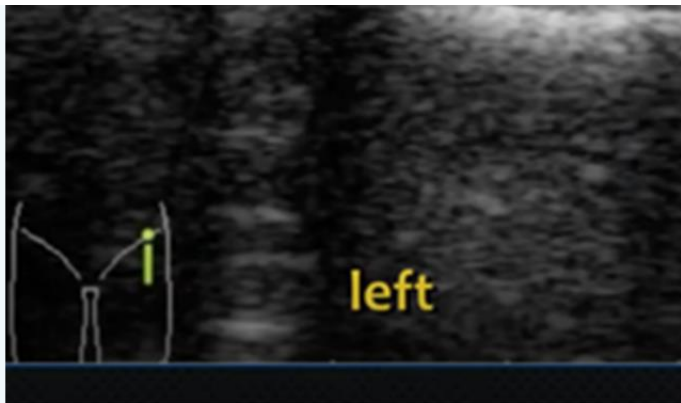
Edit question

The following image was taken of your 14 year old patient.

What area of anatomy is being imaged and is this image normal or abnormal?



- ☒ a. This is an image of the anterior hip and is abnormal. ✓
- ☐ b. This is an image of the anterior hip and is normal.



- ☒ a. This is an image of the anterior hip and is abnormal. ✓
- ☐ b. This is an image of the anterior hip and is normal.
- ☐ c. This is an image of the lateral hip and is abnormal.
- ☐ d. This is an image of the lateral hip and is normal.

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Question 5

Correct

Mark 1.00 out of 1.00

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The normal Achilles tendon is surrounded by a:

Select one:

- ☒ a. Paratenon ✓
- ☐ b. Synovial Sheath
- ☐ c. Accessory Tendon
- ☐ d. Bone
- ☐ e. Fluid Pocket

Your answer is correct.

Question 6

Correct

Mark 1.00 out of 1.00

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Your patient arrives for an ultrasound of a soft tissue lump on their abdomen, it is not painful and does not seem to be increasing in size.

While scanning you take the following image.

Given the patient history and ultrasound appearances, your provisional diagnosis is:



- ☒ a. A Lipoma. ✓
- ☐ b. A Foreign Body.
- ☐ c. A Sebaceous Cyst.
- ☐ d. A Melanoma.
- ☐ e. A Schwannoma.

Your answer is correct.

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Question 7

Correct

Mark 1.00 out of 1.00

Flag question

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Does the ultrasound image correspond to the probe position in the images below?



Select one:

☒ True ✓

☐ False

Question 8

Correct

Mark 1.00 out of 1.00

Flag question

Edit question

Direct inguinal hernias occur lateral to the inferior epigastric vessels.

☐ a. True

☒ b. False ✓

Your answer is correct.

Question 9

Correct

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Edit question

A foreign body can sometimes be surrounded by hypoechoic tissue.

☒ a. True ✓

☐ b. False

Your answer is correct.

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Question **10**

Correct

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Edit question

A patient who is symptomatic for Carpal Tunnel Syndrome will often demonstrate the following:

- ☒ a. Tingling and numbness in the thumb, pointer and middle fingers. ✓
- ☐ b. Pain in the little finger only.
- ☐ c. Difficulty in straightening their ring finger, particularly in the morning.
- ☐ d. Pain in the wrist region only at night time.
- ☐ e. Weakness and pain in the forearm that does not extend into the fingers.

Your answer is correct.

Question **11**

Correct

Mark 1.00 out of 1.00

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Edit question

Which of these Ligaments is **NOT** assessed during a routine Ankle Ultrasound examination?

Select one:

- ☒ a. Coraco-Acromial Ligament ✓
- ☐ b. Anterior Talo-Fibular Ligament
- ☐ c. Anterior Tibio-Fibular Ligament
- ☐ d. Calcaneofibular Ligament
- ☐ e. None of the Given Answers

Your answer is correct.

Question **12**

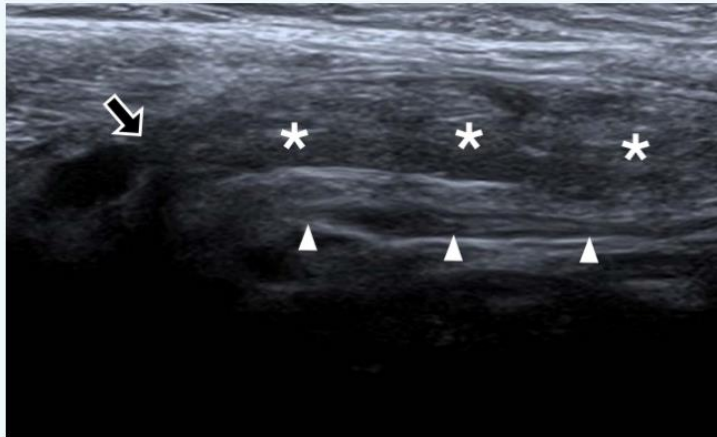
Correct

Mark 1.00 out of 1.00

Flag question

Edit question

This image most likely represents:



- ☐ a. A lipoma.
- ☒ b. An indirect inguinal hernia. ✓
- ☐ c. A direct inguinal hernia.
- ☐ d. A foreign body.

Your answer is correct.

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Question 13

Correct

Mark 1.00 out of 1.00

Flag question

Edit question

Cortico-steroid injections are sometimes contra-indicated in diabetics because:

Select one:

- ☐ a. The steroid acts to destroy body sugars.
- ☒ b. It causes a temporary, but significant, elevation in blood sugar. ✓
- ☐ c. The steroid neutralises insulin.
- ☐ d. None of the above.

The correct answer is: It causes a temporary, but significant, elevation in blood sugar.

Question 14

Correct

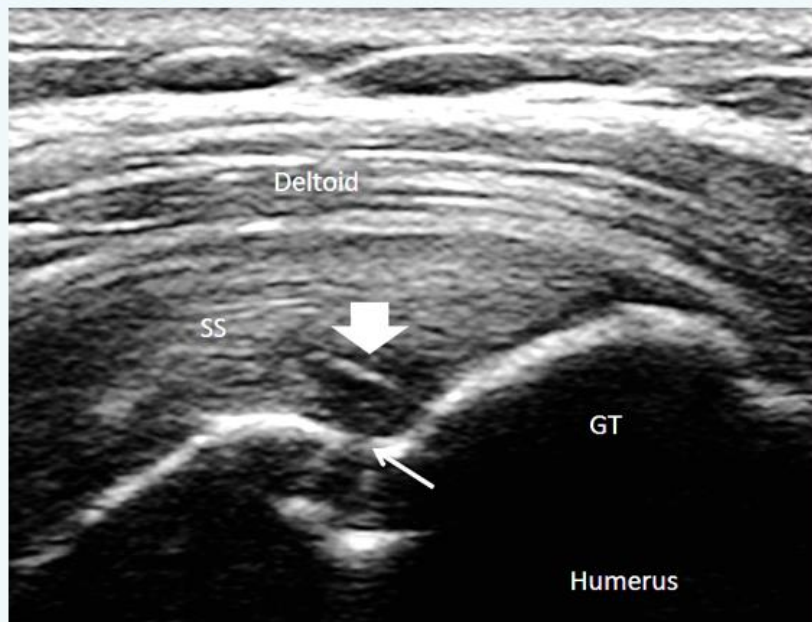
Mark 1.00 out of 1.00

Flag question

Edit question

This image was taken of the supraspinatus tendon during a routine shoulder ultrasound.

This image is demonstrating:



- ☒ a. A partial thickness tear at the articular surface. ✓
- ☐ b. A partial thickness tear at the bursal surface.
- ☐ c. A full thickness, incomplete tear.
- ☐ d. A full thickness, complete tear.
- ☐ e. A normal appearing tendon.

Your answer is correct.

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Question **15**

Correct

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The Lateral Collateral Ligament:

- ☒ a. Spans between the lateral femoral condyle and the fibular head. ✓
- ☐ b. Spans between the medial femoral condyle and the fibular head.
- ☐ c. Spans between the lateral tibial condyle and the fibular head.
- ☐ d. Spans between the lateral meniscus and the fibular head.

Your answer is correct.

Question **16**

Correct

Mark 1.00 out of 1.00

Flag question

Edit question

Anisotropy can:

- ☐ a. Be helpful in visualising tendon tears.
- ☐ b. Be caused by keeping the transducer perpendicular to the structure.
- ☒ c. Be avoided by 'heel toeing' the transducer. ✓
- ☐ d. Be avoided by using extended field of view.

Your answer is correct.

Question **17**

Correct

Mark 1.00 out of 1.00

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Edit question

Before commencing a corticosteroid injection, you should always gain informed consent from your patient.

- ☒ a. True ✓
- ☐ b. False

Your answer is correct.

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Question 18

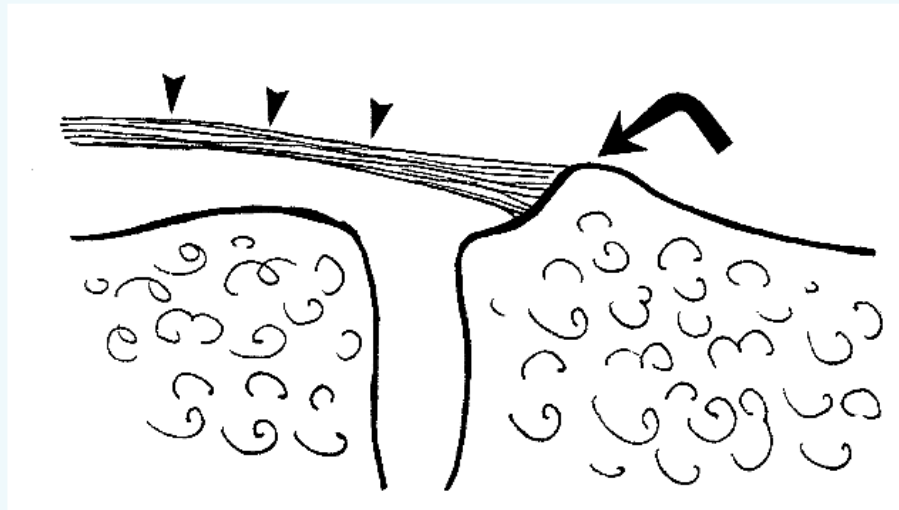
Correct

Mark 1.00 out of 1.00

Flag question

Edit question

This structure is inserting onto Gerdy's tubercle. It is most likely:



- ☐ a. The Lateral Collateral Ligament.
- ☐ b. The Biceps Tendon.
- ☒ c. The Iliotibial Band. ✓
- ☐ d. The Achilles Tendon.

Your answer is correct.

Question 19

Correct

Mark 1.00 out of 1.00

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Edit question

Which option is **not** true of a Spigelian hernia?

- ☐ a. They occur at the aponeurotic layer between the rectus abdominis muscle and the semilunar line.
- ☐ b. They penetrate between the muscles of the abdominal wall.
- ☐ c. They never occur at the medial edge of the rectus abdominus muscle.
- ☒ d. They occur between the external oblique and internal oblique muscles. ✓

Your answer is correct.

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Question **20**

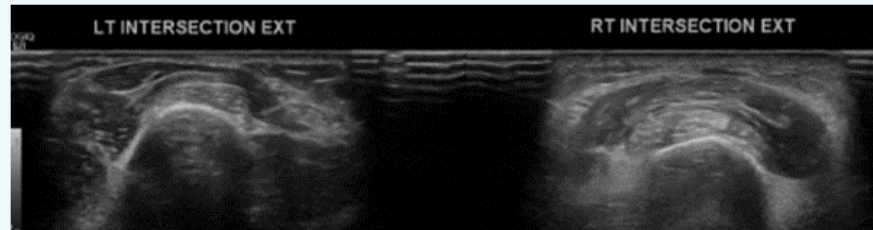
Correct

Mark 1.00 out of 1.00

Flag question

Edit question

The following images have been taken on the dorsal aspect of each wrist of your patient. Which image is demonstrating pathology?



- ☐ a. Image of the left side.
- ☒ b. Image of the right side. ✓
- ☐ c. Neither Image.
- ☐ d. Both images.
- ☐ e. Unsure.

Your answer is correct.

Q21:

Question **21**

Complete

Mark 7.50 out of 8.00

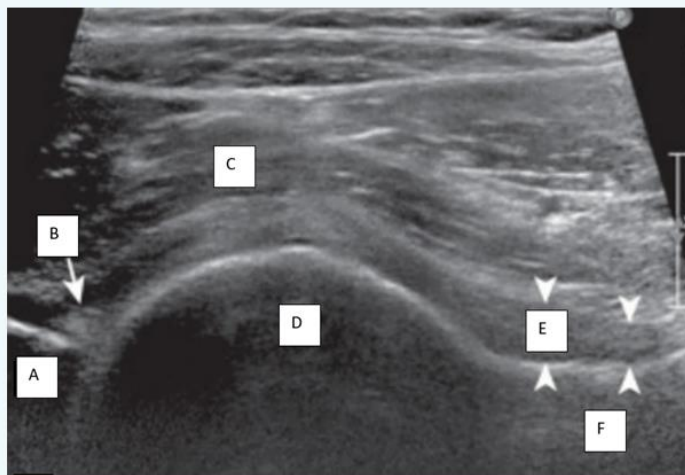
Flag question

Edit question

Use the image below to answer the following questions:

- a. Label this image. [3 marks]
- b. Describe the probe that you would use to obtain this image. Briefly explain why you would make this choice. [2 marks]
- c. What should the anterior joint capsule measurement be under to be considered normal? [1 mark]
- d. List 2 conditions that may result in fluid within the anterior joint capsule. [2 marks]

[Total marks: 8 marks]



a) Label this image:

A - Acetabulum of the Pelvis

B - Anterior Labrum

C - Iliopsoas Muscle

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D - Femoral Head

E - Anterior Joint Recess/Anterior Joint Capsule

F - Femoral Neck

b)

Linear array mid to high range frequency transducer with wide footprint (such as a 14L5). Wouldn't use the highest frequency probe available (18L) because need more depth/penetration to image this region hence lower frequency is needed to adequately penetrate tissues of anterior hip. For a larger patient use a lower frequency transducer such as the high frequency small, curved array, e.g. 10C1 and adjust frequency, sector width, and other settings appropriately. This will ensure adequate penetration to visualise anatomy but the trade off for using a lower frequency is that the spatial resolution and therefore image quality with a lower frequency will decrease.

c)

<7mm, ensure no capsular bulging, and on visual inspection not significantly thicker than contralateral side. Some workplaces might say <9mm. Both accepted depending on what they say workplace follows.

d)

Hip joint effusion, transient synovitis of hip, hemarthrosis, possibly labral tear if mention associated fluid in anterior joint capsule, iliopsoas tendinopathy, OA, RA, fracture, Para labral synovial cyst.

Q22:

Question 22

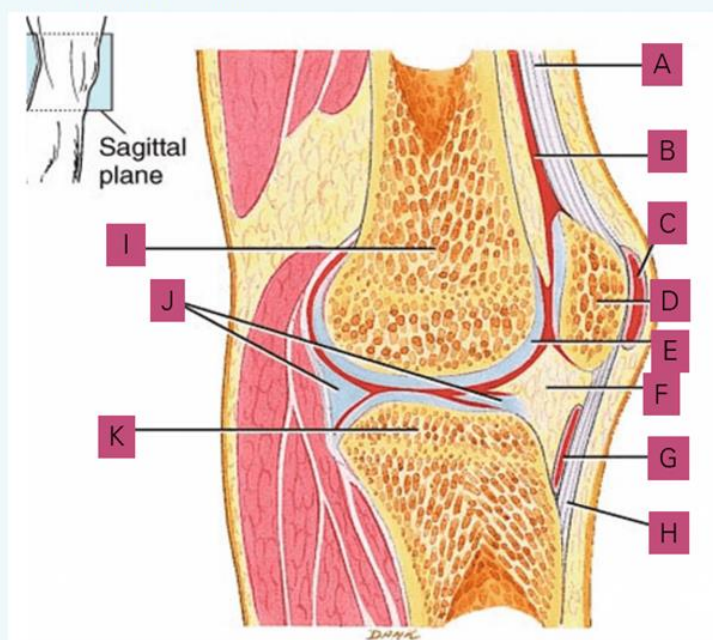
Complete

Mark 5.50 out of 5.50

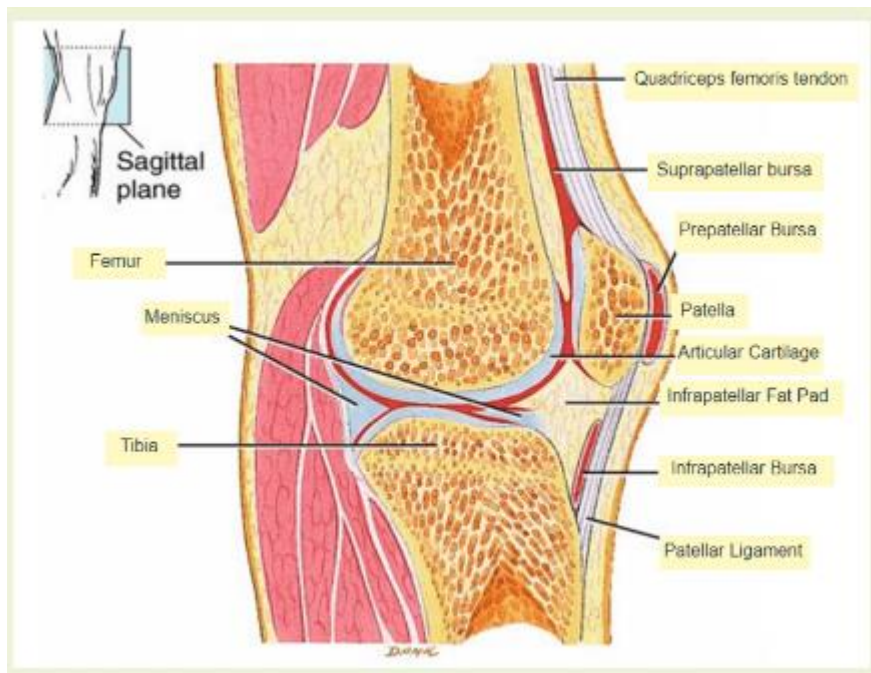
Flag question

Edit question

a. Label this image. [5.5 Marks]



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- A - Quadriceps Femoris Tendon
- B - Suprapatellar Bursa
- C - Prepatellar Bursa
- D - Patella
- E - Articular Cartilage of the Distal Femur
- F - Infrapatellar Fat Pad / Hoffa's Fat Pad
- G - Deep Intrapatellar Bursa
- H - Patellar Ligament / Patellar Tendon
- I - Femur (distal)
- J - Knee Menisci
- K - Tibia (proximal)

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Q23:

Question **23**

Complete

Mark 4.00 out of 4.50

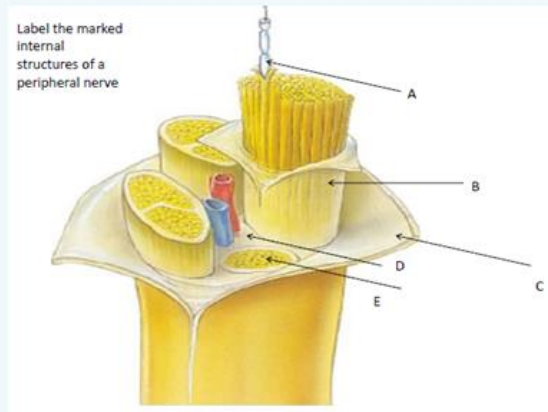
Flag question

Edit question

a. Label this image. [2.5 Marks]

b. What are 2 typical appearances of a nerve on ultrasound? [2 marks]

[Total marks: 4.5 marks]



a) Labels:

A - Neuron / Nerve Fibre, invested by endoneurium or endoneurium covering the nerve

B - Perineurium

C - Outer Epineurium

D - Internal Epineurium

E - Nerve Fascicle

b) In transverse, rounded or oval, discrete hypoechoic fascicle bundles – honeycomb appearance. Where there are hypoechoic dots that represents fascicle surrounded by hyperechoic endoneurium.

In longitudinal – echogenic parallel, linear bands or lines – fibrillar pattern, similar thickness throughout, homogeneous.

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Q24:

Question **24**

Complete

Mark 8.00 out of 8.00

Flag question

Edit question

Use the image below to answer the following questions:

a. Label this image. [3 marks]

b. Describe the probe that you would use to image this region of anatomy. [1 mark]

c. How might you position your patient to obtain this view? [1 mark]

d. Do you think this image is demonstrating normal or abnormal appearances of the region? Explain your answer. [3 marks]

[Total marks: 8 Marks]



a)

1. Common extensor tendon origin
2. Radial collateral ligament
3. humerus/lateral epicondyle
4. capitulum
5. radial head
6. radio-humeral joint

b) Because the structures are superficial, and I would use a high frequency linear around 18MHz array probe and possibly even hockey stick depending on machine to get that extra detail. Don't need the depth as is superficial but need the image resolution.

c) Patient seated across from sonographer and on a chair, chair tucked in, elbow flexed at 90 degrees with thumb up, medial elbow/forearm resting on the bed.

d) **Normal**

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There appears to be:

- nice continuous linear fibrillar appearance of the common extensor tendon toward the enthesis of the lateral humeral epicondyle which is homogeneous throughout.
- the Bones appear nice and uniform and smooth in shape
- the Radio-collateral ligament appears intact, as radiohumeral joint isn't widened, joint space is preserved and there's no joint fluid present.
- Although there might be hypoechoic area at the enthesis of the humerus I think that may be due to anisotropy.

Or

- The CET appears well-defined, thin and hyperechoic with a maintained internal fibrillar echotexture.
- The RCL appears well-defined, thin and hyperechoic with a maintained internal fibrillar echotexture.
- The capitellum, radial head and lateral epicondyle appear smooth and echogenic.
- The humeroradial joint does not appear widened and does not demonstrate joint effusion.
- The surrounding tissue does not appear echogenic or thickened to indicate inflammation.
- Therefore, this is a normal appearance of the lateral elbow.

Q25:

Question 25

Complete

Mark 8.50 out of 8.50

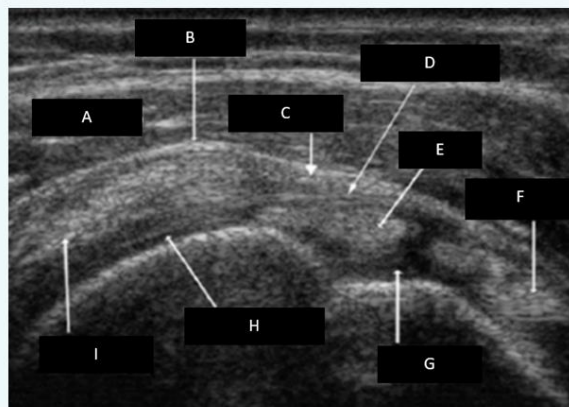
Flag question

Edit question

Use the image below to answer the following questions:

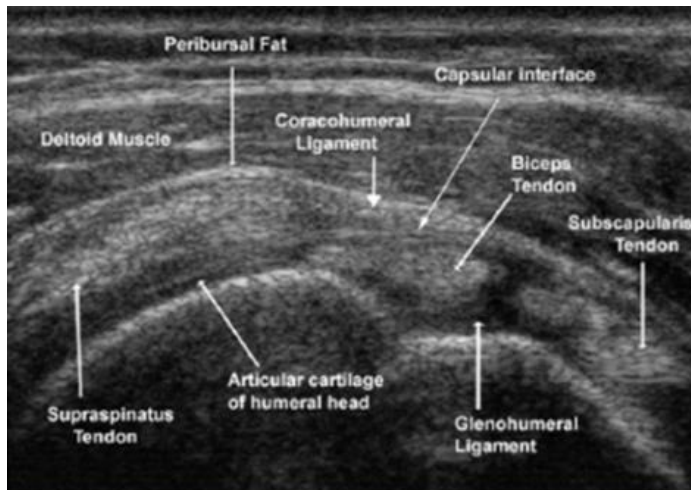
- Label the image. [4.5 marks]
- What region of the body would you be scanning to include this image as part of a routine ultrasound examination? [1 mark]
- How might you position your patient for this image (be specific)? [1 mark]
- Describe 2 symptoms that a patient might present with if having this scan. [2 marks]

[Total marks: 8.5 marks]



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a)



- A. Deltoid Muscle
- B. Bursa /Bursa space/fat
- C. coracohumeral ligament
- D. Capsular interface
- E. Biceps tendon
- F. Subscapularis tendon
- G. Glenohumeral ligament
- H. Articular Cartilage of humerus
- J. Supraspinatus Tendon

b) Shoulder – as this is the rotator cuff interval

c) Patient positioned on stool wearing gown exposing shoulder. Patient's arm should be by adducted their side with palm facing up, then flex elbow 90 degrees to have hand resting palm up (supinated) on their thigh.

d) Pain over shoulder/upper arm region with lateral abduction, pain upper arm after heavy lifting and feeling a "pop", followed up pop-eye appearance of upper arm (long head biceps tendon rupture). Unable to sleep on shoulder, unable to abduct arm which may indicate adhesive capsulitis, decreased range of movement.

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Q 26:

Question 26

Complete

Mark 10.50 out of 10.50

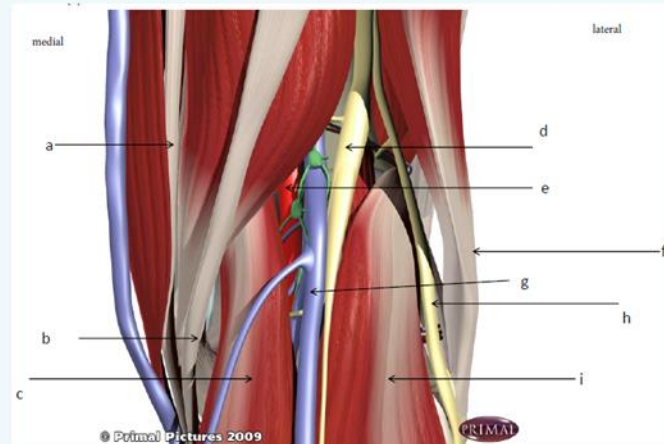
Flag question

Edit question

This image demonstrates the anatomy of the posterior knee.

- Label the marked structures. [4.5 marks]
- What is the insertion point of (f)? [1 mark]
- What structures do (c) and (i) arise from? [2 marks]
- What is the most common pathology found at the posterior medial fossa of the knee? [1 mark]
- Describe the typical ultrasound appearances that you would expect to see for this pathology. [2 marks]

[Total: 10.5 marks]



a) Labels:

- A - Gracilis Tendon
- B - Semitendinosus Tendon
- C - Medial Head of Gastrocnemius Muscle
- D - Posterior Tibial Nerve
- E - Popliteal Artery
- F - Tendon of Biceps Femoris Muscle
- G - Popliteal Vein
- H - Common Peroneal Nerve
- I - Lateral Head of Gastrocnemius Muscle

b) lateral head fibular

c) Medial gastroc - medial condyle of femur

Lateral gastroc - lateral condyle of femur

d) Bakers cyst

e) Located posterior knee between semimembranosus/semitendinosus and medial gastrocnemius

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Anechoic (sometimes with internal debris/echoes) fluid-filled well defined cystic structure – looks like speech bubble with neck coming from joint.

Neck between tendons may be seen.

No internal vascularity.

Q27:

Question **27**

Complete

Mark 11.50 out of 11.50

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Edit question

This image was taken on the volar aspect of your patient's wrist.

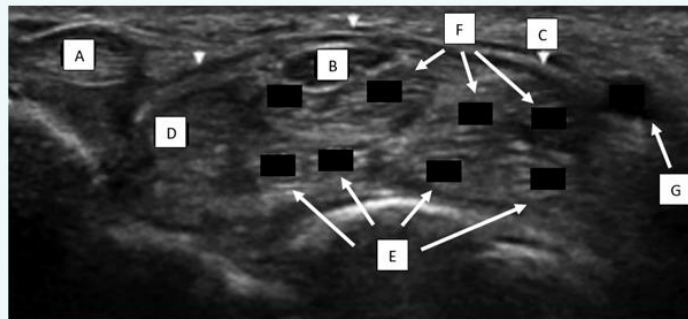
a. Label this image. [3.5 marks]

b. List 2 possible pathologies you may find while scanning this region. [2 marks]

c. Describe the ultrasound appearances that you would see to confirm the two pathologies that you have listed above. [4 marks]

d. List one symptom (for each pathology listed above) that the patient may present with. [2 marks]

[Total marks: 11.5 marks]



a) Labels:

A - Flexor Carpi Radialis (FCR)

B - Median Nerve

C - Flexor Retinaculum / Transverse Carpal Ligament

D - Flexor Pollicis Longus Tendon (FPL)

E - Flexor Digitorum Profundus Tendons (FPD)

F - Flexor Digitorum Superficialis Tendons (FDS)

G - Ulnar Artery

b) List 2 possible pathologies:

i) Median nerve neuropathy/compression (carpal tunnel syndrome)

ii) Stenosis tenosynovitis of the flexor tendons

c) Ultrasound appearances to confirm the two pathologies:

Carpal Tunnel Syndrome - Median Nerve Neuropathy/Compression:

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- Loss of the normal fascicular pattern
- Abrupt calibre change of the nerve at the site of nerve compression (deep to the flexor retinaculum) in the longitudinal plane
- Narrowed nerve due to compression within the carpal tunnel and thickened and hypoechoic nerve proximal to the carpal tunnel
- The nerve margins will appear irregular and ill-defined
- Hypervascularity within and around the nerve seen on colour Doppler
- Surrounding tissue will appear hyperechoic and heterogeneous due to inflammation and oedema
- Large difference in cross-sectional area proximal to the carpal tunnel and within the carpal tunnel (department's protocol is a difference of >0.3)
- Dynamic assessment will demonstrate abnormal gliding of the adjacent flexor tendons

Stenosing Tenosynovitis of the Flexor Tendons:

- Heterogeneous and swollen tendons due to the presence of interstitial fluid
- Hypervascularity present on colour Doppler
- Loss of the normal fibrillar pattern of the tendons
- Catching/abnormal gliding of the tendons during dynamic assessment in the longitudinal plane
- Hypoechoic fluid/oedema surrounding the tendons

d) One symptom for each:

- Carpal Tunnel Syndrome: Pain, tingling and numbness within the first three fingers
- Stenosing Tenosynovitis: Focal pain, tenderness and swelling within the volar aspect of the wrist during wrist flexion and extension, and weakened grip

MSK SP5 23 Exam Questions & Answers

Q28:

Question **28**

Complete

Mark 11.00 out of 11.00

Flag question

Edit question

The structure indicated in the image below is a ligament at the ankle and is bridging between the lateral malleolus and the talus.

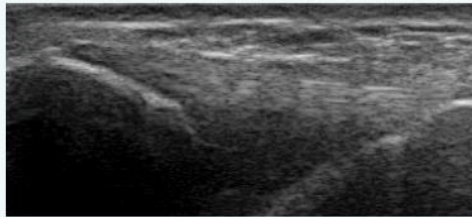
A. What is the name of the ligament? [1 mark]

B. What position will you place the foot in to optimise imaging and why? [2 marks]

C. This image demonstrates a normal ligament. What sonographic signs are there to indicate that this is the case? [2 marks]

D. There is a sonographic classification system for injured ligaments. List each of the classifications and their sonographic appearance criteria. [6 marks]

[Total marks: 11 marks]



a) Ligament:

- Anterior Talofibular Ligament (ATFL)

b) Foot position:

- The ATFL should be stretched to optimise the visualisation of its fibres
- To optimise visualisation of the ATFL, have the patient internally rotate/invert the foot
- A small pillow or rolled towel can be placed underneath the medial side of the ankle to stretch the ligament more and improve transducer contact on the skin
- An alternative is to have the patient's ankle hanging off the bed with the lateral ankle facing up. This will also stress the ATFL more.

c) Normal Sonographic Signs:

- The ligament appears homogeneously hypoechoic
- Normal fibrillar pattern demonstrated: tightly packed parallel hyperechoic and hypoechoic linear bands
- It has a uniform thickness throughout its entire length
- No disruption of the fibres, no focal defects
- No surrounding oedematous change
- The joint space appears intact/is not widened

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- The bony cortexes at the proximal and distal attachments appear smooth
- The subcutaneous tissue appears normal

d) Sonographic classification for injured ligaments:

Grade 1 - Ligament Sprain:

- Mildly stretched, microtears present however the ligament fibres are still intact
- Ligament appears mildly thickened and hypoechoic
- Contour of the ligament is still well-defined
- Bony cortex at the origin and insertion are still smooth or mostly smooth

Grade 2 - Partial Thickness Tear/Incomplete Tear:

- Thickened, heterogeneous and hypoechoic ligament
- Focal irregular anechoic defect will represent the tear site
- The hypoechoic defect/tear does not involve the full thickness of the ligament
- Some loss of the fibrillar pattern
- Minimal fluid surrounding the ligament (hypoechoic spaces)
- Hypervascularity may be demonstrated on colour Doppler
- Mild separation of the joint space on dynamic assessment

Grade 3 - Complete Tear/Rupture:

- Hypoechoic defect runs through the full thickness of the ligament
- Defect appears hypoechoic, heterogeneous and irregular/ill-defined
- Loss of the fibrillar pattern throughout the full thickness of the ligament
- Ligament retraction - 'teardrop sign' present as retracted ligament fibres can be seen floating within the tear space
- Surrounding oedema (hypoechoic spaces)
- Joint effusion present - irregular hypoechoic fluid extravasating from the joint space
- Widened joint space
- Instability and separation of the joint space with dynamic scanning
- Hypervascularity present on colour Doppler

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- Bony avulsion fracture can be present - irregular echogenic foci with posterior shadowing within the ligament bed, hypoechoic defect within the bony cortex at the site of avulsion
- If a fracture is present, there may be hyperechoic fluid within the joint space (hemarthrosis, lipohaemarthrosis if fat is present)

Q29:

Question 29

Complete

Mark 6.00 out of 6.00

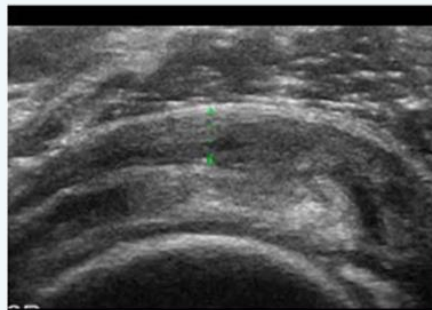
Flag question

Edit question

This image was taken while performing a shoulder ultrasound. It demonstrates your findings at the subdeltoid-subacromial bursa.

- Describe the ultrasound appearances of this image. [3 marks]
- Given the ultrasound appearances, what would the likely diagnosis be? [1 mark]
- How might you extend the examination to help confirm this diagnosis? [2 marks]

[Total marks: 6 marks]



a) Ultrasound appearance:

- High frequency linear array transducer
- B-Mode image of the subacromial-subdeltoid bursa (SASD bursa) and the supraspinatus tendon, likely with the tendon in the transverse plane
- The deltoid muscle lying superficially to the bursa overall demonstrates a normal appearance: homogeneously hypoechoic muscle fibres with thin echogenic dots and dashes (representing the connective tissue septa)
- The SASD bursa appears grossly thickened and distended.
- Measurement callipers have been placed at the superficial and deep margins of the bursa, drawing attention to the grossly-thickened bursa
- The intrabursal space appears heterogeneous due to the presence of fibrous exudate - echogenic debris and adhesions and hypoechoic fluid within
- The synovial membrane appears thickened and echogenic
- Bursal contour appears irregular and ill-defined, particularly at its deep margin where it communicates with the superficial supraspinatus tendon fibres
- The supraspinatus tendon, located deep to the SASD bursa, appears diffusely heterogeneous

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- The articular cartilage along the humeral head overall appears unremarkable, with preservation of the homogeneously hypoechoic appearance and a uniform thickness
- The bony cortex of the humeral head appears smooth

b) Likely Diagnosis:

- Chronic Subacromial-Subdeltoid Bursitis

c) Extending the examination:

- Assess the bursa in the opposite plane
- Assess the acromion for bony spurs which may be causing impingement on the bursa
- Assess the rotator cuff tendons for associated tendinopathy/tendon tears
- Apply colour Doppler to assess for neovascularity
- Scan the contralateral side for comparison
- Perform a dynamic assessment to assess the bursa for impingement syndrome - will be seen as 'catching' of the bursa as the supraspinatus tendon travels under the coraco-acromial arch during arm abduction

Q30:

Question 30

Complete

Mark 7.00 out of 7.00

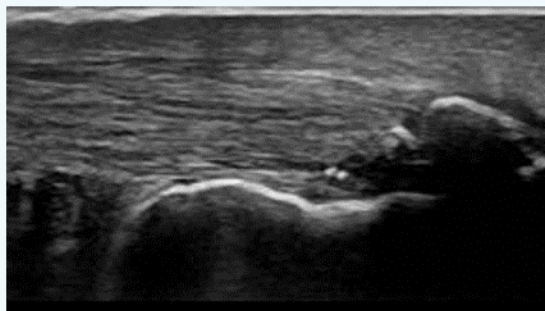
Flag question

Edit question

A patient presents with a lump on the posterior aspect of their heel. The below image is what you found while scanning the region of interest.

- Describe the ultrasound appearances of this image. [3 marks]
- Given the patient presentation and sonographic appearances, what is your provisional diagnosis? [1 mark]
- How might you extend the examination to help confirm your diagnosis? [3 marks]

[Total marks: 7 marks]



MSK SP5 23 Exam Questions & Answers

a) Ultrasound appearance:

- High frequency linear array transducer utilised to produce a longitudinal image of the Achilles Tendon enthesis on the calcaneum
- The distal tendon appears tendinotic. It appears diffusely thickened, swollen and heterogeneous, with hypoechoic interstitial fluid
- There are echogenic calcific foci within the tendon
- The bony cortex of the calcaneum appears very irregular, with enthesophytes present. This represents enthesopathy of the Achilles Tendon.
- The subcutaneous tissue appears thickened and echogenic, with hypoechoic fluid within the subcutaneous calcaneal bursa

b) Provisional Diagnosis:

- Tendinosis and Enthesopathy Change of the Distal Achilles Tendon
- Haglund's Deformity

c) Extend the examination:

- Assess the region in the transverse plane and from multiple angles to ensure that the pathology is real and not just artefact
- Apply colour Doppler to assess for neovascularity within and around the tendon
- Scan the asymptomatic contralateral side for comparison
- Measure the largest calcific focus
- Measure the length and width of the tendinotic portion of the tendon
- Assess the retrocalcaneal bursa
- Scan more proximally along the tendon to check for more proximal involvement
- Scan the soleus and gastrocnemius muscles

MSK SP5 23 Exam Questions & Answers

Q31:

Question **31**

Complete

Mark 4.00 out of 4.00

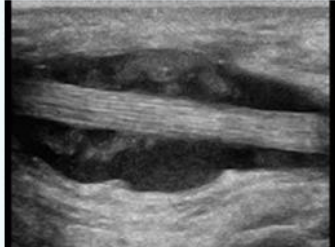
Flag question

Edit question

This longitudinal image of a tendon demonstrates an associated synovitis in the tendon sheath.

- What type of tendons are normally encased by a synovial sheath? [1 mark]
- What are the names of the two connecting layers of the synovial sheath? [2 marks]
- List one tendon that this image could be demonstrating. [1 mark]

[Total marks: 4 marks]



a) Type of tendons encased by a synovial sheath:

- Type 2 Tendon
- Tendons that cross synovial joints are covered with a synovial sheath
- Examples include the flexor and extensor tendons of the fingers

b) Two connecting layers:

- Internal (visceral) layer - covers the epitenon
- External (parietal) layer - continuous with the adjacent tissue spaces

c) Possible Tendon in Image:

- Extensor Pollicis Longus (EPL) Tendon

MSK SP5 23 Exam Questions & Answers

Q32:

Question **32**

Complete

Mark 8.50 out of 8.50

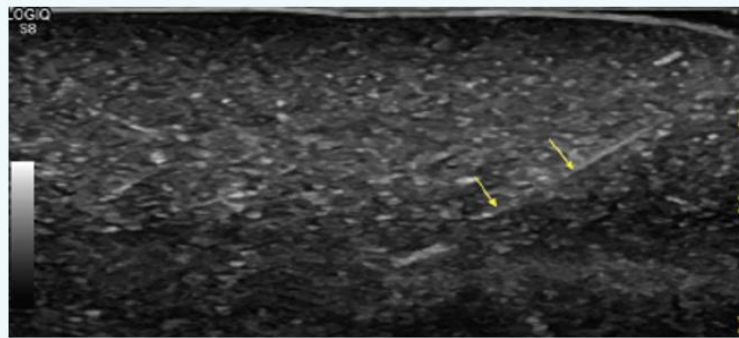
Flag question

Edit question

The following image was taken during an interventional procedure.

- Is this image demonstrating good needle optimisation? Explain your response. [3 marks]
- List 2 techniques that you might use to ensure the needle is visualised well during an interventional procedure. [1 marks]
- List 3 possible complications of an interventional procedure. [1.5 marks]
- Give a brief explanation of how you might ensure you have informed consent from your patient before proceeding with the interventional procedure. [3 marks]

[Total marks: 8.5 marks]



a) Good needle optimisation:

- No this is not good needle optimisation
- The needle is demonstrated as a feint hyperechoic linear structure which is difficult to see
- The hypoechoic background with the echogenic foci making the needle blend into the background
- The needle is entering the skin at too-steep an angle, meaning the sound waves are not insonating the beam at an optimal angle (not perpendicular enough)
- The needle may be slightly out of plane - it is not in the direct centre of the transducer
- It is difficult to visualise the needle tip
- There is no reverberation artefact. Reverberation artefact confirms that the needle is in plane.

b) Techniques for needle visualisation:

- Ensure the transducer is as parallel to the needle as possible/beam is as perpendicular to the beam as possible by heel-toeing the probe
- Utilise beam-steering
- Ensure the long-axis of the needle is directly in the middle of the long-axis of the transducer
- Optimise machine settings: depth, focus, gain, TGC

MSK SP5 23 Exam Questions & Answers

- Scan in the transverse plane to find the course of the needle (with the radiologist's permission, of course)

c) 3 possible complications of an interventional procedure:

- Infection
- Bleeding/haematoma formation
- Tendon tear/rupture
- Microcrystalline synovitis
- Depigmented skin
- Allergic reaction

d) Gaining informed consent:

- I would first perform proper identification of the patient by asking their name, date of birth, and what procedure they are here for
- I would then ask them the following questions: do they have any allergies, are they a diabetic, are they on any anticoagulants, any previous surgeries to the area, have they had this injection before, are they afraid of needle, if they have had any complications with injection in the past
- I would then explain to the patient the steps of the procedure so that they know what to expect: I will first scan the area to get a lay of the land, I will mark the skin so the radiologist has an idea of which area to target, the radiologist will come in and clean their skin etc.
- I will then explain the possible risks and complications that may occur eg. infection, bleeding
- I will provide after-care instructions: the medication can take up to two weeks to reach the maximum level of effectiveness, ensure they rest for the following 48 hours, watch out for signs of infection eg. redness and swelling at the injection site
- I will then give the patient an opportunity to ask questions
- I will ask the patient if they understand the procedure, and if I have their consent to continue
- I then ask them to sign a consent form to ensure proper documentation

MSK SP5 23 Exam Questions & Answers

Q33:

Question 33

Complete

Mark 7.00 out of 7.00

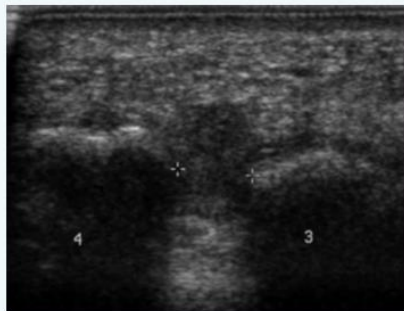
Flag question

Edit question

The image below is a transverse image of the forefoot taken at the level of the 3rd and 4th metatarsal interspace/web space.

- Describe the ultrasound appearances. [3 marks]
- Given these sonographic appearances, what is the most likely diagnosis? [1 mark]
- List two strategies you can use to help confirm your diagnosis. [2 marks]
- What is a classic symptom that a patient may present with in relation to this diagnosis? [1 mark]

[Total marks: 7 marks]



a) Ultrasound appearances:

- A high frequency linear array transducer has been utilised to produce a transverse image of the 3rd and 4th intermetatarsal web space, with a plantar approach
- There are two curvilinear echogenic structures in the middle of the image, likely representing the 3rd and 4th metatarsal heads
- Protruding out from the webspace is a well-defined, mildly-lobulated, hypoechoic lesion with low-level internal echoes
- Measurement callipers have been placed to measure the transverse diameter of the lesion
- There is associated posterior enhancement deep to the lesion
- The subcutaneous tissue appears mildly heterogeneous

b) Likely Diagnosis:

- Morton's Neuroma within the webspace between the 3rd and 4th metatarsals
- Fibrosis of the interdigital nerve

c) Two strategies to help confirm diagnosis:

- Perform the Mulder test: Squeeze the metatarsal heads together and apply pressure to the region with a finger. If the patient feels pain, the Mulder sign is positive. This highly suggests the presence of a Morton's neuroma.

MSK SP5 23 Exam Questions & Answers

- Assess the lesion in the longitudinal plane and try and find the interdigital nerve to check for communication between the nerve and the lesion. Apply colour Doppler and use the interdigital artery as a landmark to find the neurovascular bundle.
- Squeeze the metatarsal heads together and use a finger to push the webspace from the dorsal side. This will push the neuroma out further and aid in visualisation
- Apply colour Doppler to assess for neovascularity
- Apply pressure to check if it is just bursal fluid. Bursal fluid is compressible, a neuroma is not.
- Assess the adjacent webspaces for comparison

d) Classic symptom:

- The patient will report that they feel as if there is a stone in their shoe when they are walking, however when they look for the stone, there is nothing there
- Pain in the forefoot when walking