

# MULTIPLE CHOICE

## VT PERIPHERAL ARTERIAL - PRACTICE SET - 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. How is the ankle-brachial index calculated?**

- A. Lower ankle systolic pressure divided by the lower brachial systolic pressure
- B. Mean ankle pressure divided by mean brachial pressure
- C. Higher ankle pressure divided by ipsilateral brachial pressure
- D. Higher ankle systolic pressure of that limb divided by the higher of the two brachial systolic pressures**

**2. An ankle systolic pressure less than 50 mm Hg or a toe pressure less than 30 mm Hg most likely indicates:**

- A. Normal resting perfusion
- B. Critical limb ischemia with poor wound healing potential**
- C. Compensated peripheral arterial disease with adequate collaterals
- D. Acute deep vein thrombosis

**3. A normal peripheral arterial Doppler spectral waveform in a resting lower extremity is best described as:**

- A. Monophasic with continuous forward flow throughout diastole
- B. Triphasic with a sharp systolic upstroke**
- C. Biphasic with high diastolic flow
- D. Continuous low-resistance flow with broad systolic peak

**4. A patient with a normal resting ankle-brachial index reports classic exertional calf claudication. Which test is most appropriate next?**

- A. Exercise (treadmill) ABI testing**
- B. Plethysmography of the digits at rest
- C. Venous duplex of the lower extremity
- D. Repeat resting ABI in 30 days

**5. An ankle-brachial index value greater than 1.40 most likely indicates which condition?**

- A. Normal arterial physiology
- B. Medial arterial calcification with noncompressible vessels**
- C. Acute arterial occlusion
- D. Severe peripheral arterial disease

**6. A patient presents with a systolic blood pressure difference of greater than 20 mm Hg between the two arms. This finding is most suggestive of:**

- A. Subclavian or innominate artery stenosis on the lower-pressure side**
- B. Aortic valve regurgitation
- C. Hypertensive crisis
- D. Severe lower extremity peripheral arterial disease

**7. Which is the most common etiology of a femoral artery pseudoaneurysm?**

- A. Penetrating trauma from gunshot wound
- B. Inherited connective tissue disorder
- C. Spontaneous degeneration of the arterial media
- D. Iatrogenic arterial puncture (catheterization)**

**8. Which subclavian or upper extremity finding is most suggestive of a subclavian steal syndrome?**

- A. Reversed flow in the ipsilateral vertebral artery with proximal subclavian artery stenosis**
- B. Bidirectional flow in the common carotid artery
- C. Elevated peak systolic velocity in the contralateral carotid artery
- D. Antegrade flow in both vertebral arteries with equal velocities

9. Which graft-specific abnormality is unique to in situ saphenous vein bypass grafts but not to synthetic (PTFE) grafts?

- A. Graft infection
- B. Pseudoaneurysm at the anastomosis
- C. Anastomotic intimal hyperplasia
- D. Retained valve cusps causing focal stenosis**

10. On color Doppler, a focal outpouching connected to a femoral artery by a narrow neck shows a swirling 'yin-yang' flow pattern. The most likely diagnosis is:

- A. Arteriovenous fistula
- B. Pseudoaneurysm**
- C. True saccular aneurysm
- D. Femoral hematoma with no communication

11. What is the most commonly used resting ankle-brachial index threshold for diagnosing peripheral arterial disease?

- A. 0.90 or less**
- B. 0.50 or less
- C. 1.10 or less
- D. 0.70 or less

12. Which artery is the continuation of the anterior tibial artery as it crosses the ankle onto the dorsum of the foot?

- A. Posterior tibial artery
- B. Dorsalis pedis artery**
- C. Peroneal artery
- D. Medial plantar artery

13. Which testing modality is least affected by medial arterial calcification and noncompressible vessels?

- A. Ankle-brachial index
- B. Segmental systolic pressures
- C. Pulse volume recordings**
- D. Doppler-derived ankle systolic pressure

14. Which artery is the direct continuation of the external iliac artery as it passes beneath the inguinal ligament?

- A. Superficial femoral artery
- B. Common femoral artery**
- C. Profunda femoris artery
- D. Popliteal artery

15. Which patient population is most likely to have falsely elevated ankle-brachial index values due to noncompressible arteries?

- A. Patients with long-standing diabetes mellitus or end-stage renal disease**
- B. Young athletes with low resting heart rates
- C. Patients on beta-blocker therapy
- D. Pregnant patients

16. When the ankle-brachial index is unreliable due to noncompressible vessels, which alternative measurement is most useful for assessing distal perfusion?

- A. Carotid-brachial pressure ratio
- B. Resting venous outflow plethysmography
- C. Repeating the ABI using a larger cuff
- D. Toe-brachial index**

17. On color and spectral Doppler interrogation of a stenotic peripheral artery, which finding is the most direct indicator of a hemodynamically significant narrowing?

- A. Focal elevation of peak systolic velocity with post-stenotic turbulence**
- B. Diffuse color desaturation along the entire vessel length
- C. Triphasic waveform proximal and distal to the lesion
- D. Decreased peak systolic velocity throughout the artery

18. Spectral Doppler within the neck of a pseudoaneurysm typically demonstrates which characteristic waveform?

- A. Absent flow with only color noise

- B. To-and-fro flow with antegrade systolic and retrograde diastolic components**
- C. Continuous low-resistance forward flow throughout the cardiac cycle
- D. Sharp triphasic waveform identical to the parent artery

19. A normal pulse volume recording (PVR) waveform is characterized by which features?

- A. Flat-lined tracing with minimal pulsatility
- B. Slow upstroke, rounded peak, and absent dicrotic notch
- C. Rapid systolic upstroke, sharp peak, and a dicrotic notch on the downslope**
- D. High-amplitude continuous waveform without distinct systole and diastole

20. Which technical pitfall most commonly results in artifactually elevated peak systolic velocities during peripheral arterial duplex imaging?

- A. Doppler insonation angle of 30 degrees
- B. Doppler insonation angle greater than 60 degrees**
- C. Use of a high-frequency linear transducer in superficial vessels
- D. Color Doppler scale (PRF) set above the expected peak velocity

21. Which condition is characterized by intermittent episodes of digital ischemia in response to cold or emotional stress, typically demonstrating attenuated or flat-line digital PPG waveforms during cold immersion?

- A. Buerger disease in its end-stage form
- B. Raynaud phenomenon**
- C. Acute compartment syndrome
- D. Thoracic outlet syndrome

22. A patient cannot safely walk on a treadmill. Which alternative provocative maneuver can be substituted to induce claudication?

- A. Valsalva maneuver
- B. Passive leg elevation
- C. Cold immersion of the hand
- D. Active pedal plantar flexion (toe raises / calf raises)**

23. When evaluating a patient for thoracic outlet syndrome with arterial duplex, the proximal arterial Doppler signals are typically obtained at rest and again with which provocative maneuvers?

- A. Arm abduction and external rotation, including the hyperabduction (EAST/Roos) and military (costoclavicular) positions**
- B. Cold immersion of the hand followed by warming
- C. Treadmill walking at increasing speed
- D. Repeated calf raises while standing

24. An ankle-brachial index between 0.91 and 0.99 is best classified as:

- A. Borderline**
- B. Moderate to severe disease
- C. Normal
- D. Mild disease

25. A patient with a femoropopliteal bypass graft presents for routine surveillance. Within the graft, which finding is most concerning for an evolving stenosis requiring intervention?

- A. Triphasic waveform at the proximal anastomosis
- B. Mild color filling defect at a venous valve site without velocity elevation
- C. Uniform peak systolic velocity of 60 cm/sec throughout the graft
- D. Focal peak systolic velocity above 300 cm/sec with a PSV ratio greater than 3.5**