



Peripheral vascular disease

Peripheral vascular disease (PVD), commonly referred to as peripheral arterial disease (PAD) or peripheral artery occlusive disease (PAOD), refers to the obstruction of large arteries not within the coronary, aortic arch vasculature, or brain. PVD can result from atherosclerosis, inflammatory processes leading to stenosis, an embolism, or thrombus formation. It causes either acute or chronic ischemia (lack of blood supply). Often PAD is a term used to refer to atherosclerotic blockages found in the lower extremity.

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Classification

Peripheral artery occlusive disease is commonly divided in the Fontaine stages, introduced by René Fontaine in 1954 for ischemia:

1. mild pain when walking (claudication), incomplete blood vessel obstruction;
2. severe pain when walking relatively short distances (intermittent claudication), pain triggered by walking "after a distance of >150 m in stage IIa and after <150 m in stage II-b";
3. pain while resting (rest pain), mostly in the feet, increasing when the limb is raised;
4. biological tissue loss (gangrene) and difficulty walking.

A more recent classification by Rutherford consists of three grades and six categories:

1. Mild claudication
2. Moderate claudication
3. Severe claudication
4. Ischemic pain at rest
5. Minor tissue loss
6. Major tissue loss

Symptoms

About 20% of patients with mild PAD may be asymptomatic; other symptoms include:

- Claudication - pain, weakness, numbness, or cramping in muscles due to decreased blood flow
- Sores, wounds, or ulcers that heal slowly or not at all
- Noticeable change in color (blueness or paleness) or temperature (coolness) when compared to the other limb (termed unilateral dependent rubor; when both limbs are affected this is termed bilateral dependent rubor)
- Diminished hair and nail growth on affected limb and digits.

Cause

Risk factors contributing to PAD are the same as those for atherosclerosis:

- Smoking - tobacco use in any form is the single most important modifiable cause of PVD internationally. Smokers have up to a tenfold increase in relative risk for PVD in a dose-related effect. Exposure to second-hand smoke from environmental exposure has also been shown to promote changes in blood vessel lining (endothelium) which is a precursor to atherosclerosis.
- Diabetes mellitus - causes between two and four times increased risk of PVD by causing endothelial and smooth muscle cell dysfunction in peripheral arteries. Diabetics account for up to 70% of nontraumatic amputations performed, and a known diabetic who smokes runs an approximately 30% risk of amputation within 5 years.
- Dyslipidemia (high low density lipoprotein [LDL] cholesterol, low high density lipoprotein [HDL] cholesterol) - elevation of total cholesterol, LDL cholesterol, and triglyceride levels each have been correlated with accelerated PAD. Correction of dyslipidemia by diet and/or medication is associated with a major improvement in short-term rates of heart attack and stroke. This benefit is gained even though current evidence does not demonstrate a major reversal of peripheral and/or coronary atherosclerosis.
- Hypertension - elevated blood pressure is correlated with an increase in the risk of developing PAD, as well as in associated coronary and cerebrovascular events (heart attack and stroke).
- Risk of PAD also increases in individuals who are over the age of 50, male, obese, or with a family history of vascular disease, heart attack, or stroke.
- Other risk factors which are being studied include levels of various inflammatory mediators such as C-reactive protein, homocysteine.

Peripheral arterial disease

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PAD is an atheromatous disease of the peripheral arteries, it is more common in men than women and patients generally present over the age of 50. The lower limb is more often affected than the upper limb and there is a high association with smoking, alcohol excess, diabetes and hyperlipidaemia

Clinical Presentation

Patients present with intermittent claudication. This is a discomfort or ache in calves or buttocks precipitated by walking, relieved by rest. The pain will generally come on after a certain distance of walking and worsen over time. Intermittent claudication is essentially angina of the legs. On examination the following signs may be present:

- Diminished peripheral pulses
- Cold feet or legs
- Peripheral cyanosis
- Pale skin
- Hair loss
- Areas of skin necrosis (ulcers)
- Frank gangrene of the toes in severe cases

In more severe cases patients may present with rest pain due to critical ischaemia. This is commonly felt at night and the patient can relieve the symptoms by hanging the legs out of the bed

Investigations

- Doppler Ultrasound
 - Ankle-Brachial Pressure Index (ABPI) assesses arterial patency by comparing the upper and lower limb. Results of 0.4-0.9 are found in patients with intermittent claudication, 0.04 – 0.4 is indicative of critical ischaemia.
 - Visualise the limb to identify areas of stenosis
- Ultrasound of the abdomen to detect aneurysms
- Angiography (less often performed due to improving Doppler techniques)

Management

General management includes advice regarding smoking cessation, weight loss (if obese/overweight), regular exercise and reducing alcohol intake. Diabetic and hypertensive patients should have control optimised. Vasoconstrictive drugs should be discontinued. Patients should do their best to avoid trauma or infections and chiropody should be arranged.

Indications for revascularization/embolectomy

- Acute ischaemia of the limb (Pain, pallor, pulseless, paralysis, paraesthesia, perishing)
- Chronic ischaemia with impaired skin and tissue viability
- Disabling symptoms

Amputation is a last resort in patients have a dangerously infected limb, in gangrene is too extensive or tissues not viable.

Peripheral venous disease

Varicose veins

Varicose veins more often occur in women. They form due to incompetent valves in the veins, most commonly in the legs. The venous anatomy of the legs consists of 3 groups of veins, deep veins, superficial veins and perforators which join the two systems. Incompetence of the valves in the deep veins results in reflux of blood from the deep venous systems into the superficial veins, which results in dilatation. The veins become chronically elongated, and tortuous. Common sites of varices include the calf perforators, mid thigh perforators (MTP), Saphenofemoral junction (SFJ) and the Saphenopopliteal junction (SPJ).

Varicose veins can be described as primary or secondary:

- *Primary varicose veins*
 - Often familial
 - Aggravating factors include obesity, pregnancy, constipation and prolonged standing.
- *Secondary varicose veins*
 - Following damage to venous valves by either disease (thrombosis) or trauma
 - Chronic venous hypertension in the legs results in skin changes

Clinical Presentation

Patients may present with pain/ache/heaviness or itching of the veins. They may also present for cosmetic reasons. In patients with chronic venous hypertension further signs may be seen including oedema, pigmentation (from haemosiderin deposits), thickening of skin (lipodermosclerosis), eczema and ulceration.

Varices of the saphenofemoral junction (Saphena Varix) may present in a similar manner to inguinal hernias (region, cough impulse, more evident on standing) except that they may demonstrate fluid thrills.

The Trendelenberg test may be useful in finding the level of valvular incompetence. A tourniquet should be put on the thigh with the leg elevated. Ask patient to stand up and look for filling of the varix. If filling occurs with the tourniquet still on, then the level of incompetence must be above the tourniquet. Check at different levels for SFJ, SPJ, MTP respectively.

Investigations

Hand held Doppler - listen over the SFJ/SPJ, apply pressure for 1 second and listen for reflux.

Management

- Conservative for elderly patients, or those with mild disease

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- Elastic support stockings, weight reduction, regular exercise
- Sclerotherapy
 - Seldom used as recurrence, and skin staining occurs
- Surgery most effective treatment when there is sapheno-femoral or sapheno-popliteal incompetence
 - Sapheno-femoral / sapheno-popliteal ligation
 - Stripping of the long saphenous vein and tortuous tributaries

Complications following surgery include recurrence, bruising, haemorrhage, infection, saphenous nerve damage (can lead to paraesthesia).

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5 Foods you must not eat :
Cut down a bit of stomach fat every
day by never eating these 5 foods.

Never eat



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