

Table S1 Diagnostic values of magnetic resonance venography for venous obstruction compared to duplex ultrasonography

3D TSE-STIR MRV	Value
Sensitivity (%)	88.5
Specificity (%)	88.62
Positive predictive value (%)	84.04
Negative predictive value (%)	91.93
Accuracy (%)	88.67
Cohen's kappa coefficient (κ)*	0.765

*, duplex ultrasonography was used as the diagnostic reference standard. The degree of agreement between 3D TSE-STIR MRV and duplex ultrasonography for the presence of venous obstruction was assessed by Cohen's kappa value (κ). 3D TSE-STIR MRV, three-dimensional turbo spin-echo short tau inversion recovery magnetic resonance venography.

Table S2 Ability to use 2D PC-MRI data for discriminating different diagnoses among diseased legs

Variables	Reflux versus normal			Obstruction versus normal			Obstruction versus reflux		
	AUC (95% CI) (%)	P value	Cut-off	AUC (95% CI) (%)	P value	Cut-off	AUC (95% CI) (%)	P value	Cut-off
SV (mL)									
IVC	72.6 (64.6, 80.5)	<0.001	>10.36	81.8 (74.9, 88.6)	<0.001	>9.34	62.0 (55.3, 68.8)	0.001	>7.92
EIV	50.2 (41.7, 58.8)	0.967	–	72.9 (65.0, 80.8)	<0.001	>2.11	67.2 (60.6, 73.7)	<0.001	>2.11
FV	50.1 (40.1, 60.1)	0.986	–	68.0 (59.1, 76.9)	0.002	>0.83	64.7 (58.0, 71.5)	<0.001	>0.85
PV	55.6 (46.9, 64.2)	0.333	–	58.2 (49.1, 67.4)	0.167	–	59.3 (52.4, 66.2)	0.008	>0.23
GSV	50.1 (40.9, 59.2)	0.990	–	74.4 (66.3, 82.5)	<0.001	>0.005	68.5 (62.1, 74.9)	<0.001	>0.23
FFV (mL)									
IVC	73.1 (64.9, 81.2)	<0.001	>10.36	82.1 (75.4, 88.9)	<0.001	>9.34	62.1 (55.3, 68.9)	0.001	>7.92
EIV	51.2 (42.6, 59.9)	0.832	–	72.9 (64.9, 80.8)	<0.001	>2.11	67.2 (60.6, 73.7)	<0.001	>1.5
FV	50.1 (40.2, 60.0)	0.982	–	68.5 (59.7, 77.3)	0.002	>0.83	65.0 (58.3, 71.7)	<0.001	>0.85
PV	55.2 (46.6, 63.9)	0.361	–	58.5 (49.4, 67.6)	0.154	–	59.4 (52.5, 66.3)	0.008	>0.19
GSV	50.1 (41.0, 59.3)	0.982	–	74.5 (66.6, 82.4)	<0.001	>0.06	68.4 (62.0, 74.8)	<0.001	>0.2
BFV (mL)									
IVC	51.5 (39.1, 63.9)	0.792	–	56.8 (42.9, 70.7)	0.256	–	56.8 (50.0, 63.6)	0.054	–
EIV	58.3 (46.1, 70.5)	0.149	–	52.2 (39.6, 64.9)	0.708	–	57.3 (50.5, 64.2)	0.037	≤0
FV	57.4 (45.2, 69.6)	0.198	–	52.5 (39.9, 65.1)	0.673	–	56.0 (49.1, 63.0)	0.086	–
PV	52.7 (41.3, 64.2)	0.634	–	57.6 (45.9, 69.3)	0.203	–	55.0 (48.1, 61.9)	0.153	–
GSV	51.0 (39.1, 62.9)	0.859	–	58.7 (45.8, 71.5)	0.146	–	58.6 (51.9, 65.4)	0.014	≤0
RF (%)									
IVC	51.5 (39.1, 63.9)	0.792	–	56.9 (43.0, 70.7)	0.248	–	56.7 (50.0, 63.5)	0.055	–
EIV	57.7 (45.3, 70.1)	0.180	–	52.1 (39.7, 64.5)	0.723	–	55.1 (48.2, 62.0)	0.151	–
FV	59.8 (47.5, 72.1)	0.086	–	54.7 (42.0, 67.4)	0.429	–	56.3 (49.4, 63.2)	0.075	–
PV	57.0 (45.1, 68.9)	0.224	–	52.8 (40.3, 65.4)	0.632	–	55.5 (48.7, 62.4)	0.116	–
GSV	55.2 (43.0, 67.4)	0.365	–	50.8 (37.3, 64.3)	0.894	–	58.0 (51.2, 64.7)	0.023	≤0
ASV (mL)									
IVC	73.8 (65.5, 82.1)	<0.001	>10.36	82.4 (75.6, 89.1)	<0.001	>9.34	62.2 (55.5, 69.0)	0.001	>7.92
EIV	52.1 (43.3, 60.9)	0.708	–	72.6 (64.6, 80.7)	<0.001	>2.11	66.4 (59.8, 73.0)	<0.001	>1.5
FV	51.1 (41.2, 61.1)	0.843	–	68.9 (60.2, 77.7)	0.001	>0.81	64.7 (58.0, 71.4)	<0.001	>0.85
PV	55.1 (46.4, 63.8)	0.376	–	58.6 (49.5, 67.7)	0.150	–	59.4 (52.4, 66.3)	0.008	>0.19
GSV	50.1 (40.9, 59.2)	0.992	–	74.7 (66.7, 82.6)	<0.001	>0.13	68.8 (62.4, 75.2)	<0.001	>0.12
MF (mL)									
IVC	71.3 (63.4, 79.1)	<0.001	>11.99	81.5 (74.6, 88.4)	<0.001	>12.16	61.8 (55.1, 68.6)	0.001	>6.45
EIV	52.5 (44.2, 60.9)	0.662	–	68.6 (60.4, 76.8)	0.002	>1.97	65.8 (59.1, 72.5)	<0.001	>2.23
FV	53.4 (43.9, 62.9)	0.552	–	64.4 (55.2, 73.6)	0.015	>0.9	63.7 (57.0, 70.4)	<0.001	>0.98
PV	58.1 (49.8, 66.3)	0.160	–	54.7 (45.6, 63.8)	0.433	–	58.7 (51.8, 65.6)	0.013	>0.34
GSV	51.8 (43.0, 60.7)	0.748	–	72.4 (64.2, 80.6)	<0.001	>0.02	67.9 (61.4, 74.3)	<0.001	>0.23
VTI (cm)									
IVC	65.0 (56.3, 73.8)	0.009	>6.85	80.2 (73.0, 87.3)	<0.001	>7	64.2 (57.7, 70.8)	<0.001	>3.54
EIV	71.7 (64.8, 78.6)	<0.001	≤4.64	54.0 (45.2, 62.8)	0.502	–	66.6 (60.0, 73.1)	<0.001	>2.15
FV	51.6 (39.5, 63.7)	0.781	–	65.6 (55.2, 76.0)	0.009	>1.16	63.2 (56.4, 69.9)	<0.001	>1.99
PV	57.6 (48.6, 66.5)	0.187	–	51.7 (42.3, 61.1)	0.777	–	52.5 (45.4, 59.7)	0.470	–
GSV	52.1 (42.1, 62.1)	0.718	–	68.4 (59.2, 77.6)	0.002	>0.03	63.8 (57.1, 70.5)	<0.001	>0.54
MV (cm)									
IVC	64.5 (56.0, 73.1)	0.011	–	79.1 (71.8, 86.4)	<0.001	>5.06	63.7 (57.1, 70.3)	<0.001	>4.03
EIV	72.0 (65.0, 79.0)	<0.001	≤5.75	52.1 (43.2, 60.9)	0.730	–	64.0 (57.3, 70.8)	<0.001	>3.35
FV	51.7 (39.9, 63.5)	0.765	–	61.2 (50.6, 71.7)	0.061	–	61.9 (55.1, 68.7)	0.001	>2.21
PV	60.1 (51.4, 68.8)	0.078	–	54.5 (45.3, 63.8)	0.448	–	52.0 (44.8, 59.2)	0.572	–
GSV	50.3 (40.6, 60.0)	0.957	–	66.5 (57.4, 75.7)	0.005	>0.04	63.0 (56.2, 69.8)	<0.001	>0.46

2D, two-dimensional; PC-MRI, phase-contrast magnetic resonance imaging; AUC, area under the curve; CI, confidence interval; SV, stroke volume; IVC, inferior vena cava; EIV, external iliac vein; FV, femoral vein; PV, popliteal vein; GSV, great saphenous vein; FFV, forward flow volume; BFV, backward flow volume; ASV, absolute stroke volume; RF, regurgitant fraction; MF, mean flux; VTI, velocity time integral; MV, mean velocity.