

Abstract Submitted
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Ultrasound SIV measurement of helical valvular flow behind the great saphenous vein¹ JUN HONG PARK, JEONG JU KIM, SANG JOON LEE, Pohang Univ of Sci Tech, EUNSEOP YEOM, Pusan Natl Univ, EXPERIMENTAL FLUID MECHANICS LABORATORY TEAM, LABORATORY FOR MICROTHERMAL AND MICROFLUIDIC MEASUREMENTS COLLABORATION — Dysfunction of venous valve and induced secondary abnormal flow are closely associated with venous diseases. Thus, detailed analysis of venous valvular flow is invaluable from biological and medical perspectives. However, most previous studies on venous perivalvular flows were based on qualitative analyses. On the contrary, quantitative analysis on the perivalvular flows has not been fully understood yet. In this study, 3D valvular flows under *in vitro* and *in vivo* conditions were experimentally investigated using ultrasound speckle image velocimetry (SIV) for analyzing their flow characteristics. The results for *in vitro* model obtained by the SIV technique were compared with those derived by numerical simulation and color Doppler method to validate its measurement accuracy. Then blood flow in the human great saphenous vein was measured using the SIV with respect to the dimensionless index, helical intensity. The results obtained by the SIV method are well matched well with those obtained by the numerical simulation and color Doppler method. The hemodynamic characteristics of 3D valvular flows measured by the validated SIV method would be helpful in diagnosis of valve-related venous diseases.

¹None

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