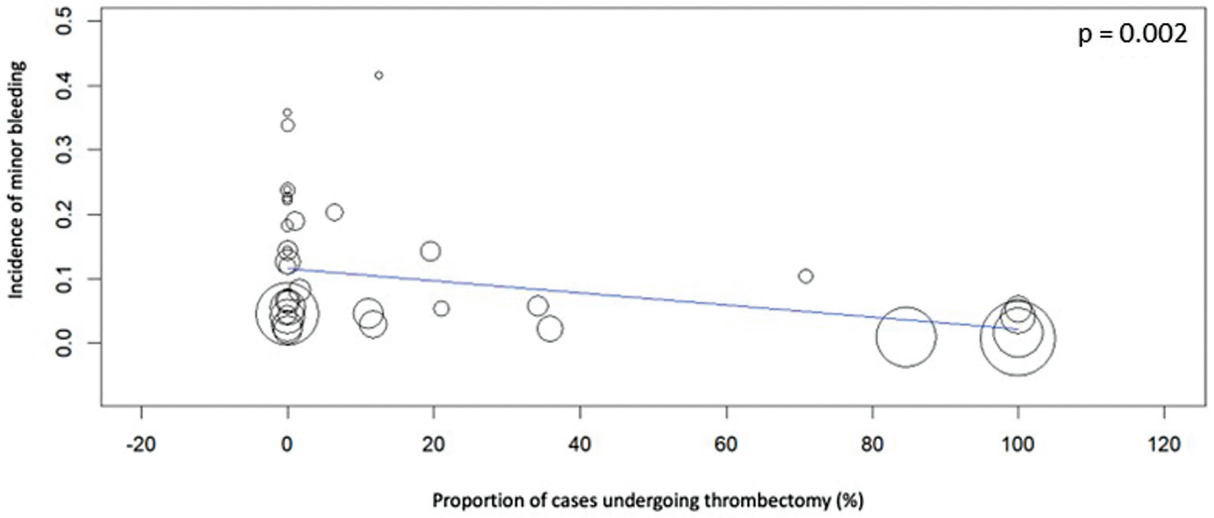
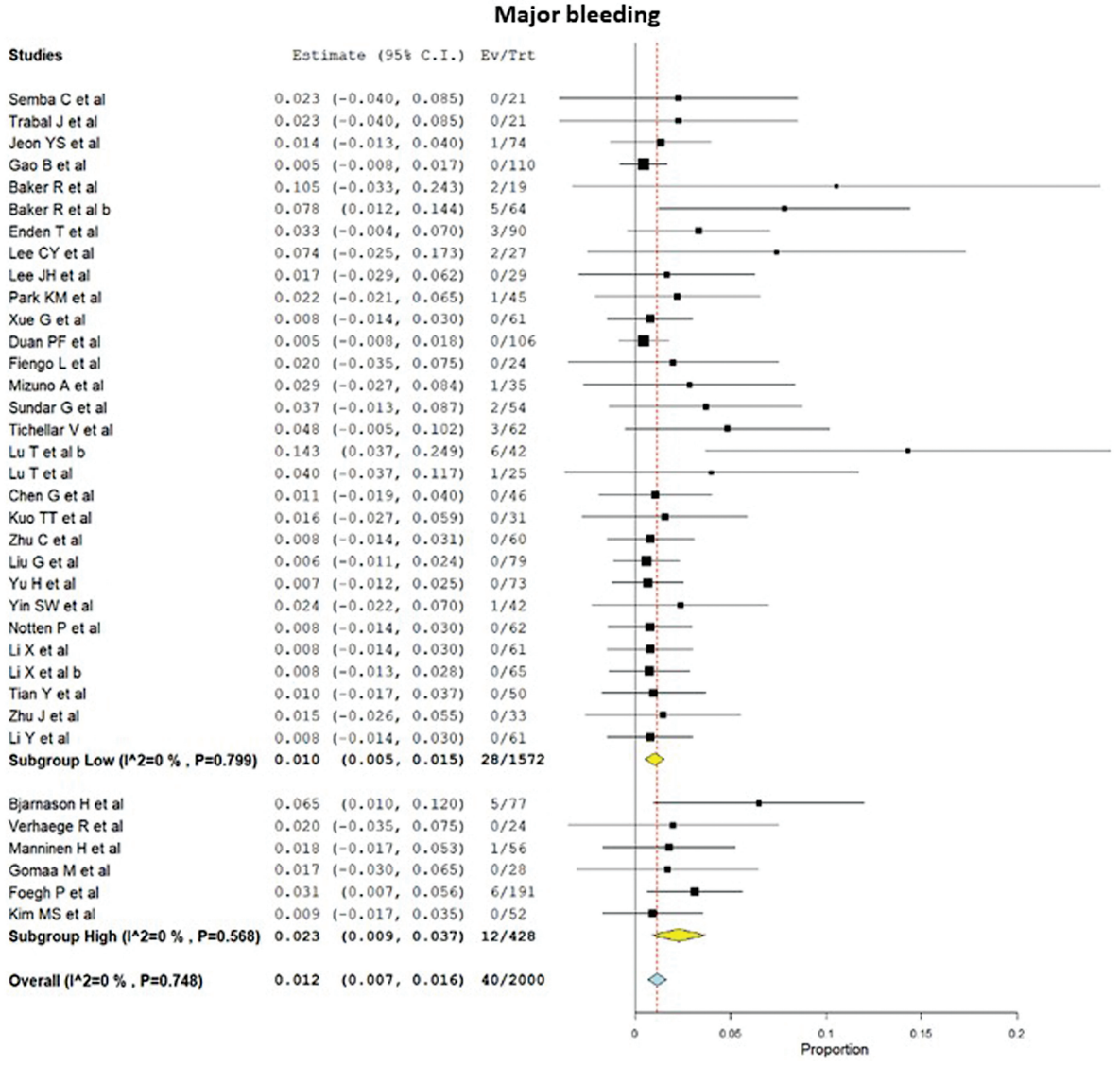
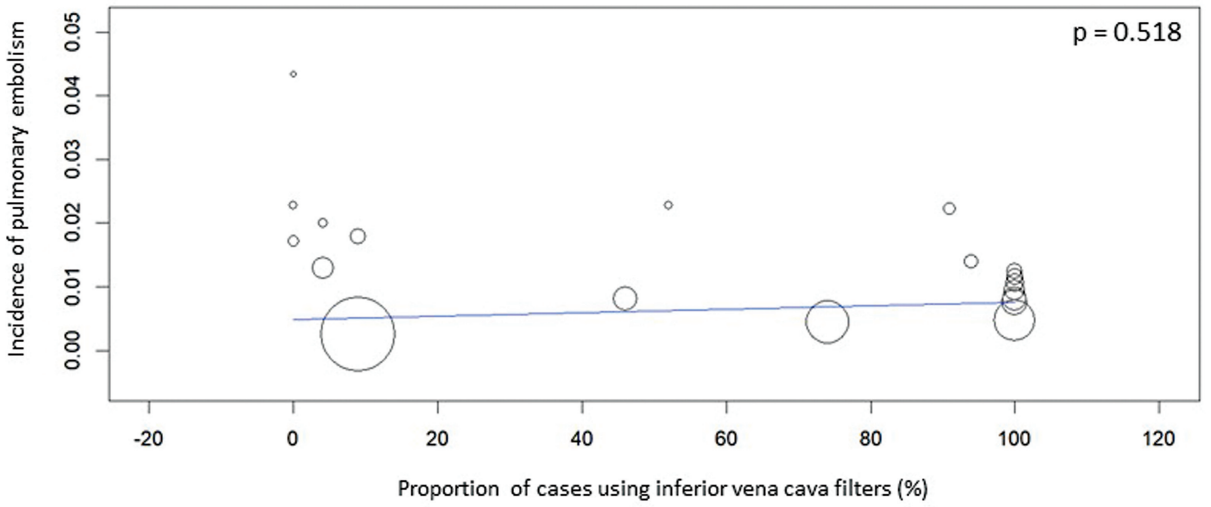


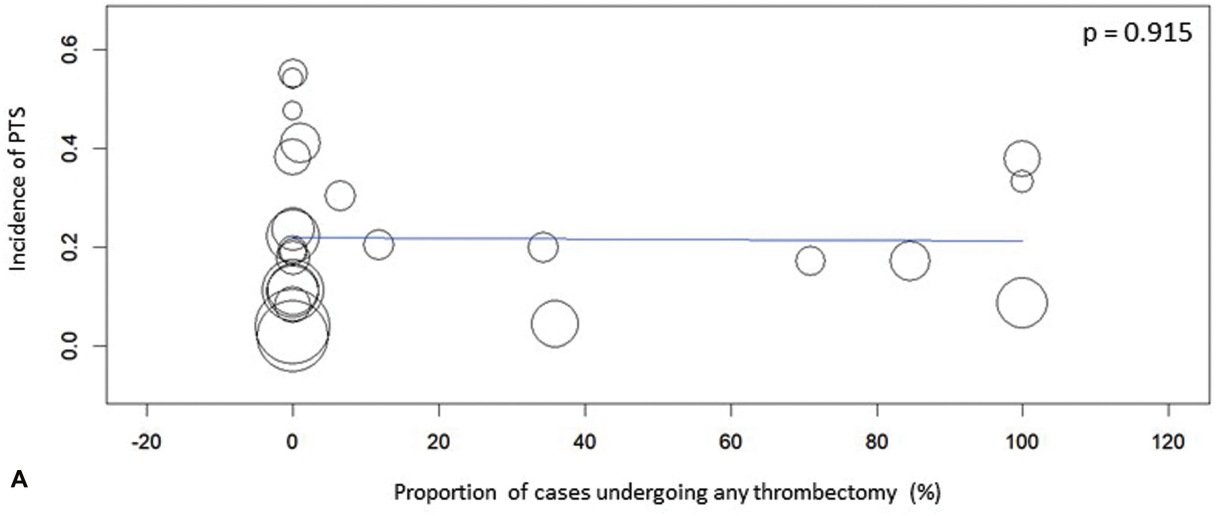
Supplementary Fig. S1 The proportion of cases undergoing any kind of adjunctive thrombectomy was a negative predictor of minor bleeding.



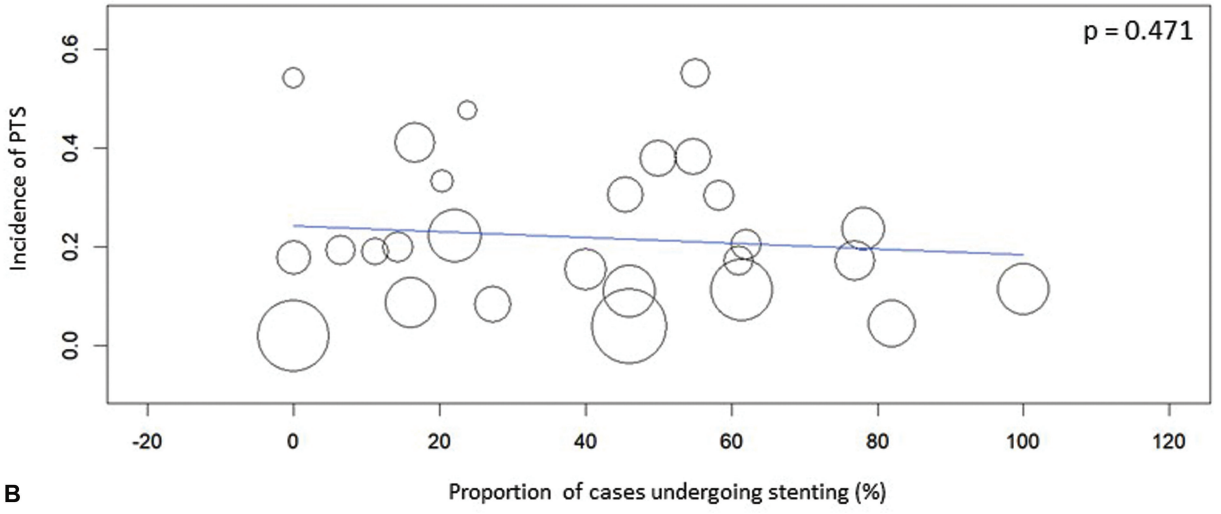
Supplementary Fig. S2 Subgroup analysis of the incidence of major bleeding per dose regimen (low dose or high dose).



Supplementary Fig. S3 The proportion of cases using inferior vena cava (IVC) filters was not correlated with the incidence of pulmonary embolism.

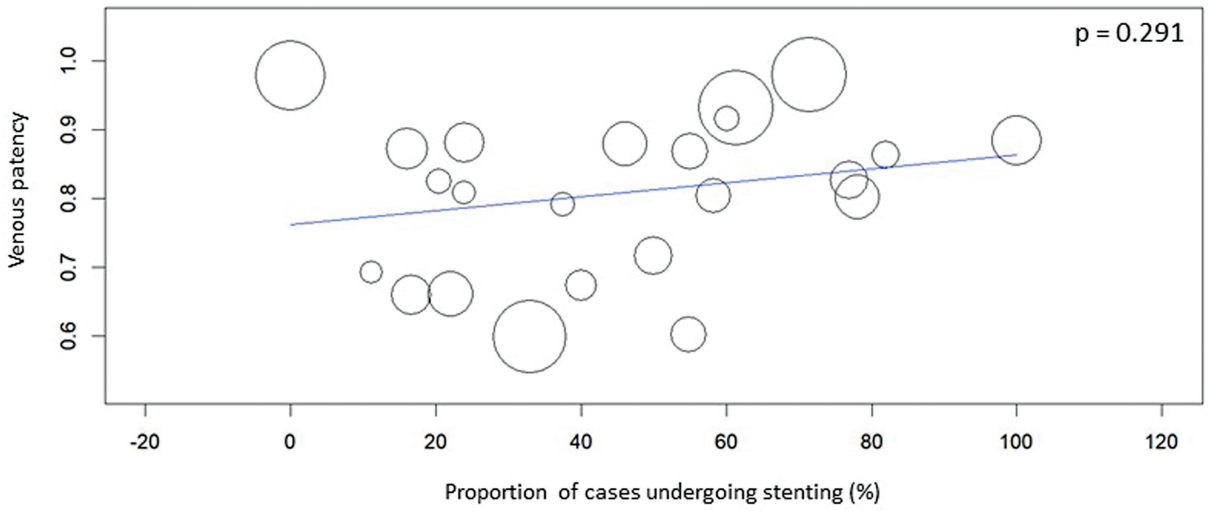


A



B

Supplementary Fig. S4 Association between the incidence of PTS and the proportion of cases undergoing stenting (coefficient: −0.001; 95% CI: −0.003 to 0.001; $p = 0.471$) **(A)** or any kind of thrombectomy (coefficient: 0; 95% CI: −0.002 to 0.001; $p = 0.915$) **(B)**.



Supplementary Fig. S5 Association between patency and the proportion of cases undergoing stenting (coefficient: 0.001; 95% CI: −0.001 to 0.003; $p = 0.291$).

Supplementary Table S1 Search strategies per database

MEDLINE	#1 AND #2 AND #3 #1 deep venous thrombosis[MeSH Terms] OR venous occlusion OR thrombophlebitis[MeSH Terms] OR deep vein thrombosis[MeSH Terms] #2 lower limb[MeSH Terms] OR veins, iliac[MeSH Terms] OR vein, iliac[MeSH Terms] OR femoral vein[MeSH Terms] OR femoral veins[MeSH Terms] OR inferior vena cava[MeSH Terms] OR popliteal vein[MeSH Terms] OR tibial veins[MeSH Terms] OR lower extremity[MeSH Terms] #3 infusions[MeSH Terms] OR thrombolytic therapy[MeSH Terms] OR CDT OR Catheter-directed thrombosis) OR lysis
Scopus	(TITLE-ABS-KEY (catheter-directed AND thrombolysis) OR ALL (cdt) OR ALL (thrombolysis) AND TITLE-ABS-KEY (deep AND venous AND thrombosis) OR ALL (venous AND occlusion) AND ALL (lower AND limbs) OR ALL (iliac AND vein) OR ALL (inferior AND vena AND cava) OR ALL (femoral AND vein) OR ALL (popliteal AND vein) AND NOT KEY (pulmonary AND embolism) AND NOT KEY (arterial AND occlusion) AND NOT TITLE-ABS-KEY (arterial AND thrombosis) AND NOT ALL (upper AND limb) AND NOT TITLE-ABS-KEY (artery AND thrombosis) AND NOT ALL (experimental AND animal AND models) AND NOT ALL (hepatic AND vein) AND NOT ALL (splenic AND vein) AND NOT ALL (superior AND vena AND cava) AND NOT ALL (mesenteric AND vein) AND NOT ALL (hemodialysis AND access) AND NOT ALL (dialysis AND access) AND NOT TITLE-ABS-KEY (aortic AND aneurysm))
ISI Web of Knowledge	#1 AND #2 AND #3 #1 (deep venous thrombosis) *OR* **Todos os campos:** (venous occlusion) #2 **Todos os campos:** (lower extremity) AND **Todos os campos:** (vein) *OR* **Todos os campos:** (iliac vein) *OR* **Todos os campos:** (femoral vein) *OR* **Todos os campos:** (popliteal vein) *OR* **Todos os campos:** (tibial veins) #3 (Catheter directed thrombolysis) *OR* **Todos os campos:** (CDT) *OR* **Todos os campos:** (Thrombolysis)

Supplementary Table S2 Characteristics of the patients included in the systematic review

Author	Year	Age (mean)	Male (%)	Thrombophilia (%)	Obesity (%)	Malignancy (%)	Current history of smoking (%)	Oral contraceptive or hormone therapy (%)	Previous episode of DVT (%)	IVC DVT (%)	IF DVT (%)	Mean thrombus age (days)	Phlegmasia (%)
Semba et al	1994	52.8	47.6	NR	NR	NR	NR	NR	7	37	100	>14	7
Bjarnason et al	1997	47	35	21	NR	35	NR	25	35	16.3	100	>14	NR
Verhaeghe et al	1997	38	37.5	41.7	NR	4.2	NR	NR	33.3	NR	100	2–14	NR
Mewissen et al	1999	47.5	48	NR	NR	NR	NR	NR	NR	16.7	74	2–14	9
Ogawa et al	2005	70.6	70.8	12.5	NR	4.2	NR	NR	8.3	0	70.8	2–14	NR
Kim et al	2006	42.9	39.1	15.4	NR	19.2	NR	NR	38.5	NR	100	NR	NR
Park et al	2008	55	29.4	32.4	NR	NR	NR	0	0	17.6	100	2–14	NR
Martinez Trabal et al	2008	52.6	66.7	24	NR	24	NR	NR	NR	52.4	100	2–14	NR
Jeon et al	2010	61	46	24	11	3	NR	NR	11	8	77	2–14	NR
Gao et al	2011	40.6	44	NR	NR	1	NR	NR	0	3.6	85.4	>14	0
Manninen et al	2012	54	46	31	29	5	20	21	11	NR	71.4	NR	NR
Baker et al	2012	48	26.3	5.3	NR	21.1	15.8	15.8	52.6	52.6	7	2–14	NR
Baker et al	2012	44	40.6	9.4	NR	3.1	12.5	9.4	34.4	50	30	2–14	NR
Enden et al	2012	53.3	64	44	10	3	NR	7.8	10	0	45.6	2–14	0
Lee CY et al	2013	62.4	48.1	14.8	NR	14.8	29.6	22.2	NR	0	66.7	2–14	NR
Lee JH et al	2013	57.8	24.1	NR	NR	NR	NR	NR	NR	NR	100	2–14	NR
Gomaa et al	2013	38	46.4	NR	NR	NR	NR	NR	NR	21.4	78.6	NR	0
Park et al	2014	62.5	27	2	NR	2	NR	NR	7	17.8	95.6	2–14	NR
Xue et al	2014	64	41	NR	NR	NR	NR	NR	NR	NR	100	2–14	NR
Engelberger et al	2015	50	55	NR	32	0	32	23	14	18	100	2–14	NR
Li et al	2015	47.4	34.9	NR	NR	NR	NR	NR	NR	0	88.7	NR	NR
Fiengo et al	2015	35	NR	NR	NR	8	NR	NR	NR	0	91.7	NR	NR
Mizuno et al	2015	64.7	54.3	0	NR	2.9	5.7	8.6	2.9	28.6	82.3	2–14	2.9
Duan et al	2016	64.6	46.2	NR	NR	14.2	NR	NR	0	NR	NR	2–14	NR
Yang et al	2016	51.5	56.4	NR	NR	7.7	NR	NR	0	NR	NR	2–14	NR
Sundar et al	2016	37.2	50	5.6	NR	5.6	NR	NR	9.2	24.1	94.4	2–14	1.9
Zou et al	2016	50.4	34.4	NR	NR	NR	NR	NR	NR	NR	NR	2–14	NR
Tichelaar et al	2016	48.6	36	5	12	11	NR	33	16	27.4	72.6	2–14	NR

Supplementary Table S2 (*Continued*)

Author	Year	Age (mean)	Male (%)	Thrombophilia (%)	Obesity (%)	Malignancy (%)	Current history of smoking (%)	Oral contraceptive or hormone therapy (%)	Previous episode of DVT (%)	IVC DVT (%)	IF DVT (%)	Mean thrombus age (days)	Phlegmasia (%)
Foegh et al	2017	35.7	27.7	NR	0	NR	NR	NR	0	NR	NR	NR	NR
Lu et al	2017	50	57	NR	NR	NR	24	22	64	28.6	98	2–14	9.5
Lu et al	2017	52	52	NR	NR	NR	0	17	52	28	72	2–14	0
Chen et al	2017	60	43.5	6.5	NR	10.9	NR	NR	NR	0	100	2–14	NR
Kuo et al	2017	64.5	54.8	16.1	NR	6.5	29	57.1	NR	NR	NR	2–14	NR
Lin et al	2017	51.6	51	49.4	56	10.1	NR	NR	27	0	94	NR	NR
Wang et al	2018	61.1	47.6	NR	NR	11.1	NR	NR	NR	1.6	100	2–14	NR
Liu et al	2018	54	64.5	NR	14.5	2.5	39.2	NR	NR	NR	NR	2–14	NR
Yu et al	2018	53.6	44	NR	NR	NR	NR	NR	NR	NR	NR	2–14	NR
Zhu et al	2019	55.9	38.3	NR	NR	NR	NR	NR	NR	NR	NR	2–14	NR
Abd El-Mabooda et al	2020	42.6	25	NR	NR	NR	NR	NR	0	NR	100	2–14	NR
Yin et al	2020	57	50	1	NR	4	NR	NR	4	NR	NR	NR	NR
Pouncey et al	2020	44	43.4	28	NR	5	18	NR	NR	23	100	2–14	NR
Notten et al	2020	46.5	48	NR	22.6	1.6	NR	16	9.7	NR	NR	2–14	NR
Kim et al	2020	48.4	55.8	11.5	NR	3.8	NR	7.7	NR	NR	100	2–14	NR
Li et al	2020	53.3	54.1	NR	NR	NR	NR	NR	NR	NR	100	2–14	NR
Li et al	2020	55.3	52.3	NR	NR	NR	NR	NR	NR	NR	100	2–14	NR
Zhu et al	2020	62.4	42	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Nakamura et al	2021	64	52	4	NR	15	NR	NR	0	0	100	2–14	NR
Tian et al	2021	46	28	8	NR	4	NR	2	NR	NR	100	2–14	NR
Li et al	2021	56.2	49	3.3	NR	13.1	NR	1.6	4.9	NR	NR	NR	NR

Abbreviations: DVT, deep venous thrombosis; IF, iliofemoral; IVC, inferior vena cava; NR, not registered.

Supplementary Table S3 Use of inferior vena cava filters during catheter-directed thrombolysis among studies included in the systematic review that reported this feature

Author	Year	Modality	Criteria	Proportion of cases (%)	Type of filter
Semba et al	1994	Never	–	0	–
Bjarnason et al	1997	Selective	Unspecified	4	Unspecified
Verhaeghe et al	1997	Selective	PE	4	Unspecified
Mewissen et al	1999	Selective	Unspecified	NR	Unspecified
Ogawa et al	2005	Selective	IPC	NR	Retrievable
Kim et al	2006	Never	–	0	–
Park et al	2008	Selective	IVC floating thrombus	NR	Unspecified
Martinez Trabal et al	2008	Selective	Unspecified	52	Unspecified
Jeon et al	2010	Selective	Floating thrombus in IVC or CIV, PE	NR	Retrievable
Gao et al	2011	Selective	Floating thrombus, IVC involved, symptomatic PE	74	Retrievable
Manninen et al	2012	Selective	Recurrent PE, IVC floating thrombus	9	Unspecified
Lee et al	2013	Selective	IVC/CIV floating thrombus	NR	Unspecified
Gomaa et al	2013	Never	–	0	–
Park et al	2014	Selective	Unspecified	91	Retrievable
Xue et al	2014	Selective	IVC involved, PE	46	Unspecified
Fiengo et al	2015	Selective	PE	NR	Unspecified
Mizuno et al	2015	Selective	Unspecified	94	Retrievable or permanent
Duan et al	2016	Routine	–	100	Retrievable
Yang et al	2016	Routine	–	100	Retrievable
Sundar et al	2016	Selective	IVC floating thrombus, patients who developed DVT while already on systemic anticoagulation	NR	Unspecified
Zou et al	2016	Never	–	0	NR
Foegh et al	2017	Selective	IVC floating thrombus	9	Retrievable
Lu et al	2017	Selective	Unspecified	NR	Unspecified
Lu et al	2017	Selective	Unspecified	NR	Unspecified
Chen et al	2017	Routine	–	100	Retrievable or permanent
Lin et al	2017	Selective	Unspecified	NR	Unspecified
Wang et al	2018	Selective	IVC/CIV floating thrombus	NR	Unspecified
Liu et al	2018	Selective	Unspecified	NR	Retrievable or permanent
Yu et al	2018	Selective	IVC involved	NR	Unspecified
Zhu et al	2019	Selective	Unspecified	NR	Unspecified
Abd El-Mabooda et al	2020	Selective	IVC floating thrombus, PE	NR	Unspecified
Yin et al	2020	Routine	–	100	Unspecified
Pouncey et al	2020	Selective	IVC floating thrombus, PE with right heart strain	NR	Unspecified
Kim et al	2020	Selective	IVC floating thrombus	NR	Retrievable
Li et al	2020	Routine	–	100	Retrievable
Li et al	2020	Routine	–	100	Retrievable
Zhu et al	2020	Selective	Unspecified	NR	Retrievable

(*Continued*)

Author	Year	Modality	Criteria	Proportion of cases (%)	Type of filter
Nakamura et al	2021	Routine	–	100	Retrievable
Tian et al	2021	Selective	Unspecified	NR	Unspecified
Li et al	2021	Selective	PE or high risk of PE, IPC	NR	Retrievable

Abbreviations: CIV, common iliac veins; DVT, deep venous thrombosis; IPC, intermittent pneumatic compression; IVC, inferior vena cava; NR, not registered; PE, pulmonary embolism.

Supplementary Table S4 Use of stenting and additional aspiration, mechanical or pharmacochemical thrombectomy during catheter-directed thrombolysis among studies included in the systematic review that reported this feature

Author	Year	Stenting	Stenting (%)	Aspiration thrombectomy	Aspiration thrombectomy (%)	Mechanical or PCDT	Mechanical or PCDT (%)
Semba et al	1994	Yes	60	No	0	No	0
Bjarnason et al	1997	Yes	44	No	0	Yes	19.5
Verhaeghe et al	1997	Yes	37.5	No	0	Yes	12.5
Mewissen et al	1999	Yes	33	No	0	No	0
Ogawa et al	2005	No	0	No	0	No	0
Kim et al	2006	Yes	23.1	No	0	No	0
Park et al	2008	Yes	62	Yes	11.7	No	0
Martinez Trabal et al	2008	Yes	45	No	0	No	0
Jeon et al	2010	Yes	50	Yes	100	No	0
Gao et al	2011	Yes	22	No	0	No	0
Manninen et al	2012	Yes	16.1	Yes	100	No	0
Baker et al	2012	Yes	42.1	No	0	Yes	21.1
Baker et al	2012	Yes	35.9	No	0	Yes	11
Enden et al	2012	Yes	16.7	Yes	1.1	No	0
Lee et al	2013	Yes	11.1	No	0	No	0
Lee et al	2013	Yes	61	Yes	71	No	0
Gomaa et al	2013	No	0	No	0	No	0
Park et al	2014	Yes	93	Yes	NR	No	0
Xue et al	2014	Yes	100	No	0	No	0
Engelberger et al	2015	Yes	82	No	0	Yes	36
Li et al	2015	No	0	No	0	No	0
Fiengo et al	2015	Yes	27.3	No	0	No	0
Mizuno et al	2015	Yes	14.3	Yes	34.3	No	0
Duan et al	2016	Yes	61.3	No	0	No	0
Yang et al	2016	No	0	No	0	No	0
Sundar et al	2016	Yes	20.4	Yes	100	No	0
Zou et al	2016	Yes	NR	No	0	No	0
Tichelaar et al	2016	Yes	55	No	0	No	0
Foegh et al	2017	Yes	52	No	0	No	0
Lu et al b	2017	Yes	24	No	0	Yes	59.5
Lu et al	2017	Yes	71.4	No	0	Yes	80
Chen et al	2017	Yes	60.9	No	0	No	0

(*Continued*)

(*Continued*)

Author	Year	Stenting	Stenting (%)	Aspiration thrombectomy	Aspiration thrombectomy (%)	Mechanical or PCDT	Mechanical or PCDT (%)
Kuo et al	2017	Yes	6.5	No	0	No	0
Lin et al	2017	Yes	NR	No	NR	Yes	NR
Wang et al	2018	Yes	46	No	0	No	0
Liu et al	2018	Yes	58.2	Yes	6.4	No	0
Yu et al	2018	Yes	54.8	No	0	No	0
Abd El-Mabooda et al	2020	Yes	23.8	No	0	No	0
Pouncey et al	2020	Yes	78	No	0	No	0
Notten et al	2020	Yes	45.4	Yes	NR	No	0
Kim et al	2020	Yes	76.9	Yes	84.6	No	0
Li et al	2020	Yes	NR	No	0	Yes	100
Li et al	2020	Yes	NR	Yes	100	No	0
Zhu et al	2020	No	0	No	0	No	0
Nakamura et al	2021	Yes	40	Yes	NR	No	0
Tian et al	2021	Yes	46	No	0	No	0
Li et al	2021	Yes	6.6	No	0	Yes	1.6

Abbreviations: NR, not registered; PCDT, pharmacomechanical thrombectomy.

Supplementary Table S5 Per procedural monitoring during catheter-directed thrombolysis among studies included in the systematic review that reported this feature

Author	Year	Full coagulation	aPTT	PT/INR	Fibrinogen	Hemoglobin	Platelets/ blood count	D-dimers	Anti-Xa activity
Semba et al	1994		4 h and 24 h after start		4 h and 24 h after start				
Bjarnason et al	1997		Every 4 h	Every 4 h	Every 12 h	Every 12 h	Every 12 h		
Park et al	2008		Yes		Yes	Yes			
Martinez Trabal et al	2008		Yes						
Jeon et al	2010		Every 6 h						
Gao et al	2011				Varying				
Manninen et al	2012		Every 6 h		Every 6 h				
Enden et al	2012			Daily		Daily		Daily	
Lee et al	2013		Twice daily		Daily	Daily	Daily		
Gomaa et al	2013		Yes						
Xue et al	2014				Every 6 h				
Duan et al	2016		Yes	Yes		Yes			
Li et al	2015		Twice daily		Daily	Daily	Daily		
Fiengo et al	2015		Every 12 h		Every 12 h				
Yang et al	2016				Every 12 h				
Zou et al	2016				Daily			Daily	
Tichelaar et al	2016			Daily	Twice daily	Daily	Daily		
Lu et al	2017		Every 4 h	Every 4 h	Every 4 h		Every 4 h		
Lu et al	2017		Every 4 h	Every 4 h	Every 4 h		Every 4 h		
Chen et al	2017		Every 2 days	Every 2 days	Every 2 days		Every 2 days		
Kuo et al	2017				Daily	Daily	Daily		
Lin et al	2017				Yes				Yes
Wang et al	2018				Daily	Every 48 h	Every 48 h	Every 48 h	
Liu et al	2018		Every 4 h		Every 4 h				
Abd El-Mabooda et al	2020			Daily		Daily	Daily		

(*Continued*)

(*Continued*)

Author	Year	Full coagulation	aPTT	PT/INR	Fibrinogen	Hemoglobin	Platelets/ blood count	D-dimers	Anti-Xa activity
Yin et al	2020				Yes	Yes	Yes		
Pouncey et al	2020	Daily			Daily		Daily		
Notten et al	2020	Every 6 h							
Li et al	2020	Yes							
Li et al	2020	Yes							
Nakamura et al	2021		Daily		Daily	Daily	Daily	Daily	
Tian et al	2021		Every 4 h	Every 4 h	Every 4 h	Every 4 h	Every 4 h		
Li et al	2021	Daily							

Abbreviations: aPTT, activated partial thromboplastin time; INR, international normalized ratio; PT, prothrombin time.

Supplementary Table S6 Outcomes of catheter-directed thrombolysis among studies included in the systematic review

Author	Year	Venographic success definition	Venographic success rate	Follow-up (mo)	Venous patency	PTS scale	PTS prevalence	Minor bleeding rate	Major bleeding rate	Major bleeding definition	Pulmonary embolism rate during CDT	Death
Semba et al	1994	Complete recanalization of the vein with less than 30% residual stenosis.	85%	3	92%	NR	NR	NR	0%	NR	0%	NR
Bjarnason et al	1997	Complete thrombolysis with restoration of normal flow and less than 30% residual luminal (area) narrowing or partial thrombolysis such that short venous segments remain, which demonstrated residual narrowing or occlusion, in which case, however, thrombolysis facilitated the use of adjunctive methods	79%	24	37%	NR	NR	14.3%	6.5%	NR	1.3%	0%

(*Continued*)

Author	Year	Venographic success definition	Venographic success rate	Follow-up (mo)	Venous patency	PTS scale	PTS prevalence	Minor bleeding rate	Major bleeding rate	Major bleeding definition	Pulmonary embolism rate during CDT	Death
		such as angioplasty, stent placement, or surgical bypass, which successfully restored patency and normal flow										
Verhaeghe et al	1997	Antegrade flow in the thrombosed iliofemoral tract	CDT: 67% CDT + adjunctive: 79%	12	78%	NR	NR	NR	NR	NR	0%	NR
Mewissen et al	1999	Venous Registry Index	Grade 3: 31% Grade 2: 52% Grade 1: 17%	12	60%	NR	NR	77/473 for the whole registry (not specifically for the CDT patients)	54/473 for the whole registry (not specifically for the CDT patients)	Bleeding or hematoma necessitating transfusion	6/473 for the whole registry (not specifically for the CDT patients)	NR
Ogawa et al	2005	Venous Registry Index	CDT: Grade 1: 0% Grade 2: 20% Grade 3: 80% CDT-IPC: Grade 1: 36% Grade 2: 43% Grade 3: 21%	21	NR	Venous Disability Score	54%	0%	0%	Gastrointestinal bleeding, cerebral bleeding	0%	NR
Kim et al	2006	Venous Registry Index	Grade I: 7.7% Grade III: 80.7% Grade II: 11.5%	NR	NR	NR	NR	4.3%	8.7%	Clinically overt bleeding that resulted in the cessation of therapy, further hospitalization, permanent sequelae, or death or that required transfusion or surgical intervention	3.8%	NR
Park et al	2008	Venous Registry Index	Technical success: 97% Grade I: 53% Grade II: 41% Grade III: 3%	36 months for venous patency, 47 months for PTS	67%	NR	21%	2.9%	2.9%	NR	0%	0%
Martinez Trabal et al	2008	Venous Registry Index	Grade III: 11.1% Grade II: 59.3% Grade I: 29.6%	NR	NR	NR	NR	23.8%	0%	Any evidence of hemodynamic instability, serious distant bleeding, large hematoma, or patients receiving blood transfusions associated with any of the aforementioned conditions	0%	NR

(*Continued*)

(*Continued*)

Author	Year	Venographic success definition	Venographic success rate	Follow-up (mo)	Venous patency	PTS scale	PTS prevalence	Minor bleeding rate	Major bleeding rate	Major bleeding definition	Pulmonary embolism rate during CDT	Death
Jeon et al	2010	Thrombus removal defined as complete if CT venography at discharge showed no residual clot	Complete removal: 20% Partial removal: 70%	6	72%	Signs and symptoms	38%	4%	1%	NR	NR	
Gao et al	2011	Venous Registry Index	Grade I: 28% Grade II: 53% Grade III: 19% Considered technical success of 81%	15	67%	Modified Villalta	22%	12.7%	0%	Intracranial bleed, bleeding resulting in death, or bleeding requiring transfusion, surgery, or cessation of TRT	0%	NR
Manninen et al	2012	Venography was defined as complete (no visible thrombosis and less than 30% residual stenosis); partial (patent vein but visible thrombosis and/or more than 30% residual stenosis); or failure (no lytic effect after treatment)	Complete lysis: 79% Partial lysis: 21%	42	87%	Reporting standards in venous disease	9%	5.7%	1.8%	Necessitating active treatment and/or a prolonged hospital stay	1.8%	2%
Baker et al	2012	Venous Registry Index	Grade I: 10.8% Grade II: 63.9% Grade III: 25.3%	35	NR	NR	NR	5.3	10.5	Bleeding resulting in Hb drop of at least 3 g/dL or any Hb drop of 4 g/dL or needing transfusion of 2 units of RBC	0%	0%
Baker et al	2012	Venous Registry Index	Grade I: 10.5% Grade III: 52.6% Grade III: 36.8%	35	NR	NR	NR	4.7	7.8	Bleeding resulting in Hb drop of at least 3g/dL or any Hb drop of 4g/dL or needing transfusion of 2 units of RBC	0%	0%
Enden et al	2012	Venous Registry Index	Grade I: 47.7% Grade II: 41.1% Grade III: 11.1%	6 months for venous patency, 24 months for PTS	66%	Villalta	41%	18.9%	3.3%	Clinically overt and associated with a decrease of 2 g per deciliter or more in the hemoglobin level, led to the transfusion of 2 or more units of red cells or whole blood, was retroperitoneal or intracranial, occurred in a critical organ, or contributed to death	0%	0%

(*Continued*)

Author	Year	Venographic success definition	Venographic success rate	Follow-up (mo)	Venous patency	PTS scale	PTS prevalence	Minor bleeding rate	Major bleeding rate	Major bleeding definition	Pulmonary embolism rate during CDT	Death
Lee et al	2013	Venous Registry Index	Complete lysis (grade III): 44.4% Grade II (50–90%): 55.6% Grade I (<50%): 0%	6 months for venous patency, 12 months for PTS	69%	Villalta	19%	22.2%	7.4%	Obvious bleeding, such as intracranial bleeding, gastrointestinal bleeding, and retroperitoneal hematomas, which resulted in either hemodynamic instability, a blood transfusion of >2 U, surgery, or death	0%	NR
Lee et al	2013	Complete thrombus removal (>99%)	51.7%	48 months for venous patency, 74 months for PTS	76%	Signs and symptoms (pain, heaviness, tingling sensation and swelling)	17%	10.3%	0%	Hemorrhage needing transfusion	0%	0%
Gomaa et al	2013	Partial and complete resolution of thrombus reported	Complete lysis: 82.2% Partial lysis: 14.3%	12	100%	NR	0%	35.7%	0%	Requiring surgery or transfusion	0%	
Park et al	2014	Society of Interventional Radiology guidelines	Complete lysis in 48% Partial (grade 2) in 22%	NR	NR	NR	NR	13.3%	2.2%	Gastrointestinal bleeding, intracranial hemorrhage, severe hematoma	2.2%	2%
Xue et al	2014	>95% thrombolysis; gradient pressure measurement	The pressure gradient crossing the stenosis of the iliac vein decreased significantly after CDT and stenting (7.22– > 1.82 cmH_2O)	60 months for venous patency, 31 months for PTS	85%	Quality of Life Questionnaire	12%	6.6%	0%	NR	0%	0%
Engelberger et al	2015	Restoration of antegrade inline flow in the treated vein; elimination of any underlying obstructive lesion	100%	12	86%	Villalta	5%	0%	0%	Fatal bleeding, and/or symptomatic bleeding in a critical area or organ, such as intracranial, intraspinal, intraocular, retroperitoneal, intra-articular or pericardial, or intramuscular with compartment syndrome, and/or bleeding causing a fall in hemoglobin level of 20 g/L)1 (1.24 mmol/L)1) or more, or leading to transfusion of two or more units of whole blood or red cells	0%	NR

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Author	Year	Venographic success definition	Venographic success rate	Follow-up (mo)	Venous patency	PTS scale	PTS prevalence	Minor bleeding rate	Major bleeding rate	Major bleeding definition	Pulmonary embolism rate during CDT	Death
Li et al	2015	Venous Registry Index	Grade I: 7.9% Grade II: 30.5% Grade III: 61.6%	NR	NR	NR	NR	5.7%	2.9%	Any clinically overt bleeding that resulted in the cessation of therapy, further hospitalization, a decrease of 2 g/dL hemoglobin, leading to transfusion of 2 units of packed red blood cells, retroperitoneal/ intracranial/ critical organ bleeding, or death.	4.9%	0.4%
Fiengo et al	2015	NR	Partial resolution of thrombus in all patients after 24 h. Complete resolution in 72.7% after 48 h.	24	NR	Venous ulcer	8%	0%	0%	NR	0%	NR
Mizuno et al	2015	Yamada Score	Average pre-CDT score: 27.1 Average post-CDT score: 8.1	6	NR	Postthrombotic syndrome-related symptoms (pain, heat, heaviness, edema, pigmentation, sclerosis, ulcer)	19%	5.7%	2.9%	According to GUSTO bleeding	0%	0%
Duan et al	2016	Porter Score	GSV access: 66.9% LSV access: 63.5% PV access: 66.1%	11	93%	Symptoms (swelling/pain)	11%	5.7%	0%	NR	0%	0%
Yang et al	2016	Porter Score Thrombolysis efficiency = (total pre-lysis thrombus scores – total post-lysis thrombus scores/total pre-lysis thrombus scores) × 100%	71.26%	12	NR	Villalta	18%	2.6%	0%	NR	0%	NR
Sundar et al	2016	Venous Registry Index	No progression: 2% I: 7.4% II: 46.3% III: 46.3%	24 months for venous patency, 12 months for PTS	83%	Clinical findings of limb swelling, skin induration, or discoloration from venous stasis, dilated veins, or pain on calf compression.	33%	NR	3.7%	NR	3.7%	2%
Zou et al	2016	Marder Score	50% with substantial lysis	NR	NR	NR	NR	NR	NR	NR	NR	NR

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Author	Year	Venographic success definition	Venographic success rate	Follow-up (mo)	Venous patency	PTS scale	PTS prevalence	Minor bleeding rate	Major bleeding rate	Major bleeding definition	Pulmonary embolism rate during CDT	Death
Tichelaar et al	2016	Venous Registry Index	No progression: 2% I: 0% II: 10% III: 88%	89	87%	Villalta	55%	33.9%	48.4%	Any clinically overt bleeding that resulted in the cessation of therapy, further hospitalization, death or that required transfusion or surgical intervention	0%	NR
Foegh et al	2017	Radiological disappearance of thrombus D-dimer levels lower than 10 mg/L	48% not needing stent after CDT	84	79%	NR	NR	NR	3.1%	NR	0%	NR
Lu et al	2017	Venous Registry Index	Grade I: 7.8% Grade II: 43.1% Grade III: 49%	20	88%	NR	NR	NR	14.3%	Intracranial hemorrhage; systemic hemorrhage	0	2.4
Lu et al	2017	Venous Registry Index	Grade I: 44% Grade II: 36% Grade III: 20%	13	100%	NR	NR	NR	4%	NR	0	0
Chen et al	2017	Venous Registry Index Dissolution of $\geq$50% thrombus	High-risk patients: 64.7% Grade III: 5.9% Grade II: 58.8% Grade I: 35.3% Low-risk patients: 82.8% Grade III: 27.6% Grade II: 55.2% Grade I: 17.2%	NR	NR	NR	NR	6.5%	0%	NR	0%	NR
Kuo et al	2017	Venous Registry Index	VRI $<$50%: 19.4% 50 $\leq$ VRI $<$ 90: 32.3% VRI $\geq$90%: 48.4%	24	NR	Villalta	19%	22.6%	0%	Obvious bleeding, including intracranial hemorrhage, gastrointestinal bleeding, and retroperitoneal hematoma, resulting in hemodynamic instability, blood transfusion $>$2 U, surgical intervention, or death. All other bleeding events were considered minor episodes	0%	0%

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Author	Year	Venographic success definition	Venographic success rate	Follow-up (mo)	Venous patency	PTS scale	PTS prevalence	Minor bleeding rate	Major bleeding rate	Major bleeding definition	Pulmonary embolism rate during CDT	Death
Lin et al	2017	NR	100%	3	75%	Villalta-guided	21%	NR	NR	NR	34%	0%
Wang et al	2018	Porter Score	Popliteal vein access: 9.11 ± 1.75 to $>1.25 \pm 0.69$ ATV access: 9.26 ± 1.91 to $>0.96 \pm 0.65$	12	NR	Villalta	11%	23.8%	0%	Decrease in the hemoglobin level to $\leq$234 2.0 g/L, obvious bleeding that resulted in hemodynamic instability, or intracranial bleeding or massive gastrointestinal bleeding. All other bleeding events were considered minor bleeding, including sheath bleeding, gingival bleeding, gross and microscopic hematuria.	0%	0%
Liu et al	2018	More than 50% lysis	93.7%	24	80%	Villalta	39%	(16/79) 201.25%	0%	Bleeding necessitating active treatment and/or a prolonged hospital stay, and minor: requiring no active therapy	0%	0%
Yu et al	2018	NR	85%	38	60%	Villalta	38%	4.1%	0%	NR	0%	0%
Zhu et al	2019	NR (assessed by DUS)	NR (assessed by DUS)	12	63%	Villalta	23%	15%	0%	NR	NR	NR
Abd El-Mabooda et al	2020	NR	NR	24	81.8%	Villalta	40.9%	15%	0%	NR	10%	0%
Yin et al	2020	Venous Registry Index	Grade III: 83% Grade II: 12% Grade I: 5%	NR	NR	NR	NR	2%	2%	NR	0%	1%
Pouncey et al	2020	Venous patency $\geq$90%	53%	39	NR	Villalta, ISTH score	30.6% (Villalta) 46.8% (ISTH)	NR	0%	Bleeding associated with a fall in hemoglobin of at least 2 g/dL (about 1·24 mmol/L), a need for transfusion of two or more units of packed red blood cells or whole blood, symptomatic in a critical area or organ (intracranial, intraspinal,	4.8%	0%

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Author	Year	Venographic success definition	Venographic success rate	Follow-up (mo)	Venous patency	PTS scale	PTS prevalence	Minor bleeding rate	Major bleeding rate	Major bleeding definition	Pulmonary embolism rate during CDT	Death
										intraocular, retroperitoneal, intra-articular, pericardial, or intramuscular), or contributing to the death of the patient.		
Notten et al	2020	More than 90% lysis	43%	12	80.3%	Villalta	24%	14%	3%	Retroperitoneal bleeding, hemorrhagic stroke	0%	1%
Kim et al	2020	Successful restoration of antegrade in-line flow in the treated vein with elimination of any underlying obstructive lesion	100%	52 months for PTS 6 months for patency	82.7%	CEAP	17.3%	0%	0%	Retroperitoneal, intracranial, or bleeding in a critical organ; hemoglobin decrease of at least 2 g/dL or required transfusion of at least 2 units of red blood cells	0%	0%
Li et al	2020	Venous Registry Index	Grade I: 1.6% Grade II: 22.9% Grade III: 75.4%	6.4 months	NR	NR	NR	1.6%	0%	NR	0%	0%
Li et al	2020	Venous Registry Index	Grade I: 0% Grade II: 30.8% Grade III: 69.2%	6.4 months	NR	NR	NR	0%	0%	NR	0%	0%
Zhu et al	2020	Complete removal	Complete removal: 82% Mostly removed: 15% Partial removal: 3%	NR	NR	NR	NR	18%	0%	NR	0%	0%
Nakamura et al	2021	Lysis score based on thrombus scores for 6 venous segments. Grade I: <50% lysis Grade II: 50-99% lysis Grade III: 100% lysis	Grade I: 17% Grade II: 67% Grade III: 15%	12	68%	Villalta	16%	NR	NR	Retroperitoneal, intracranial, fatal, or bleeding in a critical organ; hemoglobin decrease of at least 2 g/dL or required transfusion of at least 2 units of red blood cells	0%	0%
Tian et al	2021	Venous Registry Index	Grade I: 4% Grade II: 24% Grade III: 76%	24	88%	Villalta	4%	12%	0%	NR	0%	0%

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Author	Year	Venographic success definition	Venographic success rate	Follow-up (mo)	Venous patency	PTS scale	PTS prevalence	Minor bleeding rate	Major bleeding rate	Major bleeding definition	Pulmonary embolism rate during CDT	Death
Li et al	2021	Venous Registry Index	Grade III: 21% Grade II: 71% Grade I: 8%	NR	NR	NR	NR	8%	0%	Clinically overt and associated with a decrease of 2 /dL or more in the hemoglobin level, led to the transfusion of 2 or more units of red cells or whole blood, was retroperitoneal or intracranial, occurred in a critical organ, or contributed to death.	0%	0%

Abbreviations: CDT, catheter-directed thrombolysis; DUS, Doppler ultrasound; ISTH, International Society on Thrombosis and Haemostasis; NR, not registered, PTS, postthrombotic syndrome.