Duplex Ultrasound of the Superficial Venous System: Indicators for Disease Severity?

Marianne de Maeseneer

During duplex ultrasound (DUS) 'reflux' is a qualitative criterion, only distinguishing between 'reflux' and 'no reflux'.

To estimate the real severity of the disease we need some additional DUS parameters.

- First, attempts have been made to better quantify reflux, trying to understand the haemodynamic impact of this reflux.
  Whereas duration of reflux is not related to clinical severity, peak reflux velocity (PRV) and mean reflux velocity appeared to be significantly higher in limbs with C4-C6 versus limbs with C2-C3 clinical class.
  Various results have been obtained by investigating refluxing volume in view of clinical severity and hence it seems less reliable than PRV.
- Second, investigation of the morphology of the refluxing veins has gained importance.

This evolution is running parallel with a growing insight in the pathophysiology of superficial venous incompetence, where changes in the vein wall seem to play a key role in the development of chronic venous disease (CVD).

- Logically the diameter of the refluxing vein should be measured, preferably in a standardized fashion.
- In addition, postural diameter change (PDC), expressed as the percentage of diameter change when changing from standing to lying position, may be another parameter to evaluate disease severity. It reflects the elasticity of the vein wall. Preliminary data showed a trend towards lower PDC with more advanced stages of CVD.

The presence of one, or more focal dilatations of the saphenous trunk may be another indicator for disease severity.

Finally, the thickness of the vein wall and the presence of phlebosclerosis can be studied, which again may indicate a tendency to more severe CVD.

Conclusion

Duplex ultrasound definitely offers more possibilities than just looking at the presence or absence of reflux in superficial veins. This should be further investigated to increase our understanding of CVD and refine selection criteria for treating patients with CVD. ■

How to Evaluate a Pathological Reflux: UIP's Recommendations?

Marianne de Maeseneer

When assessing superficial veins, patients should be examined in the standing position where possible.

To detect reflux, it is necessary to create a pressure gradient in the venous system.

This can be achieved:

- either by means of a Valsalva maneuver, which creates high pressure,
- or by means of a (manual) compression-release maneuver, which creates a low pressure in the venous system during release.

Reflux is defined as retrograde flow lasting for more than 0.5 s in the superficial venous system, and more than 1s in the femoral and popliteal veins.

Reflux is a qualitative criterion and reflux duration cannot be used for quantification.

Instead, peak reflux velocity (cm/s) and reflux rate (ml/min) should be used.

To increase reproducibility:

- standardized Valsalva maneuver (pressure of 30 mm Hg, held for 3s) can be applied (only for the saphéno-femoral junction [SFJ] and proximal leg veins),
- or standardized cuff inflation-deflation.

In most countries these standardized methods are not used routinely.

The UIP consensus document also points at the importance of:

- distinguishing between incompetence from the terminal valve or only from the pre-terminal valve at the level of the SFJ,
- by the combined use of colour flow and Doppler modalities, with the sample volume placed at different positions, to test for presence or absence of reflux. ■

Comment évaluer un reflux pathologique ? La durée du reflux n'est pas un bon critère.

P. Lemasle

Mots clés : *reflux pathologique, durée du reflux, sévérité clinique.*

Faux

La durée d'un reflux veineux est le principal critère pour le classer comme pathologique.
La valeur seuil n'est pas consensuelle et peut varier selon le territoire veineux considéré.
Les valeurs habituellement admises sont 1 seconde pour l'étage poplitéo-fémoral et 0,5 seconde pour les veines du mollet et les réseaux veineux superficiels (troncs saphènes, tributaires et perforantes).

Vrai

La durée du reflux n'est pas corrélée à la sévérité clinique de l'insuffisance veineuse chronique ou au volume variqueux (diamètre maximal ou score variqueux).
Les meilleurs critères prédictifs sont le débit moyen du reflux et le volume refluant total, et à un moindre degré, le pic de vitesse du reflux.
La durée du reflux est donc un bon critère qualitatif et un mauvais critère quantitatif.

Déclaration d'intérêt

Les auteurs déclarent ne pas avoir de conflits d'intérêt en relation avec cet article. ■

Postoperative Duplex Ultrasound follow-up after Varicose Vein Treatment: Modalities, Specifics and Objectives.

Marianne de Maeseneer

Postoperative duplex ultrasound (DUS) may have several purposes.

These include assessment of the adequacy of the initial treatment and of complications, as well as identifying possible need for further intervention at early (1-2 months) and short-term (up to one year) follow-up.

For 'single' one-stop treatments, such as surgery and endovenous thermal or non-thermal ablation, the objective is mainly to know whether the intervention has achieved the intended immediate goal.

In addition, postoperative complications can be assessed in this early postoperative period.

Endovenous heat induced thrombosis (EHIT) should not be systematically searched for, as it does not seem to have important clinical consequences.

Postoperative deep vein thrombosis (DVT) may occur, in particular in patients at higher risk (e.g. with a history of venous thromboembolism).

Although it can be detected in asymptomatic patients, in clinical practice duplex of the deep venous system should only be performed in symptomatic patients.

After any superficial venous intervention, patients should be told clearly which are 'alarming' symptoms and how to contact their treating physician.

In case of any suspicion of DVT, a comprehensive duplex ultrasound should be performed.

For sequential treatments DUS will be part of the evaluation of the previous treatment phase, before starting the next one.

Whether a routine DUS should be performed after 6 months or one year in daily clinical practice, can be discussed.

The findings at DUS may predict the clinical evolution at long term.

At long term (3-5 years), the purpose of postoperative DUS is rather to identify the evolution of deterioration and recurrence, to carry out research about different treatment modalities, mechanisms and outcomes and, in due course, to identify surrogate endpoints of long-term outcomes.

The intended purpose, as well as the cost and feasibility of inviting patients to reattend, influences the frequency of repeated assessments. ■

Bilans écho-doppler en phlébologie PREVAIT : spécificités du bilan écho-doppler des récidives de varices.

Luc Moraglia

Mots-clés : *PREVAIT, récidive (de varice), bilan échodoppler, spécificité.*

Abstract: *13 à 65 % des patients opérés de varices présenteront des récidives.*

Autant dire que le bilan échodoppler en PREsence de Varices Après Intervention opéraToire (PREVAIT), est un acte fréquent dans la pratique du médecin vasculaire. Ce bilan est un acte diagnostique préalable à une décision thérapeutique ; il servira de lien entre l'explorateur et le thérapeute, mais aussi de point de repère dans l'évolution de la maladie variqueuse du patient.

Il doit être complet et précis, avec une *cartographie légendée*, apportant les éléments déterminants au choix thérapeutique, tout en sachant cependant que le thérapeute reprendra de façon détaillée l'examen, en préopératoire (marquage avant phlébectomies par exemple) et en peropératoire (sclérothérapie échoguidée à la mousse ou ablation thermique éventuellement).

Le fait d'avoir connaissance du bilan préopératoire, du compte-rendu opératoire et du bilan de contrôle post-opératoire recommandé par le consensus de l'UIP, est évidemment une aide précieuse, dont malheureusement, pour de multiples causes, on ne dispose que trop rarement.

- *La première spécificité qu'il faut avoir à l'esprit tient en trois mots : « tout est possible ».*
  Du tronc saphénien, a priori strippé, étonnamment visible dans son compartiment, aux sources de reflux multiples alimentant des récidives complexes, on peut s'attendre à tout.
- *Un deuxième aspect est qu'il est nécessaire de faire un inventaire minutieux des manifestations cliniques de la récidive.*
  Dans ce type d'examen il est judicieux de partir de la varice et de suivre le(s) fil(s) qui mène(nt) à la (ou aux) source(s) de reflux. Il s'agit là, à proprement parler, d'une réelle exploration.
- *Les sources de reflux peuvent effectivement être multiples* ; il faudra les colliger et les évaluer (calibre, importance relative de la vitesse de reflux), ainsi que l'importance de leur drainage.
  De façon schématique les récidives peuvent être « jonctionnelles », dans l'aire inguinale ou poplitée ou « non jonctionnelles » (souvent des veines d'origine pelvi-périnéale ou des perforantes).
- Il peut être intéressant de classer les récidives selon leurs types et leurs causes dans un but de compréhension de la maladie veineuse superficielle, mais ce n'est pas contributif pour la prise en charge.
- De la même manière, on complètera l'examen en rapport avec les manifestations cliniques en explorant les zones cliniquement silencieuses.

En conclusion

Une récente revue de la littérature ciblant les essais cliniques randomisés montrent que la fréquence des récidives à moyen terme (2 à 5 ans) diffère peu entre les différentes techniques, même si les causes sont différentes. Elle conclut qu'au moins un patient sur quatre présentera des varices malgré le traitement opératoire effectué. **Le bilan échodoppler en présence de varices après intervention opératoire (PREVAIT)** est donc toujours d'actualité ; il constitue un préambule indispensable à l'élaboration de la stratégie de prise en charge et à sa mise en œuvre. ■

Predictive Value of a Preoperative test F or the Reversibility of the Reflux.

Sylvain Chastanet, Paul Pittaluga

Objective

Evaluation of the value of a test of reversibility (TR) of the reflux of the great saphenous vein (GSV) in order to forecast the result of phlebectomy with preservation of a refluxing GSV according to the principles of the Ambulatory Selective Ablation of Varices under Local anesthesia (ASVAL).

Material et method : We have prospectively included the patients operated on by ASVAL for unilateral varicose veins with a reflux of the GSV and for whom a TR was feasible.

The TR was considered as positive if the reflux of the GSV was completly abolished by compression of a varicose tributary at the moment of the sudden release of manual compression on the calf, during a duplex-ultrasound examination performed with the patient standing upright.

The presence of a reflux of the GSV, the symptoms relief and the cosmetic improvement were evaluated at 1 and 2 years of folluw-up (FU).

Results

A total of 293 lower limbs (LLs) in 249 patients have been included. The TR was positive in 165 LLs (56.3%).

- At 1 and 2 years of FU after ASVAL, a reflux of the GSV was less frequently observed in LLs for which the TR was positive preoperatively (respectively 4.3% *vs* 11.2% P=0.04 and 5.3% *vs* 14.1% P=0.02).
- On the other hand at 1 and 2 yrs of FU the pre-operative positivity of the TR did not have any correlation with the symptoms relief (12.9% *vs* 15.3% P=0.59 and 13.6% *vs* 20.7% P=0.16) or the cosmetic improvement (5.7% *vs* 9.2% P=0.30 et 6.8% *vs* 10.9% P=0.28) after treatment.

The positive predictive value of the TR for the abolition of reflux of the GSV was 95.7% and 94.7% at 1 and 2 years of FU.

Conclusion

The preoperative positivity of the test of reversibility of the GSV reflux was correlated with an hemodynamic improvement of the GSV at 1 and 2 years of follow-up after ASVAL, with a high positive predictive value. ■