

Prevalence of Bilateral Greater Saphenous Vein Insufficiency

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ABSTRACT In venous insufficiency states, venous blood escapes from its normal antegrade path of flow and refluxes back down the veins into an already congested leg. Venous insufficiency symptoms are most commonly caused by valvular incompetence in the low-pressure superficial venous system. Patients with venous insufficiency may have signs and symptoms of fatigue, heaviness, aching, cramping, throbbing, itching, lower extremity discoloration, and ulcer. Varicose veins are a sign of underlying venous insufficiency and affect 20–30% of adults. Duplex of the lower extremity venous system to rule out venous insufficiency was performed to determine the prevalence of bilateral great saphenous vein insufficiency in men and women. Great saphenous vein insufficiency is the most common form of venous insufficiency in patients presenting with signs and symptoms.

Introduction

Superficial venous insufficiency, if left untreated can be debilitating for a patient. Of all these superficial veins in the body, an insufficient great saphenous vein is the most important cause of chronic venous insufficiency and many complications, such as leg ulcers. Fifty percent of leg ulcers are due to great saphenous veins that are incompetent.² The veins in the body are similar to a puzzle because the vascular technologist and physician need to help determine the cause of the patients' clinical manifestations.¹ Venous anatomy is more consistent in the lower limbs, but occasionally there will be anomalies visualized during an ultrasound examination.³ Phlebographic examinations on patients have been the standard for the identification of venous anatomy, some of which have identified duplicate saphenous veins in the limbs.⁴ Venous duplex examinations that have been performed in the past have not only shown evidence of duplicate great saphenous veins, but duplication in small saphenous veins as well.⁵ Accurate diagnosis and prompt treatment must be made to prevent venous disease progression.

Materials and Methods

Between November 2013 and April 2015, data from lower extremity venous insufficiency ultrasound examinations were obtained from 158 extremities to determine the prevalence of bilateral great saphenous vein insufficiency in men and women. Patients were

screened based on signs and symptoms of fatigue, heaviness, aching, cramping, throbbing, itching, lower extremity discoloration, and ulcer. Of these patients, 65% of the lower extremities were women, and 35% of the extremities were men. The venous insufficiency examinations included augmentation maneuvers, valsalva maneuvers, compression, and release of the lower extremity system (Figure 1). The examination was performed with and without the patient in a standing position. The results were based on a superficial venous insufficiency time of 500 ms or greater. The ultrasound equipment used for these examinations was the Siemens S2000 (Washington, DC) and Philips IU-22 (Andover, MA). The transducers used for the venous insufficiency exams ranged from the linear 9–14 probes, which were dependent on the patient's body habitus and/or depth of the vessel. The examination room is confirmed by the vascular technologist to be warm and well-lit before the start of any venous insufficiency ultrasound. When the patient is supine on the examination table, the technologist will adjust the table so that the duplex is completed in the reverse Trendelenburg position. Once the reversed Trendelenburg ultrasound is complete, the patient will stand. Performing the examination in a standing position requires access to the patient's extremity from the groin to the toes, but the technologist also keeps in mind respect for the patient's privacy. Some of the venous insufficiency examinations completed required two vascular technologists in order to assist with ergonomic flexibility and also to prevent technologist injury.

Results

A total of 158 extremities were examined for great saphenous vein insufficiency. All of these patients

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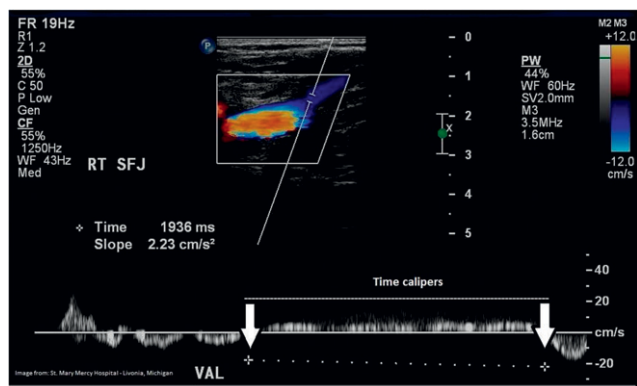


Figure 1

Pulsed wave Doppler demonstrating saphenofemoral junction reflux while the patient performed valsalva maneuver.

examined were symptomatic. The patients that were tested presented to the clinic with at least one of the following signs and symptoms in the lower extremities: pain, swelling, brawny skin discoloration, varicose veins, and ulcer. The diagnostic criterion used for the determination of great saphenous vein insufficiency was a reflux time equal to or greater than 500 ms. On completion of the noninvasive vascular duplex testing of the lower extremity venous system, the following results were determined: 63% of patients were positive for bilateral great saphenous vein insufficiency, 14%

of patients were positive for unilateral great saphenous vein insufficiency, 23% of patients were negative for great saphenous vein insufficiency.

Conclusions

Bilateral lower extremity venous duplex to rule out venous insufficiency examinations was performed on patients who had symptoms of chronic venous insufficiency. Based on the results of the examinations, we were able to determine the prevalence of bilateral great saphenous vein insufficiency. There is evidence in which 63% of symptomatic patients have bilateral great saphenous vein insufficiency.

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