

PERIPHERAL ARTERIAL DISEASE (PAD)

1. < 20% of patients present with classic intermittent claudication—muscle cramping with effort relieved by rest.
2. Patients with mild to moderate lower extremity PAD are more likely to report leg fatigue, difficulty walking, and atypical leg pain.
3. The ankle-brachial index (ABI) = ankle pressure/brachial pressure. Systolic pressures are measured in the posterior tibial and dorsalis pedis arteries of each foot using a Doppler probe; the highest systolic pressure recorded in each ankle is divided by the highest brachial pressure to obtain the ABI for each lower extremity.
4. $\geq 20\%$ decrease of the ABI after exercise suggests significant PAD.
5. PAD is most commonly the result of atherosclerosis; the annual cardiovascular event rate in PAD patients is 5 - 7%.
6. Aggressive risk modification is indicated for all patients with PAD.
7. Antiplatelet therapy may reduce PAD progression and intervention. Aspirin is first-line therapy, clopidogrel is an acceptable alternative.
8. Atorvastatin, simvastatin, *Ginkgo biloba* extract, and cilostazol increase pain-free walking duration in patients with PAD.
9. Pentoxifylline, garlic, L-carnitine, warfarin and chelation therapy *do not* reduce symptoms or progression of PAD.
10. Tight diabetic control ($A1c \leq 7\%$) is *not* associated with a reduction in macrovascular complications.
11. Properly *supervised* exercise to the point of near-maximal pain increases pain-free walking duration and distance in PAD patients.
12. Invasive PAD management is reserved for patients who face loss of a limb or have severe limitation despite conservative therapy.
13. Patients with acute limb ischemia (ALI) & severe claudication but no rest pain (class I) are treated with antiplatelet therapy and heparin.
14. Patients with ALI with rest pain & transient or incomplete motor or sensory deficits (class IIb) need medical or invasive revascularization.
15. Patients with ALI, anesthesia, paralysis, absent Doppler signals, and muscle rigor (class III) require amputation.
16. Angioplasty is most effective in short-segment stenosis within large-vessels; bypass is favored in distal, multilevel, or occlusive disease.
17. Primary stenting is more effective in large inflow vessels (aortoiliac, common iliac, external iliac), *not* femoral, popliteal, or tibial arteries.

Persons at Risk for Lower Extremity Peripheral Arterial Disease

Age <50 years, with diabetes and one other atherosclerosis risk factor (smoking, dyslipidemia, hypertension, or hyperhomocysteinemia)

Age 50-69 years and history of smoking or diabetes

Age ≥ 70 years

Leg symptoms with exertion (suggestive of claudication) or ischemic rest pain

Abnormal lower extremity pulse examination

Known atherosclerotic coronary, carotid, or renal artery disease

Claudication Site and Corresponding Vascular Territory in PAD

Claudication Site	Vascular Territory
Buttock/hip	Aortoiliac
Thigh	Common femoral or aortoiliac
Upper calf	Superficial femoral
Lower calf	Popliteal

Differential Diagnosis of Peripheral Arterial Disease

Disease	Notes
Osteoarthritis	Pain often localizes to the hips and knees; pain with variable activity and certain positions; common in the same age group as those affected by, and may accompany, peripheral arterial disease
Sensory neuropathy	Pain is not usually dependent on activity and is more often position-related; symptoms may include numbness or burning pain; patients often younger than those with PAD; often associated with diabetes mellitus
Musculoskeletal disease	Diffuse muscle pains, often unrelated to activity; typical in patients with fibromyalgia and systemic autoimmune diseases
Venous disease	Limb pain may worsen with activity and standing; limb elevation often relieves the pain; usually associated with edema; patients are younger and may have a history of deep venous thrombosis; leg pruritus, hyperpigmentation, and medial malleolar ulcers may be present
Lumbar radiculopathy	Pain may be burning and localized to the back of the leg; patient usually has a history of back problems or pain occurs in the setting of back injury
Popliteal entrapment syndrome	Pain affects the calves and worsens with vigorous physical activity; a drop in the ABI occurs with dorsiflexion; occurs primarily in young athletes
Chronic compartment syndrome	Pain affects calves and is worse after a long duration of physical activity; ABI is not affected; occurs primarily in young athletes

Interpretation of the Ankle-Brachial Index

Ankle-Brachial Index	Interpretation
>1.30	Noncompressible (calcified) vessel (uninterpretable result)
1.00-1.30	Normal
0.91-0.99	Borderline
0.41-0.90	Mild to moderate PAD
0.00-0.40	Severe PAD

Preferred Interventional Therapy for PAD by Arterial Segment

Arterial Segment	Preferred Interventional Therapy
Aortoiliac	Primary stenting
Common femoral artery	Endarterectomy and patch angioplasty, or iliofemoral bypass
Deep femoral artery	Endarterectomy and patch angioplasty, or bypass
Popliteal and tibial arteries	Bypass

Categories and Prognosis of Acute Limb Ischemia

Class	Sensory Loss	Muscle Weakness	Arterial Doppler	Venous Doppler	Prognosis
I	None	None	Audible	Audible	Not immediately threatened; viable
IIa	None to minimal (toes)	None	Inaudible	Audible	Salvageable with prompt treatment
IIb	More than toes	Mild to moderate	Inaudible	Audible	Salvageable only with immediate revascularization
III	Profound anesthesia	Profound; paralysis	Inaudible	Inaudible	Not viable; major tissue loss inevitable

Signs and Symptoms of Critical Acute Limb Ischemia (the "Six P's")

Pulseless; Painful; Pallor; Paresthesia; Paralysis; Poikilothermy (cold)