MULTIPLE CHOICE

MSK - MIXED EXAM - ANSWER KEY

PROPOSED FOR REVIEW - questions are the author's verbatim Q&A; distractors are auto-selected from other answers in the same bank and must be checked by a subject-matter reviewer (a distractor could coincidentally be correct). Not authoritative assessment content.

1. Which of the following is the most appropriate sonographic feature used to confirm placement of fluid within a tendon sheath rather than within the tendon itself during a sheath injection?

A. Loss of fibrillar pattern with focal tendon enlargement
B. Color Doppler flow within the tendon substance
C. Echogenic mass within the central fibers of the tendon
D. Anechoic fluid distending the sheath circumferentially around the tendon without intratendinous swelling

2. Which feature distinguishes a normal nerve from a normal vein on gray-scale ultrasound?

A. The nerve does not collapse with transducer pressure, whereas the vein does
B. The nerve shadows posteriorly, whereas the vein does not
C. The nerve demonstrates a fibrillar pattern, whereas the vein has a honeycomb pattern
D. The nerve is anechoic, whereas the vein is hyperechoic

3. Which finding on shoulder ultrasound is LEAST suggestive of a rotator cuff tear?

A. Joint fluid communicating with bursal fluid
B. Focal hypoechoic defect extending from articular to bursal surface
C. Concave-outward depression of the deltoid contour
D. Mild diffuse tendon thickening with preserved fibrillar pattern

4. On a transverse image at the level of the bicipital groove, the structure traveling longitudinally between the greater and lesser tuberosities is the:

A. Short head of the biceps tendon
B. Long head of the biceps tendon
C. Coracobrachialis tendon
D. Subscapularis tendon

5. A patient presents with calf pain after a sudden push-off injury. Ultrasound shows fluid between the medial head of the gastrocnemius and the soleus muscle. This finding is most consistent with which diagnosis?

A. Tennis leg (medial gastrocnemius strain/partial tear)
B. Achilles tendon rupture
C. Baker cyst rupture
D. Deep venous thrombosis

6. The most common volar wrist ganglion typically arises adjacent to which structure?

A. Ulnar nerve in Guyon's canal
B. Radial artery, near the radioscaphoid or scaphotrapezial joint
C. Pisiform bone, deep to the flexor carpi ulnaris
D. Hook of the hamate

7. A patient presents with posterior heel swelling. Ultrasound shows a fluid-filled compressible structure between the Achilles tendon insertion and the skin. This finding represents which bursa?

A. Pes anserine bursa
B. Retrocalcaneal bursa
C. Subcutaneous (superficial Achilles) bursa
D. Olecranon bursa

8. In short-axis imaging, a normal peripheral nerve typically appears as which of the following?

A. A uniformly hyperechoic fibrillar structure
B. A honeycomb pattern of hypoechoic fascicles within a hyperechoic background

C. An anechoic, compressible tubular structure
D. A bipennate pattern with a central echogenic septum

9. Which combination of structures forms the contents of the rotator interval region?

A. Long head of biceps tendon, coracohumeral ligament, and superior glenohumeral ligament
B. Long head of biceps tendon and subacromial bursa
C. Subscapularis and teres minor tendons
D. Supraspinatus and infraspinatus tendons

10. An acute partial-thickness tear of the medial collateral ligament on ultrasound is most likely to demonstrate:

A. Complete absence of the ligament with a large bony avulsion fragment
B. Anechoic cystic transformation of the entire ligament
C. Diffuse hyperechoic thickening of all MCL fibers without fluid
D. Focal hypoechoic disruption and surrounding hypoechoic fluid/edema with preserved continuity of remaining fibers

11. Anisotropy is an important pitfall when imaging the quadriceps and patellar tendons. It is best described as:

A. Artifactual hypoechogenicity of a tendon when the ultrasound beam is not perpendicular to its fibers
B. Increased through-transmission deep to a tendon cyst
C. Posterior acoustic shadowing behind a calcified tendon
D. A real focal hypoechoic tear within the tendon

12. On a transverse image of the anterior shoulder, the long head of the biceps tendon is normally seen as a hyperechoic oval structure located in which groove?

A. Within the acromioclavicular joint space
B. Bicipital (intertubercular) groove between the greater and lesser tuberosities
C. Between the coracoid process and the lesser tuberosity
D. Between the acromion and the greater tuberosity

13. Which maneuver is performed during dynamic ultrasound of the infant hip to assess for instability?

A. Apley grind and pivot-shift
B. McMurray and Lachman
C. Barlow (posteriorly directed stress on the adducted, flexed hip) and Ortolani (abduction with anterior lift)
D. Hawkins-Kennedy and Neer

14. Which structure is the primary stabilizer against valgus stress at the elbow and is therefore the focus of sonographic evaluation in overhead-throwing athletes?

A. Radial (lateral) collateral ligament
B. Anterior bundle of the ulnar (medial) collateral ligament
C. Annular ligament
D. Lateral ulnar collateral ligament

15. On ultrasound, a ganglion cyst typically demonstrates which of the following features?

A. Echogenic linear focus with comet-tail artifact
B. Anechoic, well-defined, lobulated structure with posterior acoustic enhancement and no internal Doppler flow
C. Heterogeneous hypoechoic mass with internal vascularity
D. Hyperechoic, vascular solid mass with feeding artery

16. During Graf static evaluation of the infant hip, the standard coronal/lateral plane image must demonstrate which three anatomic landmarks for the alpha angle to be valid?

A. The greater trochanter, lesser trochanter, and ischial tuberosity
B. The femoral head ossification center, the acetabulum, and the sciatic notch
C. The pubic symphysis, the acetabular roof, and the femoral neck
D. A straight echogenic iliac line, the lower limb of the ilium at the triradiate cartilage, and the labrum

17. A C-shaped or boomerang appearance of the peroneus brevis tendon wrapping around the peroneus longus on transverse imaging is most suggestive of which pathology?

A. Longitudinal split tear of peroneus brevis
B. Peroneus longus rupture
C. Normal peroneus brevis
D. Accessory peroneus quartus muscle

18. On longitudinal sonography of the anterior hip in an adult, the most reliable indicator of a joint effusion is:

A. Anterior bulging of the joint capsule with anechoic or hypoechoic fluid distending the anterior synovial recess
B. Hyperechoic fat in the femoral triangle
C. A linear hyperechoic line along the femoral cortex
D. Thickening of the iliotibial band

19. On transverse ultrasound of the popliteal fossa, the neck of a Baker cyst characteristically passes between which two structures?

A. The popliteus tendon and the lateral collateral ligament
B. The biceps femoris and the iliotibial band
C. The medial and lateral heads of the gastrocnemius
D. The medial head of the gastrocnemius and the semimembranosus tendon

20. Compared with MRI, a particular strength of musculoskeletal ultrasound is:

A. Independence from operator skill
B. Real-time dynamic evaluation during active and passive motion
C. Higher contrast for deep posterior shoulder structures
D. Superior visualization of intraosseous marrow

21. Which transducer is most appropriate for routine sonographic evaluation of the Achilles tendon in an adult?

A. Phased-array sector transducer
B. High-frequency linear array transducer
C. Curvilinear 2-5 MHz transducer
D. Endocavitary transducer

22. Anechoic fluid distending the long head biceps tendon sheath is most often a sign of:

A. Glenohumeral joint effusion communicating with the sheath
B. Subscapularis tendon tear with retraction
C. Isolated biceps tendon tear
D. Acromioclavicular joint cyst

23. On ultrasound of the medial knee, the medial collateral ligament (MCL) typically appears as how many layers and which is the principal stabilizer?

A. Three layers, with the middle layer being the principal stabilizer
B. Two layers, with the deep layer attached to the medial meniscus and the superficial layer being the principal stabilizer
C. A single fibrillar band attached only to the femur
D. A purely cartilaginous structure with no ligamentous components

24. Sonographic findings of extensor carpi ulnaris (ECU) subluxation are best demonstrated by:

A. Imaging only in long axis with the wrist neutral
B. Dynamic imaging during supination with the wrist in ulnar deviation
C. Static imaging with the wrist in full pronation
D. Compression of the dorsal capsule of the radiocarpal joint

25. On a coronal view of the acromioclavicular joint, which finding is most consistent with AC joint osteoarthritis?

A. An empty bicipital groove
B. Joint space narrowing with osteophytes and capsular bulging
C. Thinning of the supraspinatus tendon insertion
D. Anechoic distension of the bicipital groove

26. A bifid median nerve in the carpal tunnel is often associated with which vascular variant?

A. Superficial palmar arch absence
B. Radial artery duplication
C. Persistent median artery
D. Aberrant ulnar artery

27. Color or power Doppler in musculoskeletal ultrasound is MOST useful for which of the following?

A. Differentiating anisotropy from calcific tendinopathy
B. Quantifying cartilage volume
C. Measuring tendon thickness
D. Distinguishing a hypoechoic vessel from a hypoechoic tendon tear

28. Which boundary forms the roof of the tarsal tunnel on ultrasound?

A. Extensor retinaculum
B. Plantar fascia
C. Superior peroneal retinaculum
D. Flexor retinaculum

29. Which sonographic feature is most suggestive of a complete tear of the ulnar collateral ligament of the thumb (gamekeeper's/skier's thumb) with a Stener lesion?

A. Anechoic fluid in the MCP joint without ligament disruption
B. Hyperechoic foci within the UCL with posterior shadowing
C. Diffuse hypoechoic thickening of an intact UCL
D. A retracted, balled-up UCL stump lying superficial to the adductor aponeurosis

30. Which feature best distinguishes anisotropy from a partial-thickness rotator cuff tear?

A. The hypoechoic area is associated with overlying bursal fluid
B. The hypoechoic area shadows posteriorly
C. The hypoechoic area disappears and the tendon becomes hyperechoic and fibrillar when the probe is angled to be perpendicular to the fibers
D. The hypoechoic area shows internal color Doppler flow

31. Which two tendons travel together posterior to the lateral malleolus within a shared synovial sheath?

A. Flexor hallucis longus and tibialis posterior
B. Peroneus longus and peroneus brevis
C. Tibialis posterior and flexor digitorum longus
D. Tibialis anterior and extensor hallucis longus

32. On dynamic ultrasound, the peroneal tendons are seen to snap anteriorly over the lateral malleolus during dorsiflexion and eversion. This finding represents what condition?

A. Peroneal tendinosis
B. Os peroneum syndrome
C. Peroneal tendon subluxation
D. Peroneus brevis longitudinal split tear

33. A small anechoic fluid collection at the AC joint with a hypoechoic mass extending superiorly above the joint, in the setting of a massive rotator cuff tear, is most consistent with:

A. Geyser sign with an AC joint cyst
B. Subacromial bursitis without tear
C. Isolated AC joint osteoarthritis
D. Acute AC joint sprain

34. A normal, non-distended bursa typically appears on ultrasound as:

A. A thin hypoechoic or anechoic line between two hyperechoic fat layers
B. A heterogeneous, vascular soft tissue collection
C. A rounded anechoic mass with posterior enhancement
D. A thick hyperechoic fibrillar band

35. Which sonographic artifact most often mimics a tear within a normal tendon when the probe is not perpendicular to the fibers?

A. Mirror image
B. Anisotropy
C. Reverberation
D. Comet tail

36. Which sonographic feature best supports impingement rather than rotator cuff tear?

A. An empty bicipital groove
B. Nonvisualization of the supraspinatus with deltoid touching bone
C. A focal hypoechoic gap extending from the bursal to the articular surface
D. Dynamic bunching of the cuff and bursa beneath the acromion with arm abduction, without a discrete tendon defect

37. At the proximal carpal tunnel, the median nerve cross-sectional area is most reliably measured at which level?

A. At the level of the metacarpal heads
B. At the level of the pisiform bone
C. At the level of the radial styloid

D. At the level of the distal radioulnar joint

38. An anechoic, well-circumscribed fluid collection located between the skin and the anterior patella in a patient who works on his knees is most consistent with:

A. Pes anserine bursitis
B. Suprapatellar joint effusion
C. Prepatellar bursitis (housemaid's knee)
D. Baker cyst

39. Medial dislocation of the long head of the biceps tendon is most strongly associated with a tear of which rotator cuff tendon?

A. Subscapularis
B. Teres minor
C. Infraspinatus
D. Supraspinatus

40. A hockey-stick (small-footprint, high-frequency) transducer is MOST useful for which MSK application?

A. Imaging the deep posterior hip
B. Evaluating the iliopsoas muscle in an obese patient
C. Assessing the deep portion of the gluteal muscles
D. Imaging small superficial structures such as finger pulleys and digital nerves

41. Which sonographic finding most strongly supports a diagnosis of carpal tunnel syndrome?

A. Diffuse hyperechoic enlargement of the median nerve
B. Anechoic fluid surrounding the flexor tendons only, with a normal-sized nerve
C. Enlarged hypoechoic median nerve with increased cross-sectional area at the proximal carpal tunnel
D. Hyperechoic foci within the transverse carpal ligament

42. The pes anserinus is the conjoined insertion of which three tendons?

A. Sartorius, gracilis, and semitendinosus
B. Sartorius, gracilis, and biceps femoris
C. Vastus medialis, sartorius, and gracilis
D. Semimembranosus, semitendinosus, and biceps femoris

43. A thin, hypoechoic stripe of fluid measuring just a few millimeters within the subacromial-subdeltoid bursa with otherwise normal cuff tendons is best described as:

A. A normal or trace finding that may be physiologic
B. Calcific tendinitis
C. Evidence of a full-thickness rotator cuff tear
D. Definitive subacromial bursitis

44. A sonographer is unable to fully visualize the supraspinatus footprint because the patient cannot extend or internally rotate the shoulder. Which technique should be employed first?

A. Apply harmonic imaging to reduce artifact
B. Use the modified Crass or Crass position to bring the tendon out from under the acromion
C. Switch to a curvilinear transducer
D. Increase the depth setting to gain anatomic coverage

45. The transverse carpal ligament forms which boundary of the carpal tunnel?

A. The volar (palmar) roof
B. The dorsal floor
C. The radial wall
D. The ulnar wall

46. On longitudinal sonography of the lateral hip, the gluteus medius tendon is best identified by following it to its insertion on which landmark?

A. The intertrochanteric crest medially
B. The lesser trochanter
C. The lateral and superoposterior facets of the greater trochanter
D. The anterior inferior iliac spine

47. Which rotator cuff tendon is most commonly torn?

A. Teres minor
B. Subscapularis
C. Supraspinatus
D. Infraspinatus

48. The subscapularis tendon is best evaluated sonographically with the arm in which position?

A. Internal rotation with the hand on the contralateral shoulder
B. Behind the back in the modified Crass position
C. External rotation with the elbow flexed and tucked to the side
D. Neutral rotation with the arm fully abducted

49. On longitudinal ultrasound at the lateral knee, the LCL is best identified by tracing it distally to its conjoined insertion with which structure on the fibular head?

A. The lateral head of the gastrocnemius
B. The biceps femoris tendon
C. The popliteus tendon
D. The iliotibial band

50. On short-axis sonographic evaluation of the median nerve in the forearm, the normal appearance is best described as:

A. A honeycomb pattern of hypoechoic fascicles within a hyperechoic epineurium
B. A uniformly anechoic round structure
C. A solid hyperechoic mass without internal architecture
D. An anechoic tubular structure with arterial Doppler signal