HOW TO USE THIS APPLICATION NOTE

PATIENT SYMPTOMS: Verify that your patient’s symptoms correspond to one or more of those listed in Figure 1.

DOPPLEX® EQUIPMENT REQUIRED: Select the most appropriate DOPPLEX® Pocket unit to perform the examination. For suggestion of suitable DOPPLEX® equipment, refer to Figure 2.

PROCEDURE: If you have the DOPPLEX® Printa II Package or DOPPLEX® Reporter Software Package (and a computer), connect your DOPPLEX® bi-directional Doppler and begin your examination, refer to Figure 3.

LOCATING VEINS: Figure 4 suggests probe position for locating a vein.

EXAMINATION RESULTS: Taking careful note of your DOPPLEX® display and venous waveforms (if applicable), refer to Figure 5 overleaf and compare your examination results with those shown.

NOTES: Refer to Figure 6 overleaf for general notes relating to this form of examination for venous disease.

FIGURE 1: PATIENT SYMPTOMS
- VARICOSE VEINS
- VARICOSE ECZEMA
- VENOUS OEDema
- POST-THROMBOTIC SWELLING SYNDROME
- VENOUS ULCERS

FIGURE 2: DOPPLEX® EQUIPMENT REQUIRED
Multi, Maxi or Rheo DOPPLEX® unit, 5MHz probe, (deep and superficial veins) or 8MHz probe (superficial veins). DOPPLEX® Printa II Package or Reporter Software Package.

FIGURE 3: PROCEDURE
- With patient standing encourage relaxation by holding frame or bar, and ensure pulse rate is stable.
- Connect Printa II Package to your bi-directional Doppler.
- Ensure ambient temperature is comfortable and apply gel.
- Hold probe between forefinger and thumb at 45° angle, directed proximally.
- Commence examination at superficial femoral vein in the upper thigh and identify flow by applying distal calf compression.
- Check display for directional flow, and record waveform.
- Proceed to the popliteal vein and follow the same procedure as for the superficial femoral vein.
- The long saphenous and short saphenous veins can then be examined.
- The sapheno-femoral and sapheno-popliteal junctions are identified by placing the probe over the groin and popliteal fossa respectively and augmenting flow by tapping the appropriate vein distally.
NORMAL SUPERFICIAL FEMORAL VEIN

Manual compression of the calf distal to the site of examination increases or ‘augments’ venous blood flow.

With the Doppler probe pointing towards the heart, arrows on the Dopplex® display will indicate antegrade flow (away from the probe). No retrograde flow (towards the probe) will be present.

This response also confirms the substantial patency of the venous system between the site of examination and the site of manual compression (calf augmentation).

DEEP VENOUS INCOMPETENCE

Valvular reflux on distal calf compression will result in an augmented signal in an antegrade direction, immediately followed by retrograde flow.

Arrows on the Dopplex® display will indicate flow away from the probe, closely followed by flow towards the probe.

OCCCLUSION

Occlusion of the superficial femoral vein will result in a Doppler signal being obtained either spontaneously or during calf compression.

The flow pattern of a complete proximal occlusion (i.e., external iliac or common femoral vein) will depend on the residual compliance of the veins between the probe and the obstruction. However, this will usually result in a reduction in strength and duration of the signal. The flow pattern of a distal obstruction during calf compression will depend on the collateralisation. It should be noted that this will usually result in a reduction and delay of the augmented signal.

Long and short saphenous and popliteal veins.

Results similar to those obtained with the superficial femoral vein will be observed upon examination of the long saphenous, short saphenous and popliteal veins.

FIGURE 5 EXAMINATION

DOPPLEX DISPLAY

A: 

EXAMPLE OF NORMAL FLOW

DOPPLEX WAVEFORM

FIGURE 5 EXAMINATION

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FIGURE 6 NOTES

Gross superficial incompetence may interfere with insonation of deep veins. This can be minimised by placing a superficial venous tourniquet proximal to the probe.

A Trendelenburg can be performed to confirm long saphenous incompetence. A superficial venous tourniquet is placed on the thigh with the leg elevated. The probe is then placed over a previously marked calf varicosity. On standing the patient and release of the tourniquet, a retrograde flow signal will be present if the sapheno-femoral junction is incompetent.

This note is intended as a guide only. The above Dopplex® displays are an indication only. The number of arrows actually displayed will vary according to the Dopplex® unit gain setting and probe position. If in doubt contact your local vascular studies unit. If you have any questions regarding the products contact the address below.


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EDUCATIONAL MATERIAL AVAILABLE FROM HUNTLEIGH HEALTHCARE

• Library of Sounds Audio Cassette
• Assessment & Treatment of Leg Ulcers Video
• Vascular Investigations Video
• Assessment of the Diabetic Foot Video
• ABPI & TBPI guides.

APPLICATION NOTES AVAILABLE FROM HUNTLEIGH HEALTHCARE

NOTE 1 • Arterial Investigation Of The Lower Limb
NOTE 2 • Venous Investigation Of The Lower Limb Using Doppler
NOTE 3 • Venous Investigation Of The Lower Limb Using PPG
NOTE 4 • Screening For The Absence Of An Acute DVT Using PPG
NOTE 5 • Using A Hand Held Doppler To Assist With PICC Placement

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