



PERIPHERAL VASCULAR DISEASE

- The diagnosis of peripheral arterial occlusive disease begins with an accurate history. [1](#)
- Intermittent claudication must be differentiated from lower extremity pain occurring as a result of non-vascular aetiologies. [1](#)
- Neurogenic causes, such as spinal stenosis, account for most of the non-vascular causes of lower extremity pain. [1](#)



- Non-invasive diagnostic studies help determine the level of the disease, may unmask a haemodynamically significant stenosis and are useful in follow-up. [1,2](#)
- Imaging studies are useful in defining the location and extent of vascular lesions before a percutaneous or surgical revascularisation procedure. [1](#)
- Main limitation of diagnostic testing is that proving the presence of vascular disease does not necessarily exclude the possibility that symptoms are caused by neurological disease despite the presence of arterial lesions. [1](#)

COLOUR DOPPLER ULTRASOUND

- 87% sensitivity and 95% specificity for aortoiliac and femoral arterial stenosis >50%. [3-5](#)
- Helps confirm the clinical assessment and determine the level and severity of disease. [3,4](#)
- Limitations:
 - Does not provide road map equivalent to angiography.
 - Time consuming.

MAGNETIC RESONANCE ANGIOGRAPHY

- >95% sensitivity and specificity for evaluation of peripheral arterial disease of lower extremities. [5,6](#)
- Superior discriminatory power compared to duplex ultrasonography. [5](#)
- Useful adjunct and planning tool for both catheter-directed and surgical intervention. [6](#)
- Advantages: Non-invasive and does not involve exposure to ionising radiation. MRI has an advantage over CT in that it does not require the use of iodinated contrast medium, thus avoiding the risk of contrast-related nephropathy in patients who are likely to have a higher risk compared to the general population. [Note warning regarding Gadolinium in severely impaired renal function.](#)
- Limitations: limited availability and high expense.

ANGIOGRAPHY

- "Gold standard" test for defining the vascular lesion's morphology as well as providing a "road-map" of the vascular system. [1](#)
- If invasive therapy is indicated, catheter angiography is used for an accurate and complete assessment of the peripheral arteries to help choose the optimal type and technique of revascularisation procedure. [1](#)
- Disadvantages: invasive procedure with a risk of morbidity and mortality. [7,8](#)





COMPUTED TOMOGRAPHY ANGIOGRAPHY (CTA)

- The usefulness of CTA has traditionally been limited by insufficient scanning speed to examine a long arterial segment with clinically acceptable spatial resolution. [9](#)
- However, multislice CT (MSCT) scanners have had a substantial effect on CT angiography offering: [10](#)
 - Shorter acquisition time.
 - Coverage of wider anatomic areas.
 - Reduced doses of contrast.
 - Reduced reconstruction artifact.
 - Improved spatial resolution.
- In one study that used 5mm section thickness, the sensitivity and specificity of MSCT for depicting total arterial occlusions were 88% and 97% while for stenoses of at least 75% the sensitivity and specificity were 92% and 96% respectively. [11](#)
- In another study that used 2mm slice thickness, the sensitivity and specificity for detecting total arterial occlusions were 96% and 98% while for detecting stenoses of at least 50% the sensitivity and specificity were both 99%. [12](#)
- Advantages of CTA over angiography include:
 - Non-invasive.
 - Able to show segments immediately distal to a point of occlusion.
- Limitations: [12](#)
 - Less accurate for severely calcified lesions due to artifacts.
 - Limited interobserver agreement.

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Website

For more information go to www.imagingpathways.health.wa.gov.au

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