**Arterial Portfolio**

## Description: foundationlogocol

## Vascular Laboratory Guidelines

# Lower limb arterial duplex

**Patient Preparation:**

Check patient’s identification (2 forms of i.d)

Explain test procedure

Obtain verbal consent or implied consent (if patient gets undressed / lies down for scan)

Take relevant history from patient

Ask patient to undress as appropriate

**Scanner Preparation:**

The probes should be cleaned with Clinell wipes (green packet) after each patient. If a patient is infections, all staff should follow the Trust’s guidelines/policy on infection control. For infectious patients the cleaning of the ultrasound room should be done as outline in the form shown in appendix A. This form should be signed and kept in the department for audit purposes. The scanners and probes must be cleaned to the manufacturer’s guidelines.

**Procedure:**

1. May be requested for intermittent claudication, rest pain or graft surveillance.
2. Unless otherwise stated the scan should include the infra-renal aorta down to the distal crural vessels. Obtain spectral Doppler samples from each vessel.
3. Velocity ratio measurements should be made where stenoses are observed.
4. The material used for the bypass graft (PTFE or autologous vein) and the anatomical sites of its proximal and distal anastomoses (femoro-popliteal above or below the knee, femoro-distal, etc) should be outlined in the request form and noted in the report. Peak systolic velocities within a graft should be measured and reported. Low resistance blood flow may appear in bypass graft in the early postoperative period but this is normal and can persist up to 6 weeks post surgery.

**Criteria:**

|  |  |
| --- | --- |
| **Degree of stenosis** | **Velocity Ratio** *(Hennerici)* |
| 0 to 49% diameter reduction | VR <2 |
| 50% to 74% diameter reduction | VR ≥2 but <4 |
| 75% to 99% diameter reduction | VR ≥4 |
| occluded | No flow detected |

**Report:**

The report should contain the site of any occlusion, stenosis or aneurysm. The degree of any narrowing should be quantified (see criteria above). The size of any aneurysms should be reported. Vessels not observed e.g. due to calcification, bowel gas or dressings should be noted.

Written reports will be available on Rad Centre/PACS. Diagrams can be drawn in complex cases and where they add value to the report. These diagrams will be scanned onto electronic medical records (EMR). However General Practitioners (GP) cannot access EMR to review diagrammatical results, therefore, the scan results should be a written report on RADCentre/PACS.

An urgent report should be given to the referring consultant if indicated i.e. acute occlusion of a graft or native artery, large aneurysms, rest pain etc.

If during the scan there is an incidental finding that is serious and unexpected then at the bottom of the report the following caption should be added: [ALERT]

**Recommended images to be stored on PACS:**

* Longitudinal image(s) of abdominal aorta showing diameter measurement(s)
* Spectral Doppler waveform in CFA, PFA origin, SFA, popliteal artery, distal ATA, distal PTA and distal peroneal artery
* Where stenosis is detected, store spectral Doppler velocity pre- and within stenosis (either same image or multiple images)
* Where stenosis / occlusion is detected, store B-mode / colour Doppler images as necessary

For bypass grafts:

* Images of proximal and distal anastomoses where possible
* Inflow vessel spectral Doppler waveform
* Spectral Doppler waveform / velocities within graft
* Spectral Doppler waveform in the vessel distal to graft
* Where stenosis / occlusion is detected, store B-mode / colour Doppler images as necessary
* Store images of any other relevant pathology detected
* Nb. In a one-stop clinic environment where time is limited, it may be difficult to record all of the above images

**Reference:** Hennerici M, Neuerburg-Heusler D 1998 Vascular Diagnosis with ultrasound. Thieme, Stuttgart, pp 179-180

**Latest US Doppler lower limb Arterial**

**U/S Doppler Left Leg Arteries**

LEFT lower limb:

The abdominal aorta is patent and appears normal in calibre measuring 1.4cm in AP diameter (inner to inner).

The CIA, IIA origin and EIA are patent with no significant stenosis and triphasic flow noted in the distal EIA

The CFA is patent with no significant stenosis and triphasic flow noted.

The PFA origin is patent with no significant stenosis and triphasic flow noted.

The SFA is patent with velocities suggesting a 50-74% stenosis proximally however visually the stenosis may be closer to the 50% end of the range.

The popliteal artery is patent with velocities suggesting an upper end 50-74% stenosis distally with increased velocity detected.

The TPT is patent with no significant stenosis.

Some limited views of the calf arteries due to heavy calcification.

The ATA appears segmentally occluded, along the course (collaterals noted) and about a 50% stenosis in the mid ATA and distal ATA with monophasic waveforms at the ankle.

The PTA appears segmentally occluded, along the course (collaterals noted) with monophasic waveforms at the ankle.

The peroneal artery where seen is patent to the distal calf with pulsatile monophasic waveforms distally.

Scanned by Mervyn McKenna AVS trainee

**U/S Doppler Left Leg Arteries**

LEFT lower limb:

The abdominal aorta is calcified with mild atheroma and patent and appears normal in calibre measuring 1.2cm in AP diameter (inner to inner).

The proximal to mid CIA is calcified and patient with no significant stenosis. The distal CIA to distal EIA stent is patent with raised velocities detected in the distal EIA stent which would suggest a 50-74% stenosis.

There is raised velocities detected in the very distal EIA which would suggest a >75% stenosis with monophasic flow distally.

There are raised velocities detected in the Proximal CFA which would suggest a 50-74% stenosis with monophasic flow distally.

The PFA origin is patent with mild atheroma but no significant stenosis.

The SFA has generalised disease throughout with velocities suggesting a 50%-74% stenosis in the mid and mid/distal SFA. There is a 2cm long occlusion in the distal SFA with collaterals.

The popliteal artery is patent with no significant stenosis.

The TPT is patent with no significant stenosis.

The ATA is calcified but patent with no significant stenosis with low monophasic flow distally (20cm/s)

The PTA is calcified but patent with no significant stenosis with low monophasic flow distally (15cm/s)

The peroneal artery is calcified and appears occluded

Conclusion

Left leg:

The distal CIA to distal EIA stent is patent with a 50-74% stenosis in the distal EIA stent

A>75% stenosis in the very distal EIA with monophasic flow distally.

A 50-74% stenosis in the Proximal CFA

A 50%-74% stenosis in the mid and mid/distal SFA and a 2cm long occlusion in the distal SFA with collaterals.

The peroneal artery is calcified and appears occluded

The ATA and PTA are calcified but patent with no significant stenosis with low monophasic flow distally (15-20cm/s)

Mervyn McKenna AVS trainee

Emailed to referring consultant

**U/S Doppler Left Leg Arteries**

LEFT lower limb

The abdominal aorta is calcified with mild atheroma and patent and appears normal in calibre measuring 1.9cm in AP diameter (inner to inner).

There are raised velocities detected in the calcified Proximal CIA which would suggest a 50-74% stenosis with biphasic waveforms.

There are raised velocities detected in the Proximal EIA which would suggest a 50-74% stenosis with biphasic waveforms.

There are raised velocities detected in the mid/distal EIA which would suggest a 50-74% stenosis with biphasic waveforms.

The CFA is calcified and patent but no significant stenosis.

The PFA origin is patent with no significant stenosis.

The SFA has generalised "soft plaque" disease throughout with velocities suggesting a 50%-74% stenosis in the mid and mid/distal SFA. There is a 3.2cm long chronic occlusion in the mid/distal SFA with collaterals with reconstituted monophasic flow in the very distal SFA.

There are raised velocities in the mid patent popliteal artery which would suggest a 50-74% stenosis with damped monophasic waveforms.

The TPT is patent with no significant stenosis with monophasic waveforms.

The ATA is patent with no significant stenosis with low damped monophasic flow distally (10cm/s)

The PTA is patent with no significant stenosis with low damped monophasic flow distally (5cm/s)

The peroneal artery is patent with no significant stenosis with low damped monophasic flow distally (15cm/s)

Conclusion

Left leg:

A 50-74% stenosis in the proximal CIA

A 50-74% stenosis in the proximal EIA

A 50-74% stenosis in the mid/distal EIA

A 50-74% stenosis in the mid SFA

A 50-74% stenosis in the mid/distal SFA

A chronic occlusion of the mid/distal SFA with reconstituted in the very distal SFA with monophasic flow distally.

A 50-74% stenosis in the popliteal artery

The ATA, PTA and peroneal artery are patent with no significant stenosis with low damped monophasic flow distally (5-15cm/s).

Mervyn McKenna AVS trainee

Emailed to referring consultant

**U/S Doppler Left Leg Arteries**

Left lower limb Arterial Duplex

The abdominal aorta is calcified patent and appears normal in calibre measuring 1.2cm in AP diameter (inner to inner).

The CIA is heavily calcified but patient with no significant stenosis (Poor views of the IIA origin due to extensive bowel gas) and EIA is patent with no significant stenosis and triphasic flow noted in the distal EIA.

The CFA is calcified with atheroma but patent with no significant stenosis detected and triphasic flow distally.

There is a high take off PFA origin which is patent with biphasic flow.

The SFA origin is small in calibre and occluded. The two stented section of the SFA in the proximal and mid SFA are occluded (SFA appears chronically occluded at the origin to distal SFA) with reconstituted flow in the very distal SFA with monophasic flow distally.

The popliteal artery is calcified patent with no significant stenosis detected and monophasic flow distally.

There are raised velocities detected in the TPT which would suggest a 50-74% stenosis and monophasic flow.

There are raised velocities detected in the calcified proximal ATA which would suggest a 50-74% stenosis. The origin of the ATA to ankle is patent with low monophasic flow (20cm/s)

The PTA is heavily calcified and appears occluded with some segmental patency proximally.

There are raised velocities detected in the mid peroneal which would suggest a 50-74% stenosis but patent to the ankle with low monophasic flow (9cm/s).

Conclusion

Left lower limb: The stented SFA appears chronically occluded with reconstituted flow in the very distal SFA with monophasic flow distally.

A 50-74% stenosis in the TPT

A 50-74% stenosis in the proximal/mid peroneal with low monophasic flow (9cm/s).

A 50-74% stenosis in the proximal ATA ankle with low monophasic flow (20cm/s).

The PTA is heavily calcified and appears occluded with some segmental patency proximally

Irregular heart rate noted

Scanned by Mervyn Mckenna AVS trainee

**U/S Doppler Both Leg Arteries**

The abdominal aorta is heavily calcified? Patent

Right lower limb

The CIA, IIA origin and proximal to distal EIA are heavily calcified; obscuring most views but appear occluded. The EIA is very small in calibre suggesting chronic occlusion. The very distal EIA is patent with monophasic flow filled by proximal collaterals.

There is a calcified plaque seen in the CFA however this is not causing a haemodynamically significant stenosis. The CFA is patient with monophasic flow.

The PFA origin is heavily calcified with velocities suggesting a 50%-74% stenosis

The SFA is calcified patent with no significant stenosis detected and monophasic flow distally.

The popliteal artery is calcified patent with no significant stenosis detected and monophasic flow distally.

The TPT is patent with no significant stenosis detected and monophasic flow.

The ATA is patent to the ankle with no significant stenosis detected and monophasic flow distally.

The PTA is calcified patent to the ankle with no significant stenosis detected and monophasic flow distally.

There are poor views of the peroneal artery due to calcification? Patency.

Left lower limb

The CIA, IIA origin and proximal to distal EIA are heavily calcified; obscuring most views but appear occluded. The EIA is very small in calibre suggesting chronic occlusion. The very distal EIA is patent with monophasic flow filled by proximal collaterals.

There is a calcified plaque seen in the CFA however this is not causing a haemodynamically significant stenosis. The CFA is patient with monophasic flow.

The PFA origin is heavily calcified with no significant stenosis detected

The SFA is calcified patent with no significant stenosis detected and monophasic flow distally.

The popliteal artery is calcified patent with no significant stenosis detected and monophasic flow distally.

The TPT is patent with no significant stenosis detected and monophasic flow.

The ATA is patent to the ankle with no significant stenosis detected and monophasic flow distally.

The PTA is calcified patent to the ankle with no significant stenosis detected and monophasic flow distally.

There are poor views of the peroneal artery due to calcification? Patency.

Conclusion

The abdominal aorta is heavily calcified? Patent

RT: IIIac arteries appear heavily calcified and appear chronically occluded with large collaterals filling in to the very distal EIA

The PFA origin is heavily calcified with velocities suggesting a 50%-74% stenosis

ATA and PTA patent to the ankle

There are poor views of the peroneal artery due to calcification? Patency.

LT: IIIac arteries appear heavily calcified and appear chronically occluded with large collaterals filling in to the very distal EIA

ATA and PTA patent to the ankle

There are poor views of the peroneal artery due to calcification? Patency.

Scanned by Mervyn McKenna AVS trainee

**U/S Doppler Right Leg Arteries**

Right Lower Limb Arterial Duplex

The abdominal aorta calcified distally and patent and appears normal in calibre measuring 1.4cm in AP diameter (inner to inner).

The CIA, IIA origin and EIA are patent with no significant stenosis and triphasic flow noted in the distal EIA

The CFA is patent with no significant stenosis and triphasic flow noted in the distally

The PFA origin is patent with no significant stenosis and triphasic flow noted

The SFA is patent with no significant stenosis detected and triphasic flow distally

The popliteal artery is patent with velocities suggesting a 50% stenosis mid popliteal artery

The TPT is patent with no significant stenosis detected and triphasic flow distally

The PTA is heavily calcified. The proximal-mid calf PTA is patent with biphasic waveforms. The upper segment of the distal calf PTA is occluded, the lower segment of the distal PTA is patent but with retrograde flow. The PTA at the ankle is occluded.

The peroneal artery is patent, calcified with no significant stenosis detected and triphasic flow distally.

The ATA is calcified with raised velocities detected in the proximal ATA which would suggest a >75% stenosis proximal ATA. There also appears to be two 50-74% stenosis in the distal ATA and a 50-74% at the DPA ankle with biphasic flow distally.

Conclusion

Rt:A 50% stenosis in the mid popliteal artery

Heavily calcified calf run-off.

PTA distal occlusion.

ATA x1 proximal >75% stenosis, x3 50-74% distal stenoses.

Scanned by Mervyn McKenna AVS trainee

**U/S Doppler Right Leg Arteries**

Right lower limbs

The abdominal aorta is patent and appears normal in calibre measuring 1.4cm in AP diameter (inner to inner).

The CIA, IIA origin and EIA are patent with no significant stenosis and triphasic flow noted in the distal EIA

The CFA is patent with no significant stenosis detected and triphasic flow distally.

The PFA origin is patent with no significant stenosis detected and triphasic flow

The SFA is patent with no significant stenosis detected and triphasic flow distally.

The popliteal artery is patent with no significant stenosis detected and triphasic flow distally

The TPT is patent with no significant stenosis detected and triphasic flow distally.

The proximal to distal ATA is patent, there are raised velocities detected in the distal ATA which would suggest a two 50-74% stenoses. The very distal ATA to DPA is occluded with acute thrombus.

The PTA is patent with no significant stenosis detected and tri/biphasic flow at the ankle.

The peroneal artery is patent with no significant stenosis detected and triphasic flow distally.

Conclusion

Rt:Two 50-74% stenoses in the ATA at the ankle followed by an acute occlusive thrombus in the very distal ATA to DPA

Scanned by Mervyn McKenna AVS trainee

**U/S Doppler Right Leg Arteries**

Right lower limb

The abdominal aorta is patent and appears normal in calibre measuring 1.2cm in AP diameter (inner to inner).

The proximal to mid CIA (Poor views of the distal CIA and IIA origin and proximal EIA due to extensive bowel gas) and mid to distal EIA are patent with no significant stenosis and biphasic flow noted in the distal EIA

The CFA is patent with no significant stenosis detected and triphasic flow distally

The PFA origin is patent with no significant stenosis detected and triphasic flow

The SFA has generalised calcified disease throughout with velocities suggesting a >75% stenosis in the mid Distal SFA with biphasic flow distally.

The popliteal artery is patent with velocities suggesting a 50-74% stenosis proximally. Visually the stenosis may be closer to the 50% end of the range.

The TPT is patent with no significant stenosis detected and biphasic flow distally,

The proximal to mid ATA is heavily calcified but patent. The mid/distal ATA appears occluded. The Distal ATA is patent with monophasic retrograde flow. The DPA is patent with monophasic flow.

The PTA and peroneal artery are patent with no significant stenosis detected and biphasic flow distally

Conclusion

Right lower limb

A >75% stenosis in the mid Distal SFA

A 50-74% stenosis in the proximal popliteal artery

The mid/distal ATA appears occluded with monophasic retrograde flow distally and DPA is patent with monophasic flow.

**U/S Doppler Right Leg Arteries**

Very challenging patient as very confused and body habitats

Poor views (due to body habitas) of the abdominal aorta but where seen is patent and appears normal in calibre measuring 1.7cm in AP diameter (inner to inner).

Right lower limb

Some poor views of the CIA and IIA origin and EIA due to patient compliance, however there are raised velocities detected in the CIA which would suggest a 50-74% stenosis. There are raised velocities detected in the distal EIA which would suggest a 50-74% stenosis with triphasic waveforms distally.

The CFA is patent with no significant stenosis detected and triphasic flow distally

The PFA is patent with no significant stenosis detected and triphasic flow

In the proximal SFA there is a short chronic occlusion (2cm long) with some recanulation and monophasic flow after the occlusion. The mid to distal SFA has generalised disease with velocities suggesting a 50-74% stenosis in the distal SFA with monophasic distally.

The popliteal artery is patent with no significant stenosis detected with monophasic distally.

The TPT and peroneal artery are patent where seen with monophasic distally.

There are poor views of the PTA and ATA due to calcification. The PTA appears largely patent with monophasic distally and 50-74% stenosis distally with monophasic flow distally

The ATA appears segmentally patent with a? Short occlusion in the proximal ATA, a 50%-74% stenosis in the proximal and mid ATA a short occlusion distally and monophasic flow distally

Scanned by Mervyn McKenna AVS trainee

**U/S Doppler Left Leg Arteries**

Very challenging patient due to compliance

The abdominal aorta is calcified patent and appears normal in calibre measuring 1.7cm in AP diameter (inner to inner).

Left lower limb

The CIA (<50% stenosis is the distal CIA) and EIA are patent with no significant stenosis and triphasic flow noted in the distal EIA

The CFA is calcified with atheroma but patent with no significant stenosis detected and biphasic flow distally

The PFA origin is patent with no significant stenosis.

The SFA is patent with no significant stenosis with triphasic flow distally.

The popliteal artery is patent with no significant stenosis detected with pulsatile monophasic flow distally

There are raised velocities detected in the calcified TPT which would suggest a 50-74% (may be tighter).

Poor views of the calf arteries due to calcification.

There are raised velocities detected in the calcified proximal ATA which would suggest a 50-74% stenosis. ? patency of the ATA origin. The proximal to Mid/Distal ATA appears occluded with a short occlusion (3cm long) in the distal ATA but patent at the ankle with damped monophasic flow at the ankle.

? proximal to mid PTA occlusion with raised velocities seen in the distal PTA suggesting a 50-74% with monophasic waveforms distally

Unable to visualise the peroneal due to patient compliance

Scanned by Mervyn McKenna AVS trainee

**U/S Doppler Left Leg Arteries**

Left lower limb

The abdominal aorta is patent and appears normal in calibre measuring 2cm in AP diameter (inner to inner).

Poor views of the tortuous CIA, IIA origin due to calcification but appears patent with no significant stenosis with biphasic waveforms distally. There are raised velocities in the proximal EIA which may suggesting a >75% stenosis with monophasic flow in the mid EIA. The distal EIA is heavily calcified and cannot exclude a significant stenosis with bi/monophasic flow noted in the distal EIA.

The CFA is heavily calcified patent with monophasic flow.

The PFA origin is patent.

The proximal SFA is calcified and patent. The Mid SFA is ectatic and chronically occluded to the TPT

The popliteal artery is chronically occluded

The TPT is chronically occluded

The arteries in the calf calcified which is obscuring clear views.

The proximal ATA is patent. The Proximal/mid to distal ATA is occluded

The PTA appears patent (However there may be a short occlusion or stenosis in the proximal/mid PTA) where seen to the ankle with low aphasic flow distally

The peroneal artery appears patent to the ankle with low aphasic flow distally

A mixed area of echogenicity seen in the popliteal fossa consistent with appearance of a Baker's cyst. (2cm AP by 2cm LM).

Scanned by Mervyn McKenna AVS trainee

**U/S Doppler Left Leg Arteries**

The abdominal aorta is patent and appears normal in calibre measuring 2cm in AP diameter (inner to inner).

The mid CIA is aneurysmal measuring 3.1cm in AP diameter (inner to inner), IIA origin and EIA (bowel gas mid EIA) are patent with no significant stenosis and triphasic flow noted in the distal EIA

The CFA patent with no significant stenosis detected and triphasic flow distally

The PFA origin is patent.

The SFA is calcified patent with no significant stenosis detected and triphasic flow distally

The popliteal artery is patent with no significant stenosis detected and triphasic flow distally

The calf vessels are calcified

The PTA and peroneal artery take off at the popliteal artery

The PTA origin is patent then is occluded in the proximal PTA to the distal calf. There is a large collateral which runs parallel to the PTA and fills in the PTA in the ankle.

The ATA come off the patent proximal peroneal artery. The Proximal ATA is patent then occludes to the distal calf with a short patent section of the ATA at the ankle

The is a >75% stenosis in the proximal peroneal artery there is a ~50% stenosis in the mid peroneal and then there is a 50-74% stenosis in the distal Peroneal and patient at the ankle with monophasic flow

Conclusion

Left lower limb

The mid CIA is aneurysmal

The PTA and peroneal artery take off at the popliteal artery

The PTA origin is patent then is occluded in the proximal PTA to the distal calf. There is a large collateral which runs parallel to the PTA and fills in the PTA in the ankle.

The ATA come off the patent proximal peroneal artery. The Proximal ATA is patent then occludes to the distal calf with a short patent section of the ATA at the ankle

The is a >75% stenosis in the proximal peroneal artery, A ~50% stenosis in the mid peroneal artery, A 50-74% stenosis in the distal Peroneal and patient at the ankle with monophasic flow

Scanned by Mervyn McKenna AVS trainee

**U/S Doppler Left Leg Arteries**

Left lower limb

Very poor views in the abdomen due to extensive bowel gas. Unable to visualise the abdominal proximal and mid aorta.

LEFT Lower Limb Arterial Duplex:

The CIA is patent, calcified with generalised with triphasic flow. The EIA is patent (small section in the Mid EIA not seen due to bowel gas), calcified with generalised with triphasic flow in the distal EIA. The IIA is patent no significant stenosis detected.

The CFA and PFA origin are patent with triphasic flow, no significant stenosis detected.

The SFA is patent with generalised calcified disease throughout but no significant stenosis detected. There is bi/triphasic flow noted in the distal SFA.

The Popliteal artery is patent with generalised calcified disease throughout with biphasic flow, no significant stenosis detected.

The TPT, PTA and peroneal artery are patent with no significant stenosis detected with biphasic flow distally.

The ATA is patent with biphasic flow distally and a 50-74% proximal ATA stenosis.

Scanned by Mervyn McKenna

**U/S Doppler Left Leg Arteries**

Left lower limb

The abdominal aorta is patent and appears normal in calibre measuring 1.5cm in AP diameter (inner to inner).

The CIA, IIA origin and EIA are patent with no significant stenosis and triphasic flow noted in the distal EIA

The EIA is patent with no significant stenosis and triphasic flow noted in the distal EIA.

The CFA is patent with no significant stenosis and triphasic flow noted in the distally

The PFA origin is patent with no significant stenosis

There is a small channel of flow in the proximal SFA. The SFA in the proximal to mid SFA appears chronically occluded (10cm long) with collaterals. The Distal SFA is patent with monophasic flow distally

The popliteal artery is patent with no significant stenosis detected and monophasic flow distally

The TPT, PTA and peroneal artery are patent with no significant stenosis detected and monophasic flow distally

The ATA appears patent proximally, however appears to occlude in the mid ATA 2cm long (approx.). The ATA is patent in the mid/distal calf to ankle with monophasic flow

Conclusion

lt: The proximal to mid SFA appears chronically occluded (10cm long) with collaterals

There is a mid ATA occlusion with monophasic flow distally

The TPT, PTA and peroneal artery are patent with no significant stenosis detected and monophasic flow distally

Scanned by Mervyn McKenna AVS trainee

**U/S Doppler Right Leg Arteries**

Right Lower limb

The abdominal aorta is calcified patent and appears normal in calibre measuring 2cm in AP diameter (inner to inner).

There are raised velocities along the length of the mid to distal CIA which would suggest a low end 50-74% stenosis with monophasic waveforms distally

The proximal EIA is patent; however the mid EIA is heavily calcified (2.9cm long) and appears to be occluded with collaterals and monophasic flow noted in the distal EIA

There is a large calcified plaque seen in the CFA however this is not causing a haemodynamically significant stenosis. The CFA is patient with monophasic flow.

The PFA origin is heavily calcified with raised velocities suggesting a >75% stenosis

The proximal to mid SFA is patent with no significant stenosis. There are some raised velocities in a section (1.5cm long) of the heavily calcified distal SFA stent and thus cannot exclude a tight stenosis or short occlusion within the stent with monophasic flow distally

The Popliteal has generalised calcified disease throughout and patent with no significant stenosis detected and monophasic flow distally

The TPT has generalised calcified disease throughout and patent with no significant stenosis detected and monophasic flow distally

The proximal PTA is patent then occludes in the mid to distal PTA with collaterals filling the PTA in the ankle.

The proximal ATA is patent. There is a short calcified plaque seen in the mid ATA and cannot exclude a short occlusion or stenosis. There are raised velocities detected in the distal ATA which would suggest a >75% stenosis. There also appears to be second 50-74% stenosis in the ATA on the ankle with monophasic flow noted distally onto the foot.

The peroneal artery is patent to the ankle with monophasic flow noted in the distally.

Scanned by Mervyn McKenna AVS trainee

**U/S Doppler Right Leg Arteries**

The arteries in the calf are calcified which is obscuring clear views and issue with patient mobility and body habitats

Right Lower limb

The abdominal aorta is calcified (obscuring views in the mid to proximal abdominal aorta) but is patent distally and appears normal in calibre measuring 0.8cm in AP diameter (inner to inner).

The CIA, IIA origin and EIA are patent with no significant stenosis and biphasic flow noted in the distal EIA

There is a small calcified plaque seen in the CFA however this is not causing a haemodynamically significant stenosis. The CFA is patient with biphasic flow.

The PFA origin is calcified but patent

The SFA has generalised calcified disease throughout with a large calcified plaque seen in the proximal SFA however this is not causing a haemodynamically significant stenosis. There is however raised velocities in the proximal SFA suggesting a 50%-74% stenosis with biphasic flow distally

The popliteal artery has generalised calcified disease throughout with velocities suggesting a 50%-74% stenosis in the distal popliteal artery with monophasic flow distally

The TPT is patent with no significant stenosis and monophasic flow distally

The ATA is heavily calcified but patent where seen with monophasic flow distally

There appears to be raised velocities seen in distal TPT/PTA origin suggesting a >75%stenosis

Very poor views of the peroneal artery due to calcification? Patency

Unable to scan the very distal ATA and PTA at ankle level due to bandaging.

Scanned by Mervyn McKenna AVS trainee

Suggest alternative imaging due to heavily calcification

**U/S Doppler Left Leg Arteries**

Left Lower Limb

The distal abdominal aorta (Proximal to mid abdominal aorta not seen due to bowel gas ) is patent and calcified and appears normal in calibre measuring 1.6cm in AP diameter (inner to inner).

The CIA, IIA origin and EIA are patent with no significant stenosis and triphasic flow noted in the distal EIA

The CFA patent with no significant stenosis and triphasic flow noted in the distally

The PFA origin is patent.

The SFA is calcified and patent with no significant stenosis detected and triphasic flow distally

The popliteal artery is patent with no significant stenosis detected and triphasic flow distally

The arteries in the calf calcified which is obscuring clear views.

There are poor views of the TPT due to calcification

The ATA is heavily calcified but appears patient with raised velocities detected in the distal ATA which would suggest a 50-74% stenosis with pulsatile monophasic waveforms distally.

The PTA is heavily calcified which segmental patency. However waveforms would suggest a short occlusion in the Mid/Distal PTA with monophasic waveforms distally.

Segmental patency of the peroneal artery due to calcification but biphasic distally

Scanned by Mervyn McKenna AVS trainee

**U/S Doppler Both Leg Arteries**

The abdominal aorta is calcified patent and appears normal in calibre measuring 1.4cm in AP diameter (inner to inner).

Right Lower limb

The CIA, IIA origin and EIA are patent with no significant stenosis and triphasic flow noted in the distal EIA

The CFA is patent with no significant stenosis detected and triphasic flow

The PFA origin is patent with no significant stenosis detected and triphasic flow

The SFA is calcified in section but patent with no significant stenosis detected and triphasic flow distally

The popliteal artery is patent with no significant stenosis detected and triphasic flow distally

The TPT, ATA, PTA and peroneal artery are patent with no significant stenosis detected and triphasic flow distally

Left Lower limb

The CIA (Poor views in the mid and distal CIA due to bowel gas), IIA origin and EIA are patent with no significant stenosis and triphasic flow noted in the distal EIA

The CFA is patent with no significant stenosis detected and triphasic flow

The PFA origin is patent with no significant stenosis detected and triphasic flow

The SFA is calcified in section but patent with no significant stenosis detected and triphasic flow distally

The popliteal artery is patent with no significant stenosis detected and triphasic flow distally

The TPT, ATA, PTA and peroneal artery are patent with no significant stenosis detected and triphasic flow distally

Conclusion:- Bilaterally normal arterial tree

Mervyn McKenna AVS trainee

**U/S Doppler Right Leg Arteries**

The abdominal aorta is slightly calcified, patent and appears normal in calibre measuring 2.1cm in AP diameter (inner to inner) (Poor views of the distal aorta due to bowel gas).

Right lower limb

There are raised velocities detected in the calcified proximal CIA which would suggest a upper end of 50-74% stenosis. The mid to distal CIA is patent with no significant stenosis and triphasic flow noted in the distally

The IIA are patent with no significant stenosis

The EIA is slightly calcified patent with no significant stenosis and triphasic flow noted in the distal EIA.

The CFA is slightly calcified patent with no significant stenosis and triphasic flow noted in the distal EIA

The Profunda artery is calcified and patent.

The SFA origin is patent. The proximal to mid/distal SFA appears calcified and chronically occluded for approx. 17cm long with collaterals. There is reconstituted flow in the distal SFA with monophasic flow distally.

The popliteal artery is patent with mild disease no significant stenosis detected and monophasic flow distally

The TPT is patent with no significant stenosis detected and monophasic flow distally

The ATA is patent with no significant stenosis detected and monophasic flow distally

The PTA is patent with no significant stenosis detected and monophasic flow distally

The peroneal artery is patent with no significant stenosis detected and monophasic flow distally

Conclusion

RT:An upper end 50-74% stenosis in the proximal CIA

The proximal to mid/distal SFA appears chronically occluded for approx. 17cm long with collateral with reconstituted flow in the distal SFA with monophasic flow distally

**U/S Doppler Right Leg Arteries**

Right Lower Limb Arterial Duplex:

The abdominal aorta is patent and appears normal in calibre measuring 1.9cm in AP diameter (inner to inner).

The CIA, IIA origin and EIA are patent with no significant stenosis and triphasic flow noted in the distal EIA

The CFA is patent with no significant stenosis and triphasic flow noted in the distally

The PFA origin is patent.

The SFA is patent with no significant stenosis and triphasic flow noted in the distally

The popliteal artery is patent with no significant stenosis detected and triphasic flow distally

The TPT is calcified but patent with no significant stenosis detected and triphasic flow distally,

The ATA is heavily calcified with ATA origin not seen and raised velocities detected in the proximal ATA which would suggest a 50-74% stenosis with triphasic waveforms distally. Some suboptimal views, so further stenoses may have been missed.

The PTA has calcified walls with raised velocities detected in the proximal PTA which would suggest a 50-74% stenosis. There also appears to be a >75% stenosis in the mid/distal PTA, this appears to be caused by acute organised thrombus on chronic disease. ?2x short occlusions of the distal PTA (however artery is heavily calcified). The distal PTA is patent with triphasic flow (PSV=~30cm/sec).

The peroneal artery is heavily calcified with limited views, there appears to be a mid 50-74% stenosis. There appears to be triphasic flow noted in the distally.

Conclusion

The ATA is heavily calcified with ATA origin not seen and raised velocities detected in the proximal ATA which would suggest a 50-74% stenosis with triphasic waveforms distally.

The PTA is calcified with raised velocities detected in the proximal PTA which would suggest a 50-74% stenosis. There also appears to be a >75% stenosis in the mid/ distal PTA then? 2x short occlusions of the distal PTA (however vessel is heavily calcified). The distal PTA is patent with triphasic flow (PSV=~30cm/sec).

The peroneal artery is heavily calcified with limited views. There appears to be a? Mid 50-74% stenosis but triphasic flow noted in the distally.

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**U/S Doppler Both Leg Arteries**

The abdominal aorta is patent and appears normal in calibre measuring 2.2cm in AP diameter (inner to inner) . There is small calcified plaque seen in the mid abdominal aorta but not haemodynamically significant.

There appears to be no evidence of an intimal flap in the abdominal aorta with normal flow distally

Right Lower leg

The CIA (There is a very small calcified plaque seen in the proximal CIA but not haemodynamically significant) , IIA origin and EIA are patent with no significant stenosis and biphasic flow noted in the distal EIA

The CFA is patent with no significant stenosis and biphasic flow noted in the distal EIA

The PFA origin is patent with no significant stenosis and biphasic flow

A non-vascularised area of echogenicity seen in the medial mid-thigh consistent with appearance of a lipoma or haematoma (AP1.3 cm and ML 2.6cm).

The SFA is patent with no significant stenosis detected and biphasic flow distally

The popliteal artery is patent with no significant stenosis detected and biphasic flow distally

The TPT is patent with no significant stenosis detected and biphasic flow distally,

The ATA is patent with no significant stenosis detected and biphasic flow distally,

The PTA is patent with no significant stenosis detected and biphasic flow distally,

The Peroneal artery is patent with no significant stenosis detected and biphasic flow distally,

Left Lower leg

The CIA IIA origin and EIA (small section of mid EIA not seen due to bowel gas) are patent with no significant stenosis and biphasic flow noted in the distal EIA

The CFA is patent with no significant stenosis and biphasic flow noted in the distal EIA

The PFA origin is patent with no significant stenosis and biphasic flow

The SFA is patent with no significant stenosis detected and biphasic flow distally

The popliteal artery is patent with no significant stenosis detected and biphasic flow distally

The TPT is patent with no significant stenosis detected and biphasic flow distally,

The ATA is patent with no significant stenosis detected there is antegrade flow in the proximal ATA with retrograde flow in the mid to distal ATA due to a large collateral and antegrade flow in the DPA

The PTA is patent with no significant stenosis detected and biphasic flow distally,

The Peroneal artery is patent with no significant stenosis detected and biphasic flow distally,

Conclusion

No evidence of a haemodynamically significant intimal flap in the abdominal aorta

Right: Normal arterial tree in the right leg

Left leg: Normal arterial tree in the left leg with retrograde flow in the mid to distal ATA with antegrade flow in the DPA

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**U/S Doppler Left Leg Arteries**

Irregular heart rate noted

Left Lower leg

The abdominal aorta is patent and appears normal in calibre measuring 1.7cm in AP diameter (inner to inner).

The CIA is obscured by extensive bowel gas. The proximal to distal EIA is patent with triphasic flow distally.

The CFA is patent with no significant stenosis detected and biphasic flow distally

The PFA origin is patent.

The SFA has generalised calcified disease throughout but patent with no significant stenosis detected and triphasic flow distally

The popliteal artery is patent with no significant stenosis detected and triphasic flow distally

The arteries in the calf are calcified

The TPT is patent with no significant stenosis detected and triphasic flow distally

The ATA origin to proximal ATA is patent. The proximal/mid to mid ATA is occluded. Unable to scan the MID to distal ATA due to open wound. The very distal ATA is patent with no significant stenosis detected with damped pulsatile flow distally.

The PTA is patent with no significant stenosis detected and triphasic flow distally

The Peroneal artery is patent with no significant stenosis detected and triphasic flow distally

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**U/S Doppler bilateral Leg Arteries**

Right lower limb

The abdominal aorta is patent normal in calibre and measures 1.6cm in dia

The CIA is patent with no significant stenosis with biphasic signal distally

The EIA is patent with no significant stenosis with biphasic signal distally

The CFA is calcified patent with no significant stenosis with triphasic signal distally

The Profunda artery is patent with no significant stenosis with triphasic signal

There are raised velocities seen in the proximal SFA suggesting a 50-74% stenosis with biphasic signal distally

The popliteal artery is patent with no significant stenosis with tri/biphasic signal distally

The TPT is patent with no significant stenosis with biphasic signal distally

The calf arteries are calcified

The ATA is patent with no significant stenosis with biphasic signal distally

The poor views of the peroneal artery segmental patency

The PTA is patent with no significant stenosis with biphasic signal distally

Left  lower limb

The CIA is patent with no significant stenosis with biphasic signal distally

The EIA is patent with no significant stenosis with biphasic signal distally

The CFA is calcified patent with no significant stenosis with biphasic signal distally

The Profunda artery heavily calcified with raised velocities suggesting a >75% stenosis

The proximal SFA is chronically occluded (15cm long approx.) with collaterals and monophasic signal distally

The popliteal artery is patent with no significant stenosis with monophasic signal distally

The TPT is patent with no significant stenosis with monophasic signal distally

The calf arteries are calcified

The ATA is patent with no significant stenosis with low monophasic signal distally

The poor views of the peroneal artery segmental patency

The PTA is patent with no significant stenosis with low monophasic signal distally

Conclusion

Rt: A 50-74% stenosis seen in the proximal SFA with biphasic signal distally

Lt: A >75% stenosis in the heavily calcified proximal Profunda artery

The proximal SFA is chronically occluded (15cm long approx.) with monophasic signal distally

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U/S Doppler bilateral Leg Arteries

The abdominal aorta is patent normal in calibre and measures 1.4mm in dia

Right lower limb

The CIA is patent with no significant stenosis with triphasic signal distally

The EIA is patent with no significant stenosis with triphasic signal distally

The CFA is patent with no significant stenosis with triphasic signal distally

The Profunda artery is patent with no significant stenosis with triphasic signal

The SFA is patent with no significant stenosis with triphasic signal distally

The popliteal is patent with no significant stenosis with triphasic signal distally

The TPT is patent with no significant stenosis with triphasic signal distally

The ATA is patent with no significant stenosis with triphasic signal distally

The peroneal artery is patent with no significant stenosis with triphasic signal distally

The PTA   is patent with no significant stenosis with triphasic signal distally

Left lower limb

The CIA is patent with no significant stenosis with triphasic signal distally

The EIA is patent with no significant stenosis with triphasic signal distally

The CFA is patent with no significant stenosis with biphasic signal distally

The Profunda artery  is patent with no significant stenosis with triphasic signal

The SFA is patent with no significant stenosis with triphasic signal distally

The popliteal  is patent with no significant stenosis with triphasic signal distally

The TPT is patent with no significant stenosis with triphasic signal distally

The ATA is patent with no significant stenosis with biphasic signal distally

The peroneal artery  is patent with no significant stenosis with triphasic signal distally

There are raised velocities seen in the mid PTA suggesting a >75% stenosis with biphasic signal distally

Conclusion

Right: No significant stenosis throughout the arterial tree

left: a >75% stenosis  mid PTA

Incidental finding:

There is a non-vascularised echolucent area arising from the left kidney measuring 11cm AP and 8cm ML by 9cm long

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U/S Doppler bilateral Leg Arteries

The abdominal aorta is heavily calcified but patent normal in calibre and measures 2cm in dia

Right lower limb

The CIA is patent with no significant stenosis with triphasic signal distally

The EIA is patent with no significant stenosis with triphasic signal distally

The CFA is patent with no significant stenosis with tri/biphasic signal distally

The Profunda artery is patent with no significant stenosis with triphasic signal

The mid to very distal SFA appears chronically occluded.

The popliteal artery appears chronically occluded.

The proximal TPT appears chronically occluded.

The ? patent of ATA

The peroneal artery is patent with no significant stenosis with damped monophasic signal distally

The PTA is patent with no significant stenosis with damped monophasic signal distally

Left lower limb

The CIA appears chronically occluded

The EIA appears chronically occluded

The proximal CFA is calcified patent with no significant stenosis with monophasic signal distally

The distal CFA and Profunda artery and origin SFA is very heavily calcified unable to exclude a short occlusion or stenosis

The proximal to distal SFA is calcified patent with monophasic signal distally. There are raised velocities in the calcified distal SFA suggesting a 50-74% stenosis with monophasic signal distally.

The popliteal artery is patent with no significant stenosis with monophasic signal distally.

The TPT is patent with no significant stenosis with monophasic signal distally.

The ATA is patent with no significant stenosis with monophasic signal distally.

The peroneal artery is patent with no significant stenosis with monophasic signal distally.

The PTA is patent with no significant stenosis with low monophasic signal distally.

Conclusion

Rt:

The mid to very distal SFA appears chronically occluded.

The popliteal appears chronically occluded.

The proximal TPT appears chronically occluded.

The ? patent of ATA

PTA and Peroneal are patent with damped monophasic signal distally

Lt:

The CIA appears chronically occluded

The EIA appears chronically occluded

The distal CFA and Profunda artery and origin SFA is very heavily calcified unable to exclude a short occlusion or stenosis

A 50-74% stenosis in the distal SFA

Three artery run off with low monophasic flow distally

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