

Visceral Ultrasound Scan



ARTERY AND VEIN DIAGNOSTICS



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Patient Information

1. Understanding Visceral Arterial Disease

The visceral arteries supply blood to the major abdominal organs, including the stomach, liver, spleen, pancreas, and intestines. The main arteries assessed in a visceral Doppler scan include:

- Coeliac artery
- Superior mesenteric artery (SMA)
- Inferior mesenteric artery (IMA)
- Splenic artery
- Hepatic artery

These arteries can develop narrowing (stenosis), compression, aneurysms, or other abnormalities that may cause abdominal symptoms or affect organ function.

A **visceral arterial Doppler ultrasound** is a non-invasive test that evaluates blood flow to these organs and helps diagnose conditions such as coeliac artery stenosis, mesenteric ischaemia, Median Arcuate Ligament Compression (MALC), and splenic artery aneurysms.

1.1 Coeliac Artery Stenosis

The **coeliac artery** supplies blood to the stomach, liver, spleen, and pancreas. Narrowing of this artery may occur due to:

Atherosclerosis

- Plaque build-up in the artery
- More common in older adults
- Often associated with high blood pressure, diabetes, smoking, and high cholesterol

Median Arcuate Ligament Compression (MALC)

- A non-atherosclerotic cause of coeliac artery narrowing
- Occurs when the median arcuate ligament, a fibrous band of the diaphragm, compresses the coeliac artery
- Compression is often worse during exhalation and may improve during inhalation
- May cause abdominal pain, especially after eating

Why Coeliac Stenosis Matters

Significant narrowing can reduce blood flow to abdominal organs and may contribute to:

- Post-meal abdominal pain
- Unexplained weight loss
- Nausea or vomiting
- Food fear (avoiding meals due to pain)

Ultrasound helps determine whether the narrowing is fixed (atherosclerotic) or dynamic (MALC).

1.2 Splenic Artery Aneurysm

A **splenic artery aneurysm** is a bulging or dilation of the splenic artery wall. It is the most common visceral artery aneurysm.

Causes

- Atherosclerosis
- Pregnancy-related changes
- Portal hypertension
- Fibromuscular dysplasia
- Congenital vessel weakness

Why It Matters

Most splenic artery aneurysms are asymptomatic, but larger aneurysms may pose a risk of rupture, especially in pregnancy. Ultrasound helps monitor size, shape, and stability.

1.3 Mesenteric Artery Disease

The superior mesenteric artery (SMA) and inferior mesenteric artery (IMA) supply blood to the intestines. Narrowing of these arteries may cause:

- Post-prandial abdominal pain
- Weight loss
- Diarrhoea or altered bowel habits
- Chronic mesenteric ischaemia (rare but serious)

Ultrasound helps identify reduced blood flow and guides further imaging or treatment.

2. Why You Have Been Referred for This Scan

Your doctor may recommend a visceral Doppler ultrasound if you have:

- Unexplained abdominal pain
- Pain after eating (post-prandial pain)
- Unintentional weight loss
- Suspected coeliac artery stenosis or MALC
- Known or suspected splenic artery aneurysm
- Symptoms of chronic mesenteric ischaemia
- A bruit heard over the abdomen
- A history of vascular disease
- Follow-up after visceral artery stenting or surgery

The scan helps identify whether reduced blood flow or arterial abnormalities are contributing to your symptoms.

3. What the Scan Examines

A visceral arterial Doppler ultrasound uses B-mode imaging, colour Doppler, and spectral Doppler to assess the abdominal arteries and blood flow patterns.

Your scan will evaluate:

3.1 Coeliac Artery

- Peak systolic velocities
- Degree of narrowing
- Dynamic changes with breathing (for MALC)
- Turbulence or post-stenotic dilatation
- Aneurysmal changes (rare)

3.2 Superior Mesenteric Artery (SMA)

- Presence of stenosis
- Blood flow velocities
- Waveform patterns
- Evidence of chronic mesenteric ischaemia

3.3 Inferior Mesenteric Artery (IMA)

- Patency and flow
- Compensatory changes if other arteries are narrowed

3.4 Splenic Artery

- Presence of aneurysm
- Aneurysm size and morphology
- Thrombus within the aneurysm
- Flow characteristics

3.5 Hepatic Artery (When Indicated)

- Flow direction and velocity
- Post-transplant assessment (if applicable)
- Aneurysmal or stenotic changes

3.6 Aorta and Surrounding Structures

- Aortic plaque or aneurysm
- Origins of visceral arteries
- Anatomical variants

4. How to Prepare for Your Scan

To ensure the best possible imaging quality:

- **Fast for 4–6 hours before the scan**, as bowel gas can interfere with visualising the visceral arteries.

- **Do not smoke or chew gum** during the fasting period, as this increases bowel gas.
- You may take your usual medications with a small sip of water, unless your doctor advises otherwise.
- Wear loose, comfortable clothing, or pants/trousers that can be easily removed for the scan.
- Avoid applying moisturisers or oils to your abdomen on the day of the scan.
- If you have difficulty lying flat, please inform the sonographer so we can adjust your positioning.

If your doctor has requested an **urgent visceral artery scan**, please attend as soon as possible.

5. What to Expect During the Scan

A visceral Doppler ultrasound is safe, painless, and performed by a highly trained vascular sonographer with advanced expertise in abdominal vascular assessment.

5.1 Duration

The scan typically takes **30–45 minutes**, depending on your anatomy and bowel gas.

5.2 Positioning

You may be examined:

- Lying on your back
- Slightly turned to one side
- Occasionally sitting upright
- Holding your breath at times to improve image clarity

Your comfort is always prioritised.

5.3 The Procedure

- Warm gel is applied to your upper abdomen.
- The sonographer gently moves a handheld probe to visualise the visceral arteries.
- Doppler measurements are taken during normal breathing, deep inspiration and expiration (especially for MALC assessment).
- If you prefer a male or female sonographer, please let the practice know when booking.

5.4 Safety

Ultrasound uses sound waves — not radiation — making it safe for all patients.

6. How the Scan Helps Guide Treatment

Your scan results help determine the most appropriate management, which may include:

6.1 Medical Management

- Blood pressure control
- Cholesterol-lowering therapy
- Diabetes management
- Smoking cessation
- Dietary adjustments

6.2 Minimally Invasive Treatments

If significant narrowing or aneurysm is detected, your doctor may discuss:

- Angioplasty
- Stent placement
- Endovascular aneurysm repair

6.3 Surgical Options

For complex or severe disease, surgery may be recommended:

- Coeliac artery decompression for MALC
- Aneurysm repair
- Bypass procedures

7. After the Scan

7.1 Review of Images

Your scan images and measurements are reviewed by a vascular specialist or reporting sonographer trained in visceral arterial assessment.

7.2 Report Delivery

A detailed report is sent to your referring doctor, usually within **24–48 hours**, and includes:

- Presence and severity of stenosis
- Dynamic changes with respiration (for MALC)
- Aneurysm size and characteristics
- Flow patterns in visceral arteries
- Summary of clinical significance

7.3 Next Steps

Your doctor will discuss the results with you and outline treatment options tailored to your symptoms and clinical needs.

8. Frequently Asked Questions

Is the scan painful? No. You may feel mild pressure, but the scan is not painful.

Can I drive afterward? Yes. Most patients can drive immediately after the scan.

Do I need to stop medications? No. Continue your usual medications unless your doctor advises otherwise.

Why do I need to fast? Fasting reduces bowel gas, which improves the ability to see the visceral arteries clearly.

What is MALC? Median Arcuate Ligament Compression occurs when a fibrous band of the diaphragm compresses the coeliac artery, often causing symptoms during exhalation.

Are splenic artery aneurysms dangerous? Most are stable, but larger aneurysm may require specialist review or treatment.

9. Why Choose Our Vascular Lab

State-of-the-art ultrasound technology for high-resolution imaging and precise haemodynamic assessment.

Comprehensive, clinically focused reporting to support accurate diagnosis and tailored treatment planning.

Patient-centred care, with an emphasis on comfort, clear communication, and a supportive experience throughout your visit.

Examinations performed in accordance with international visceral Doppler standards, ensuring accuracy and consistency.