

**ascular Laboratories**

**Aorto Iliac Arterial Duplex Protocol**

**Date updated: May (JC)  
Date for review: May 2020**

**Purpose**

Aorto iliac arterial duplex ultrasound examinations are used to determine the location and severity of vascular disease.

**Patient preparation**

* Identify patient
* The patient should be identified by at least two means e.g. name, date of birth, address
* For administrative purposes the referral should also include MRN number which can be used to check for previous relevant imaging
* Be aware of special circumstances such as the need for an interpreter or chaperone
* Explain procedure
* The vascular scientist should introduce her/himself, explain the procedure to the patient, why it is being performed, how long it will take and what will happen with the results afterwards
* Obtain consent
* Verbal consent is suitable for this examination
* If consent is withheld or the patient lacks capacity a note to that effect should be made on the referral and the referring consultant informed
* The patient’s consent should be sought if the scan is also being used for teaching/research purposes
* Prepare patient
* Ask patient to remove clothing and jewellery appropriate to the procedure, assisting if necessary
* The patient should be positioned on the examination couch in a manner commensurate with the procedure being undertaken

Throughout the procedure the patient’s privacy, dignity and security should be observed.

The vascular scientist should recognise and adapt to ethnic, medical and demographic variables.

This protocol is available to the patient if requested.

R**elevant medical history**

A medical history relevant to arterial pathology should be taken prior to the scan. This should include presenting symptoms, their timescales and frequency, and presence of risk factors. This also provides opportunity to verify that the requested procedure correlates with the patient’s clinical presentation.

Common indications for performing an aorto iliac arterial scan include;

* Reduced femoral pulses
* Monophasic signals in common femoral artery on commencing lower limb arterial duplex
* Intermittent claudication
* Ischemic rest pain
* Gangrene
* Ulceration
* Pre intervention assessment
* Post-surgical intervention follow up

**Equipment**

The examination is performed using a curved-linear probe of low frequency (2-5 MHz). The ultrasound machine should be regularly safety checked and maintained according to local Quality Assurance protocols.

The examination couch should be height adjustable and the vascular scientist’s chair should provide good lumbar support and be height adjustable to minimise occurrence of work related musculo-skeletal disorders.

The examination room should be temperature controlled with adjustable lighting suitable for examination.

Cleaning materials should be available in line with local and manufactures guidelines.

**Aorto iliac arterial interrogation**

The patient is usually scanned in a supine position with the head supported by a pillow.

The vascular optimised preset is selected at the start of the examination. The patient name/operator ID should be entered for image capture.

The following techniques should be used to evaluate the aorto iliac arterial system;

* B-mode to image the artery and assess for aneurysmal dilation and vessel contents e.g. atheromatous plaque
* Colour Doppler to assess for presence/absence of flow and aid the position of Spectral Doppler when quantifying stenoses
* Spectral Doppler to determine direction of flow, blood flow velocities and absence of flow

Throughout the duplex scan the machine controls (e.g. scale, gain, angle, depth, gate etc.) are adjusted to optimise the image/colour filling/spectral trace.

Care should be taken to ensure the Doppler angle is ≤60° and the Doppler cursor is angled in the direction of flow

Evaluation of the following arteries (biliateral) should be include;

* Aorta
* Common iliac artery (CIA)
* External iliac artery (EIA)
* Internal iliac artery (IIA)

Each artery is examined at regular intervals along its length, particularly at areas of turbulence or colour aliasing. Any significant changes in calibre should be quantified and documented. Details of collateral circulation and abnormal pathology should be noted.

In the presence of disease peak systolic velocity (PSV) measurements are used to grade the degree of stenosis using the criteria below.

**Criteria**

|  |  |
| --- | --- |
| **Diameter reduction** | **Velocity ratio** |
| <50% | <2 |
| 50-75% | ≥2 <4 |
| 75-99% | ≥4 |
| Occluded | No flow |

Thrush and Hartshorne, third edition, ‘from various references’

**Report**

The report should include correct patient demographics, date of examination, examination type and status of vascular scientist.

The report should also include;

* Which arteries have been assessed, commenting on the presence/absence of flow
* Anatomical position of any occlusions, stenoses or aneurysms
* Any limitations to the examination

The report is then signed and copied to PACS, with the original report sent to the referrer with the referral attached.

**Post procedure**

The result of the scan is explained to the patient. The patient is informed that the result will be communicated to the referrer who will arrange appropriate follow up.

All inpatient reports are filed in the hospital notes. The vascular team should be contacted if the result requires immediate attention.

All outpatient reports are sent back to the referrer. If an aneurysm is detected and the patient has new symptoms of severe abdominal or back pain, or has rest pain or tissue loss, the vascular team should be contacted to review the patient urgently.

**References**

IPEM/SVT Vascular Laboratory Practice, Part 3

SCoR and BMUS. (n.d.). *Guidelines for Professional Ultrasound Practice.* Retrieved from <http://www.sor.org/sites/default/files/document-versions/bmus_scor_ultrasound_guidelines.pdf>

SVT Professional Standards Committee April 2012: Guidance on image storage and use, for vascular ultrasound scans.

Thrush A, Hartshorne T. Harcourt Publishers Ltd. 1999, Peripheral Vascular Ultrasound, How,Why and When.