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What are the Standard Recommendations for Ultrasound Documentation of Varicose Veins? - The 2023 Korean Society for Phlebology Clinical Practice Guidelines

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In diagnosing varicose veins, accurate ultrasound examinations and meticulous recording of findings are crucial, as they play a significant role in determining treatment methods. Therefore, the Korean Society of Phlebology, in collaboration with related societies, has developed guidelines for the ultrasound diagnosis of varicose veins, including standard recommendations for documenting examination records. After examining varicose veins, it is mandatory to record in writing the name of the blood vessel that was measured. For penetrating veins, it is also necessary to precisely record both the size and location. Additionally, during a provocation test involving compression, the augmented waveform and the regurgitation waveform must be documented so that they are distinctly visible in opposite directions around the baseline. Lastly, the reflux time should be specified in seconds or milliseconds. **(Ann Phlebology 2023;21:70-73)**

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Introduction

Doppler ultrasound serves as a valuable imaging diagnostic tool for diagnosing lower extremity venous diseases. While it facilitates the anatomical and functional evaluation of lower extremity blood vessels and the detection of venous diseases, it is important to note that results may vary based on the examiner's skill level, examination method, and recording method.

To establish standardized testing methods and results, it is imperative to have testing guidelines rooted in clinical research and practical experience. The objective is to develop evidence-based standard recommendations through key statements by field rather than relying solely on textbook descriptions. Areas lacking sufficient comparative research or those marked by significant controversy were excluded from consideration. However, in instances where there is substantial clinical significance and expert consensus, recommendations were formulated using the nominal group method, even when literature evidence was somewhat lacking.

In this context, standard recommendations have been devised for recording the results of ultrasound diagnosis of varicose veins. These recommendations, corresponding to 'Key Question 6' among all recommendations, are predominantly comprised of four key recommendations (Table 1).

Table 1. Key Question 6. What are the standard recommendations for recording ultrasound examination of varicose veins?

Recommendations	Level of recommendation
6-1. Enter the name and location of the blood vessel you wish to measure in text. It is advised that these details be specified.	Strong
6-2. In the case of penetrating veins, accurately record the size and location is recommended.	Strong
6-3. Changes in the direction of blood flow, indicative of venous insufficiency, are enhanced by applying pressure to the calf. The augmentation waveform and the reflux waveform, resulting from retrograde flow, are positioned in opposite directions relative to the baseline (horizontal axis). It is recommended to measure in such a way that the direction of blood flow is clearly shown, to ensure accurate results.	Strong
6-4. After identifying the reflux section in the ultrasound image, it is recommended that the reflux time be recorded in seconds or in milliseconds (ms).	Strong

Key Question 6. What are the standard recommendations for recording ultrasound examination of varicose veins?

6-1. It is recommended to specify in letters the name and location of the blood vessel to be measured

Minimum standards are imperative when measuring and recording lower extremity venous dysfunction using ultrasound, as these results can influence fundamental surgical treatment decisions. This serves as the essential basis for justifying such surgical interventions. Notably, major varicose vein treatment or ultrasound examination guidelines in the United States and Europe offer detailed recommendations on recording and examination methods.

However, distinctions exist between the practices in the United States, Europe, and our reality. For instance, in the United States, detailed recording of all examinations is recommended, often with the assumption that the ultrasound examiner is different from the surgeon. Additionally, some aspects, such as suggesting a minimum examination time per patient of 45 to 70 minutes, may not align with our practices (*1*). Furthermore, despite detailed examination results, guidelines in the United States, Europe, and Korea uniformly recommend treating not only the reflux area but extending the treatment from the groin to 'below the knee if possible' (*2*).

Considering these variations, this guideline aims to provide recommendations that offer minimum evidence for the 'fundamental treatment of varicose veins.' The ultrasound measurement should include the Great Saphenous Vein (GSV), Anterior/Posterior Accessory Saphenous Vein (AASV/PASV), Small Saphenous Vein (SSV), and Penetration. The specific names, left or right side, and other details, such as perforating veins, tibial veins, deep femoral veins, etc., should be clearly stated in the documentation. Additionally, it is crucial to record the presence or absence of reflux, reflux time, and the diameter size of the measured blood vessel. When varicose veins are connected to a blood vessel or vascular malformations are present, thorough recording is recommended (*3-6*). Merely marking with a body marker may confirm approximate locations, but clear documentation in letters is necessary to distinguish between types of veins, such as saphenous or reticular veins.

6-2. In the case of perforating veins, it is recommended to accurately record the size and location

When conducting ultrasound examinations and providing descriptions of perforating veins, it is advisable to provide detailed information on the presence of reflux in associated deep veins and superficial veins, the specific location of the perforating vein, and the diameter of the perforating vein. This recommendation aligns with guidelines established in both the United States and Europe, and the committee has decided to adhere to these guidelines (*4,5,7*).

6-3. The change in blood flow direction, which is a characteristic of venous insufficiency, is characterized by the fact that the augmentation waveform caused by calf compression and the reflux waveform caused by retrograde flow are in opposite directions relative to the baseline (horizontal axis), so the direction of blood flow is well established. It is recommended to measure to ensure that

In the diagnosis of varicose veins, as per major guidelines observed in the United States and Europe, it is

recommended to record the results of a provocation test involving calf compression. Specifically, during this test, the augmentation waveform and the regurgitation waveform should appear in opposite directions relative to the baseline (horizontal axis) to confirm the validity of the test (*8-12*). The committee has elected to align with these guidelines.

6-4. It is recommended to mark the reflux section on the ultrasound image and then indicate the reflux time in seconds or milliseconds

Reflux in the lower extremity veins, when observed through ultrasound and identified as pathological, must be diligently recorded and reported (*9-11*). The reflux time should be precisely recorded, and the method of recording can be either in seconds or expressed in milliseconds (*3-7,13-16*). In cases where venous insufficiency is not observed, the report should explicitly state "no reflux," or the actual measured 'normal reflux time' should be indicated (*3,4*).

Conclusion

Chronic venous disease presents in diverse forms, leading to variations in the severity of varicose veins, symptoms, and reflux among patients. While treatment decisions should primarily take into account the patient's symptoms, it is also crucial to verify the presence or absence of reflux when determining the appropriate treatment approach. Surgical treatment remains the only definitive method for chronic venous disease, and the decision to undergo surgery is significant for both patients and healthcare providers. Therefore, objectively documenting and recording the rational basis for surgical intervention is of the utmost importance.

Conflict of interest

The authors declare no potential conflict of interest.

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