

Hôpital du Valais
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Thromboses veineuses ilio fémorales (proximales) «ruée vers l'or?»

D Danzer



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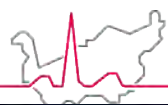
Epidémiologie TVP ilio fémorale

- **Toute TVP (DVT) incidence : 50-100/100'000**
- **TVP ilio femorale ~ 25% TVP membres inférieurs**
- **Compression veineuse ~50%**
- **Syndrome post thrombotique >50% des patients**
- **~50% des patients résidus thrombotiques avec ou sans tt invasif ...à ce jour**
- **↓ thrombus → ↓ PTS (sévérité)**

ATTRACT trial

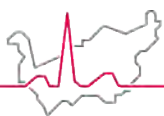
Syndrome Post Thrombotique PTS Villalta score

Symptômes subjectifs (patient)	Signes objectifs (médecin)
<ul style="list-style-type: none"> • Lourdeur • Douleur • Crampes • Prurit • Paresthésies 	<ul style="list-style-type: none"> • Œdème • Douleur à la pression des mollets • Induration de la peau • Hyperpigmentation • Rougeur
<p>Pour chaque symptôme ou signe, des points sont attribués: 0 = absent, 1 = léger, 2 = modéré, 3 = sévère, ulcère présent = 1; ulcère absent = 0.</p> <p>Interprétation: score ≤ 4: absence de SPT, 5-14: SPT modéré, 10-14: SPT intermédiaire, ≥ 15: SPT sévère ou ulcère présent.</p>	



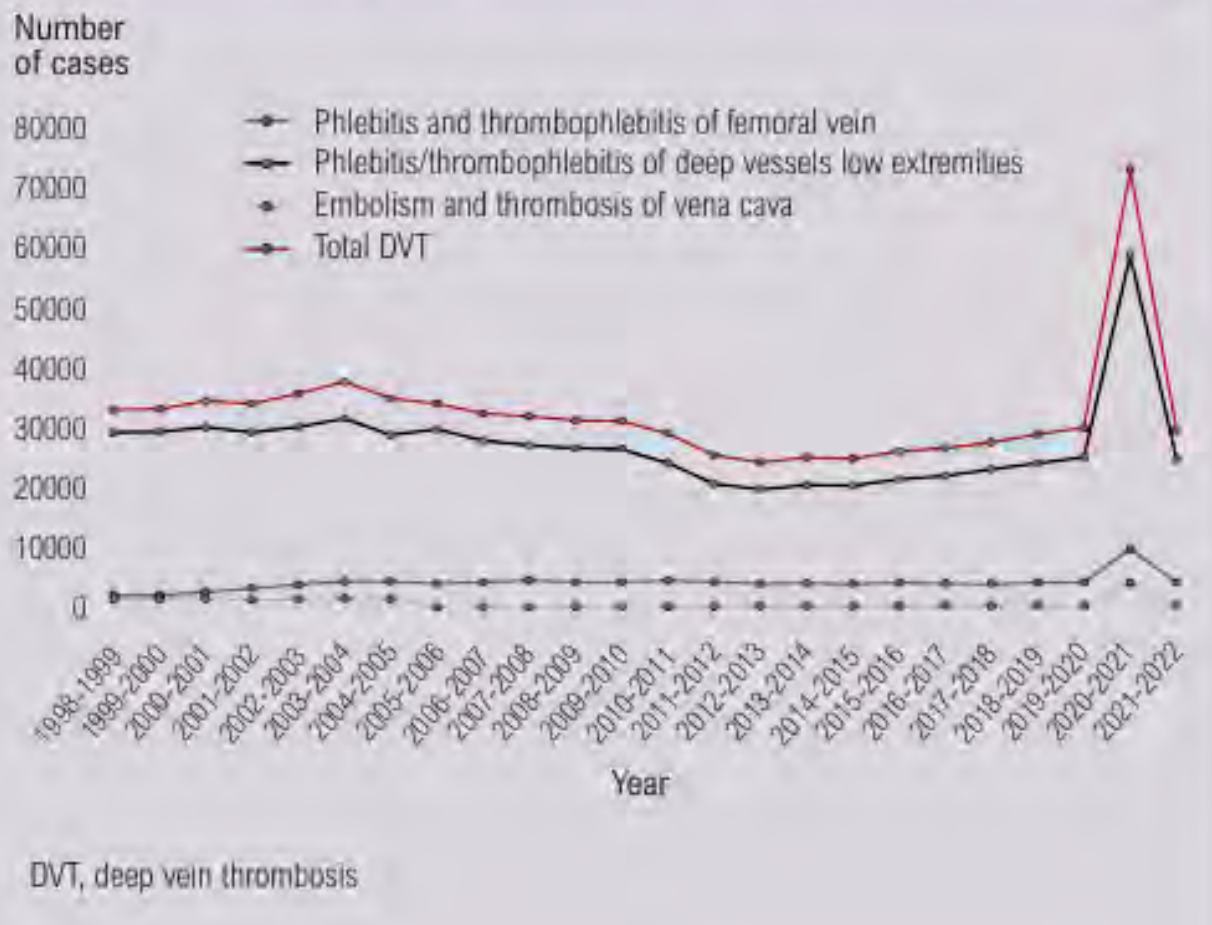
Au menu...





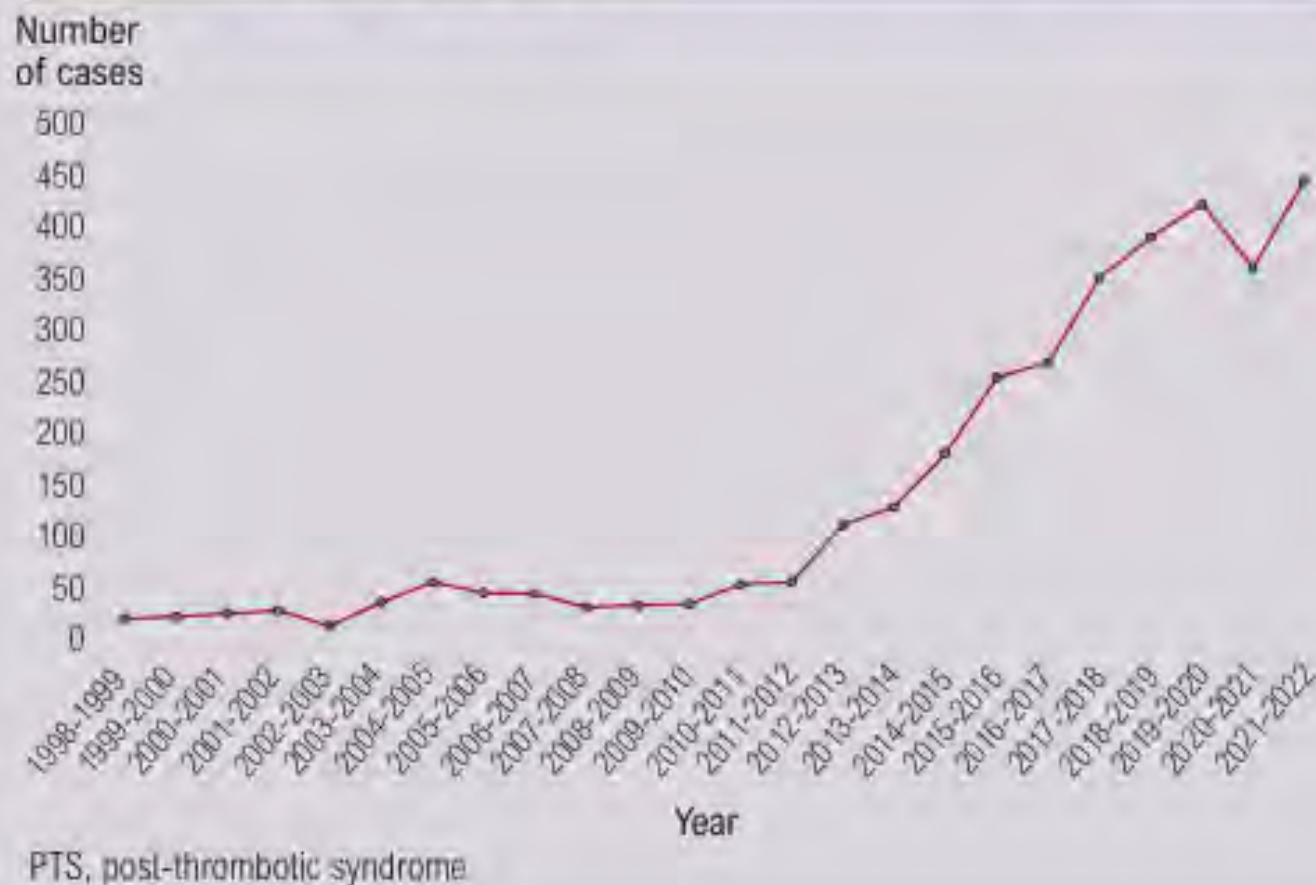
NHS Hospitalisation pour TVP

Figure 1 Number of hospital episodes with primary diagnosis of DVT between 1998 and 2022.



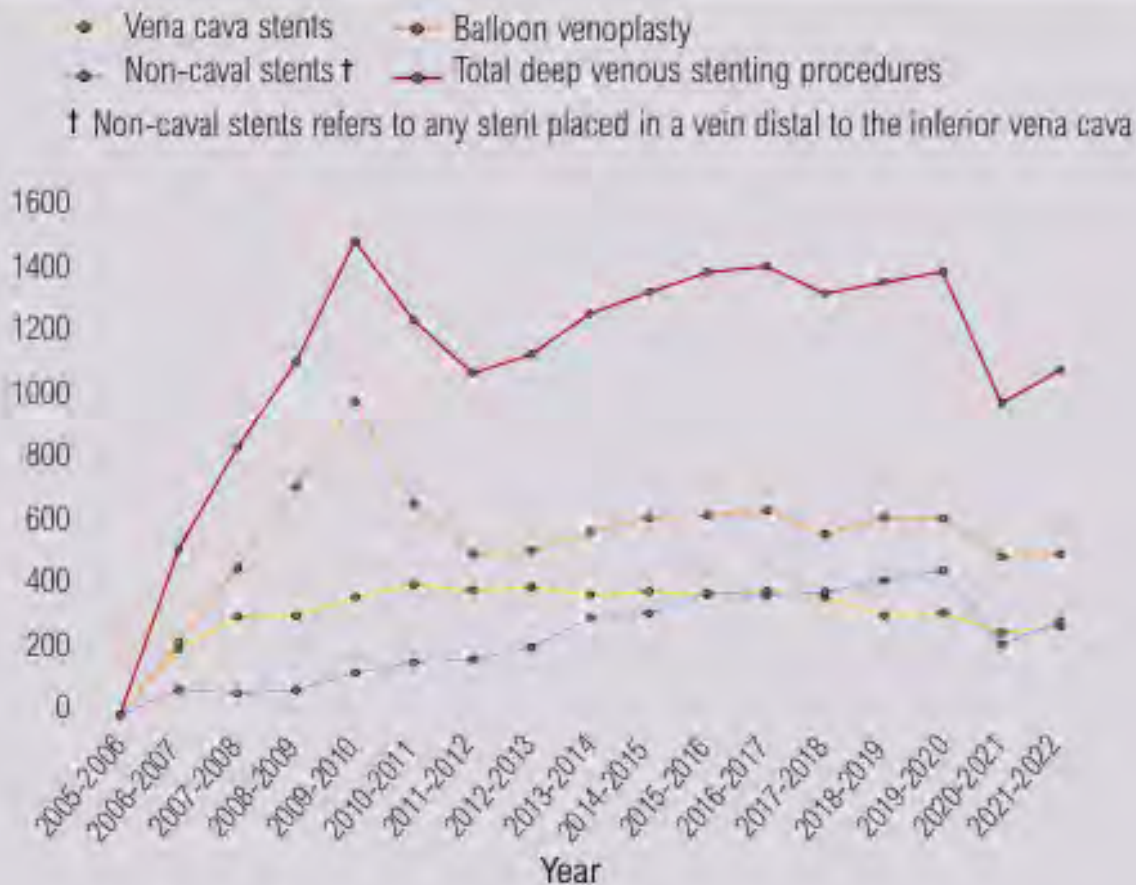
NHS Hospitalisation pour PTS

Figure 2 Number of hospital episodes with primary diagnosis of PTS between 1998 and 2022.



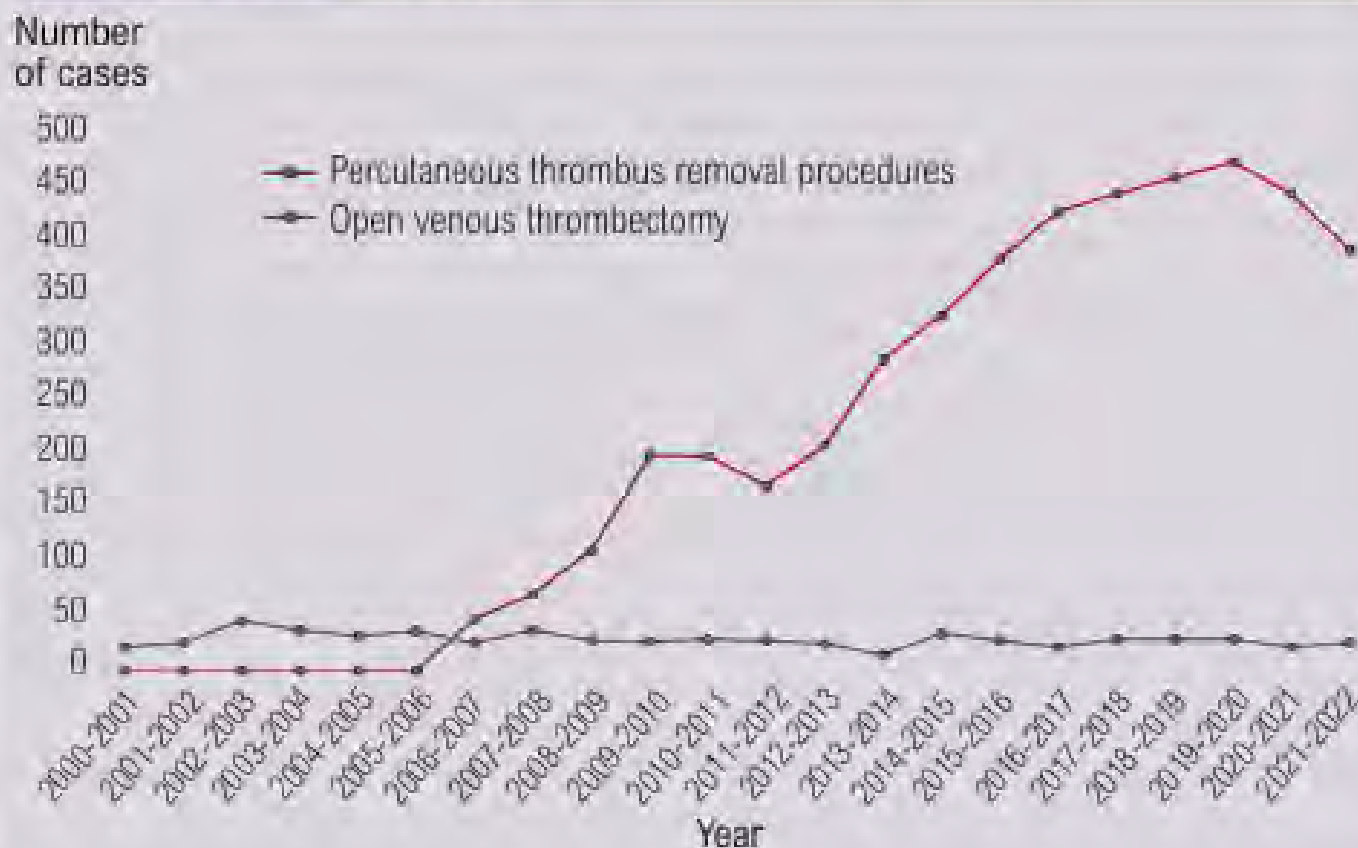
TT endovasculaire (angioplastie , Ø Thrombectomie)

Figure 4 Number of hospital episodes with percutaneous venoplasty/venous stenting listed as the primary procedure between 2005 and 2022.



NHS Hospitalisation pour thrombectomie

Figure 3 Number of hospital episodes with percutaneous or open surgical thrombectomy listed as the primary procedure between 2000 and 2022.





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Diminution du PTS?

- **Anticoagulation rapide**
- **Contention (6-12m)**
- **Mobilisation rapide**
- ***Thrombectomie?...***
- **...ATTRACT trial 2017**
- **...CaVenT 2012**



Delaits avant anticoagulation retarde recanalisation

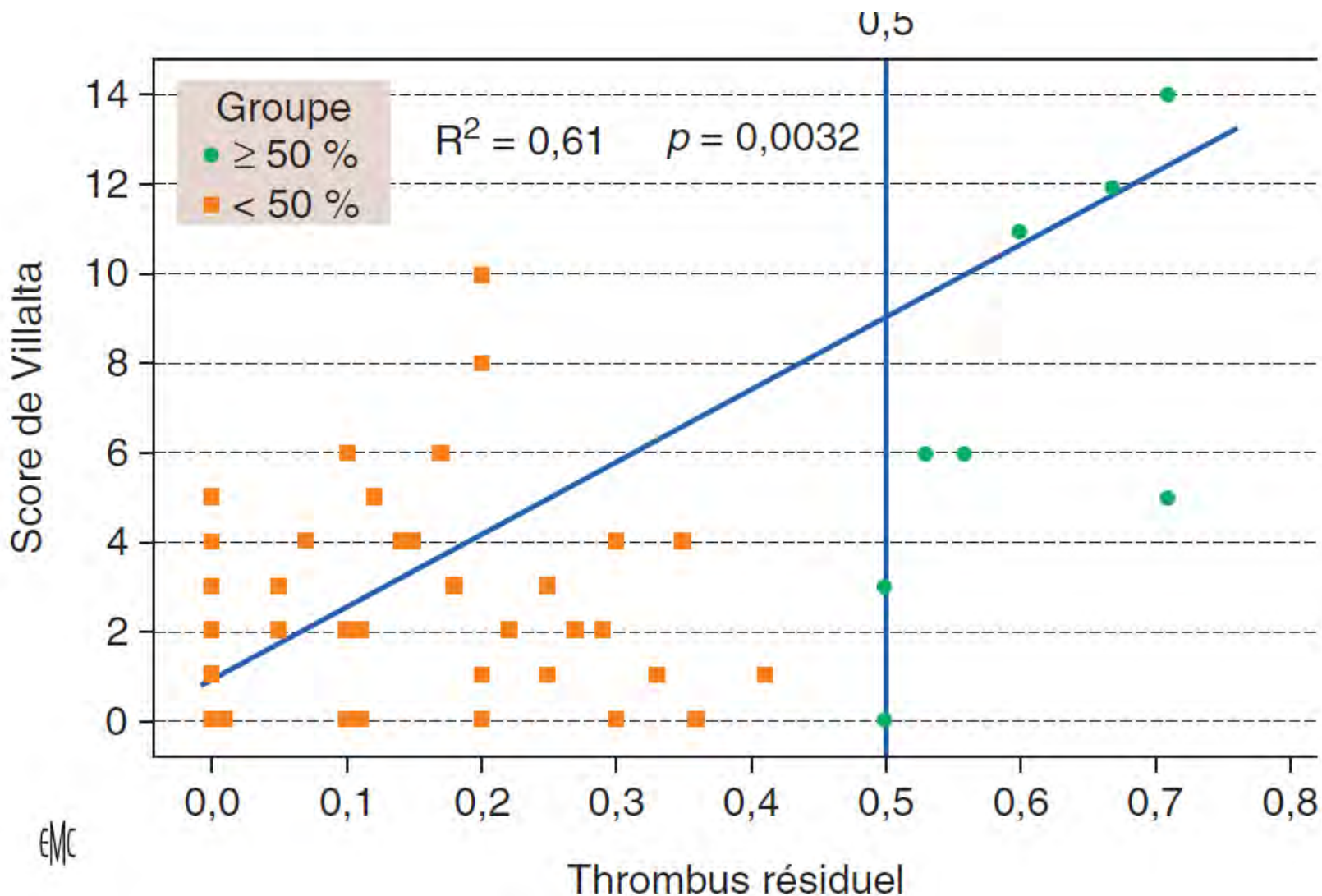
- **Significatif pour les TVP prox**

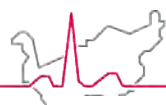
Table 2. Delay between the onset of symptomatic DVT and start of anticoagulation according to three timing categories.

	Timing of delay		
	≤72 hours n (%)	>3 days and <7 days n (%)	≥7 days n (%)
All patients (n = 76)	18 (23.7)	18 (23.7)	40 (52.6)
Patients with incomplete recanalization after 12 months of follow up (n = 31)	4 (12.9)	9 (29.0)	18 (58.1)
Patients with proximal DVT (n = 55)	13 (23.6)	10 (18.2)	32 (58.2)
Patients with distal DVT (n = 21)	5 (23.8)	8 (38.1)	8 (38.1)

Musil et al Phlebology 2022

Corrélation thrombus résiduel et SPT





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Risk of PTS

Table 3 Risk factors associated with post-thrombotic syndrome

	<i>n</i>	PTS, <i>n</i>	One-year cumulative incidence (%)	Risk ratio*	Risk ratio _{adjusted} [†]
Gender					
Women	880	235	31	1.5 (1.3–1.8)	1.5 (1.1–1.9)
Men	788	129	17	1	1
Age (years)					
18–29	200	51	25	1	1
30–39	311	75	26	1.0 (0.7–1.4)	0.8 (0.5–1.2)
40–49	391	111	30	1.2 (0.9–1.6)	1.1 (0.8–1.6)
50–59	456	87	24	0.9 (0.6–1.2)	0.7 (0.4–1.1)
60–69	310	40	16	0.6 (0.4–0.9)	0.4 (0.2–0.7)
BMI					
Underweight	15	4	36	1.3 (0.5–2.7)	1.4 (0.4–3.6)
Normal	549	109	22	1	1
Overweight	702	132	22	1.1 (0.8–1.3)	1.2 (0.9–1.6)
Obese	343	102	34	1.5 (1.2–1.9)	1.9 (1.4–2.4)
Duration symptoms before diagnosis, weeks[‡]					
≥2	368	105	29	1.4 (1.2–1.7)	1.2 (0.9–1.6)
<2	1240	245	24	1	1
Varicose veins at diagnosis[§]					
Yes	470	130	30	1.5 (1.2–1.8)	1.5 (1.2–1.9)
No	985	180	20	1	1
Localization of DVT[¶]					
Calf vein	203	37	25	0.9 (0.6–1.3)	0.9 (0.6–1.3)
Popliteal vein	498	100	23	1	1
Femoral and iliac vein	502	128	26	1.3 (1.1–1.6)	1.4 (1.1–1.8)
Malignancy[‡]					
Yes	137	19	15	0.7 (0.4–1.0)	0.8 (0.4–1.4)
No	1530	344	25	1	1

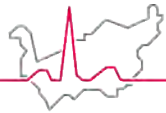
Tick et al, Journal of Thrombosis and Haemostasis 2008

Recommendations

PTS symptom management and prevention	Median	Disagreement
assessed PTS		
7- Catheter-directed thrombolysis, with or without mechanical thrombectomy, are appropriate in patients with iliofemoral obstruction, severe symptoms, and a low risk of bleeding	7	No
8- Catheter-directed thrombolysis, with or without mechanical thrombectomy, are appropriate in patients with popliteal obstruction, severe symptoms, and a low risk of bleeding	4	No

Appropriate: panel median of 7–9, without disagreement on the final appropriateness scale: it would be considered improper care not to provide this service, and there is a reasonable chance that this procedure will benefit the patient. The benefit to the patient is not small.

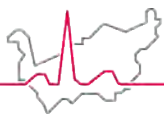
Uncertain: panel median of 4–6 OR any median with disagreement; Inappropriate: panel median of 1–3, without disagreement.



PTS Statement AHA 2014

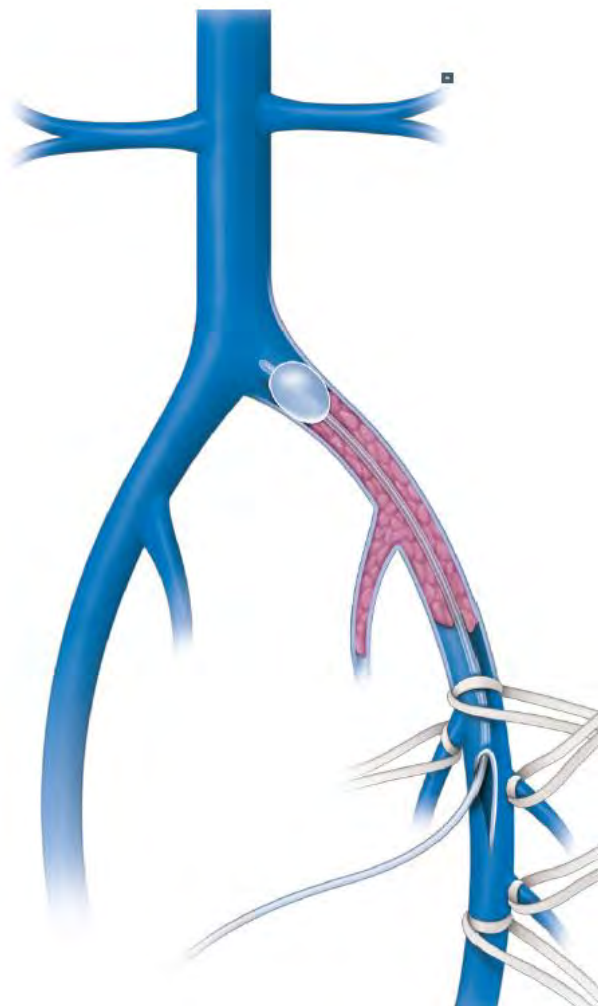
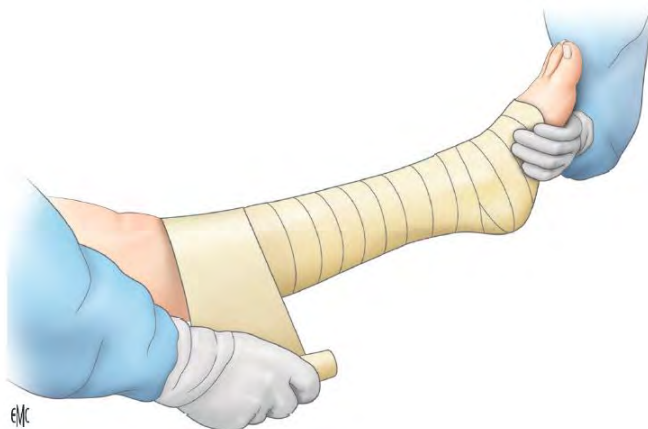
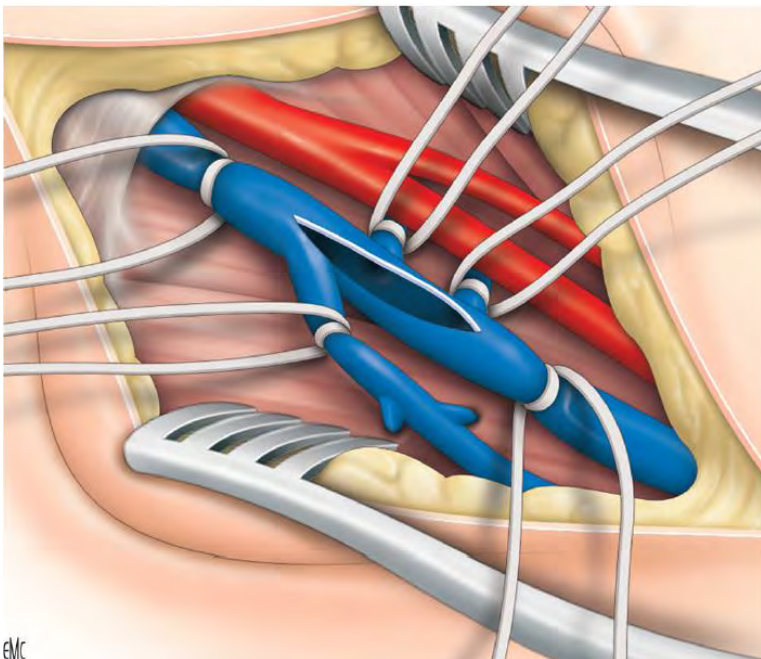
- **key risk factors for PTS include older age, higher body mass index, recurrent ipsilateral DVT, **more extensive DVT, greater symptom severity at 1 month**, and subtherapeutic anticoagulation, especially in the first few months after DVT.**

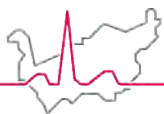
1. CDT and PCDT, in experienced centers, may be considered in select patients with acute (≤ 14 days) symptomatic, extensive proximal DVT who have good functional capacity, ≥ 1 -year life expectancy, and low expected bleeding risk (*Class IIb; Level of Evidence B*).



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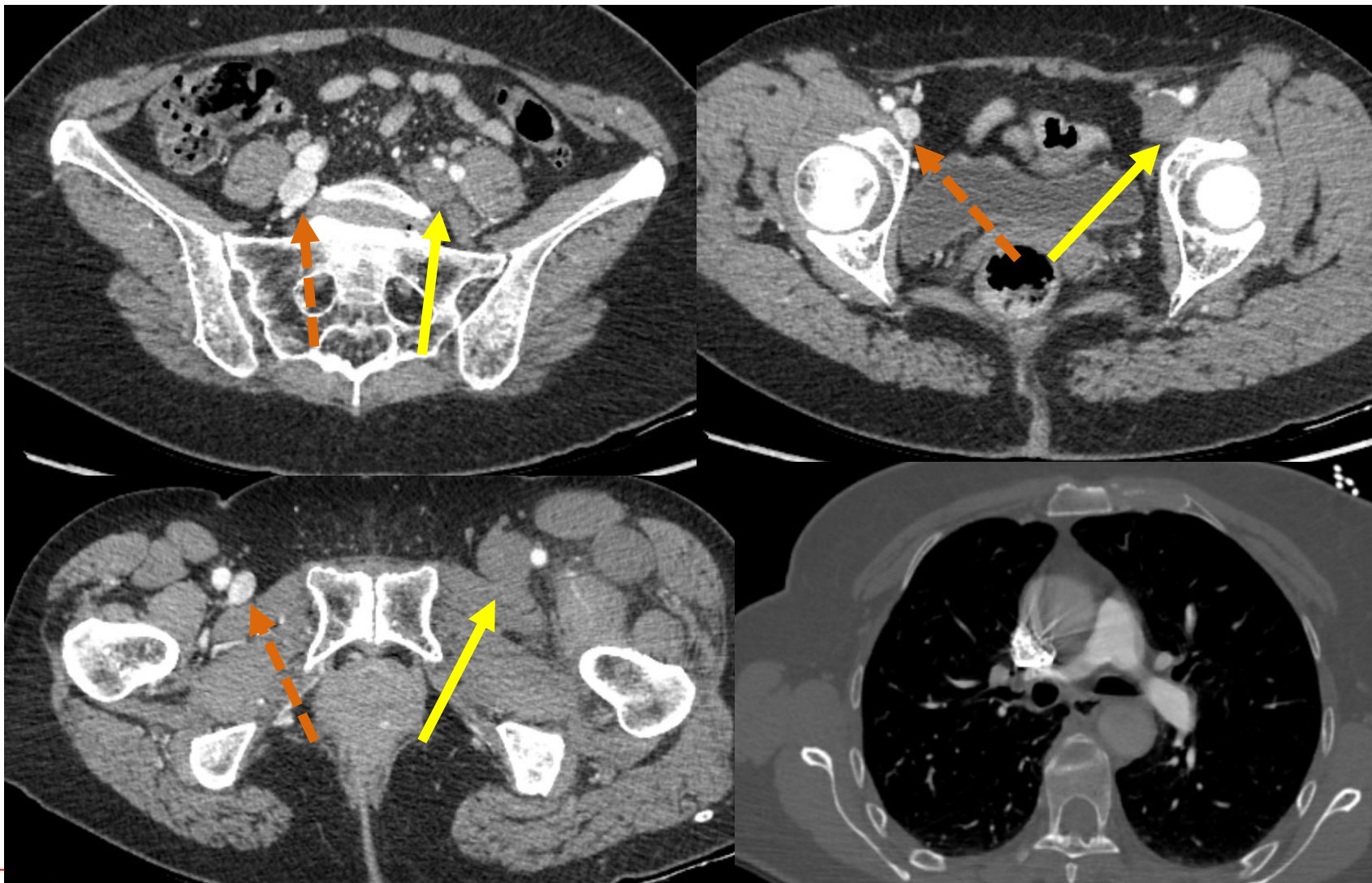
Thrombectomie chirurgicale

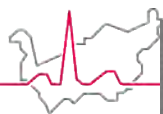




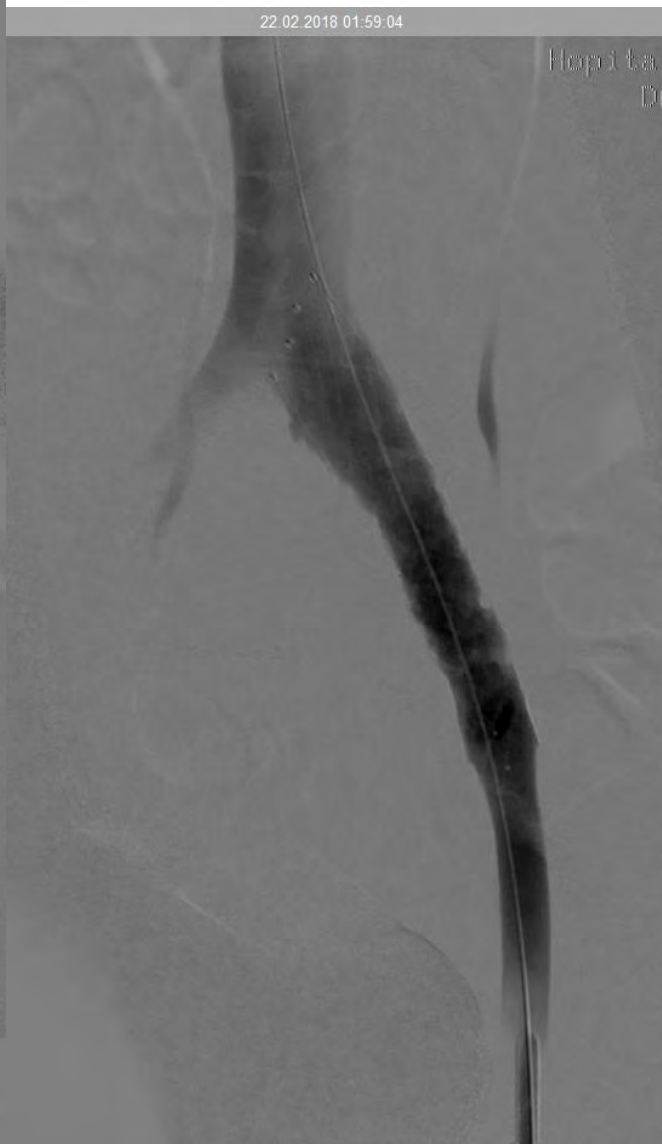
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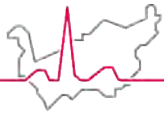
TVP aigue, douleurs de repos, 61 ans





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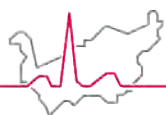
Thrombectomie chirurgicale

- **Résultats à 5-10ans**

- SPT 0-20%

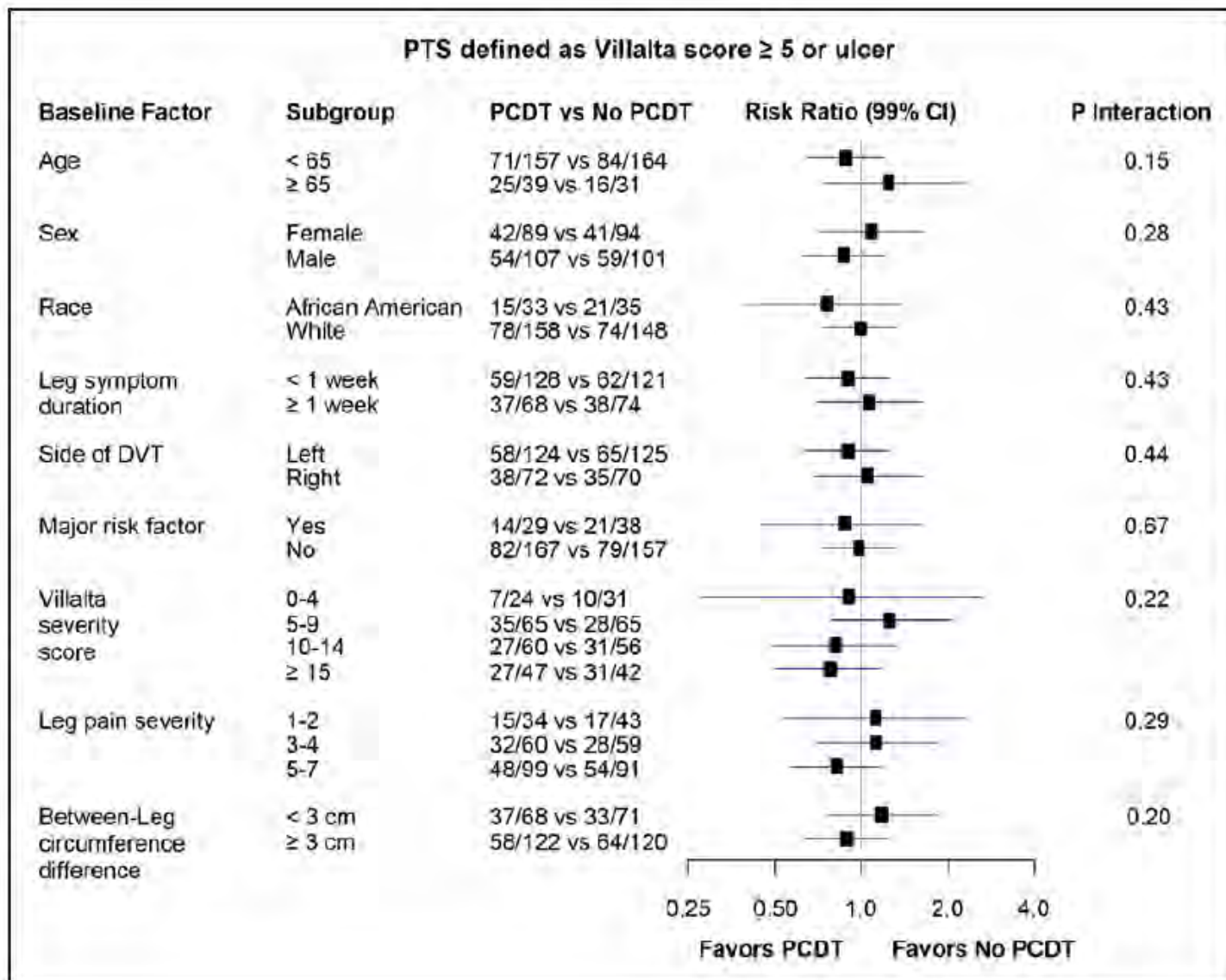
Oeckert al al Ann Vasc 2018, Lindow EJEVS 2010

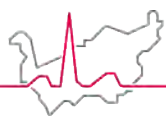
- **Complic: rethrombose précoce, complications locales**
- **2019 Actuellement surtout réservée aux contres indications à la thrombolyse...**
- **...2024 Obsolète??**



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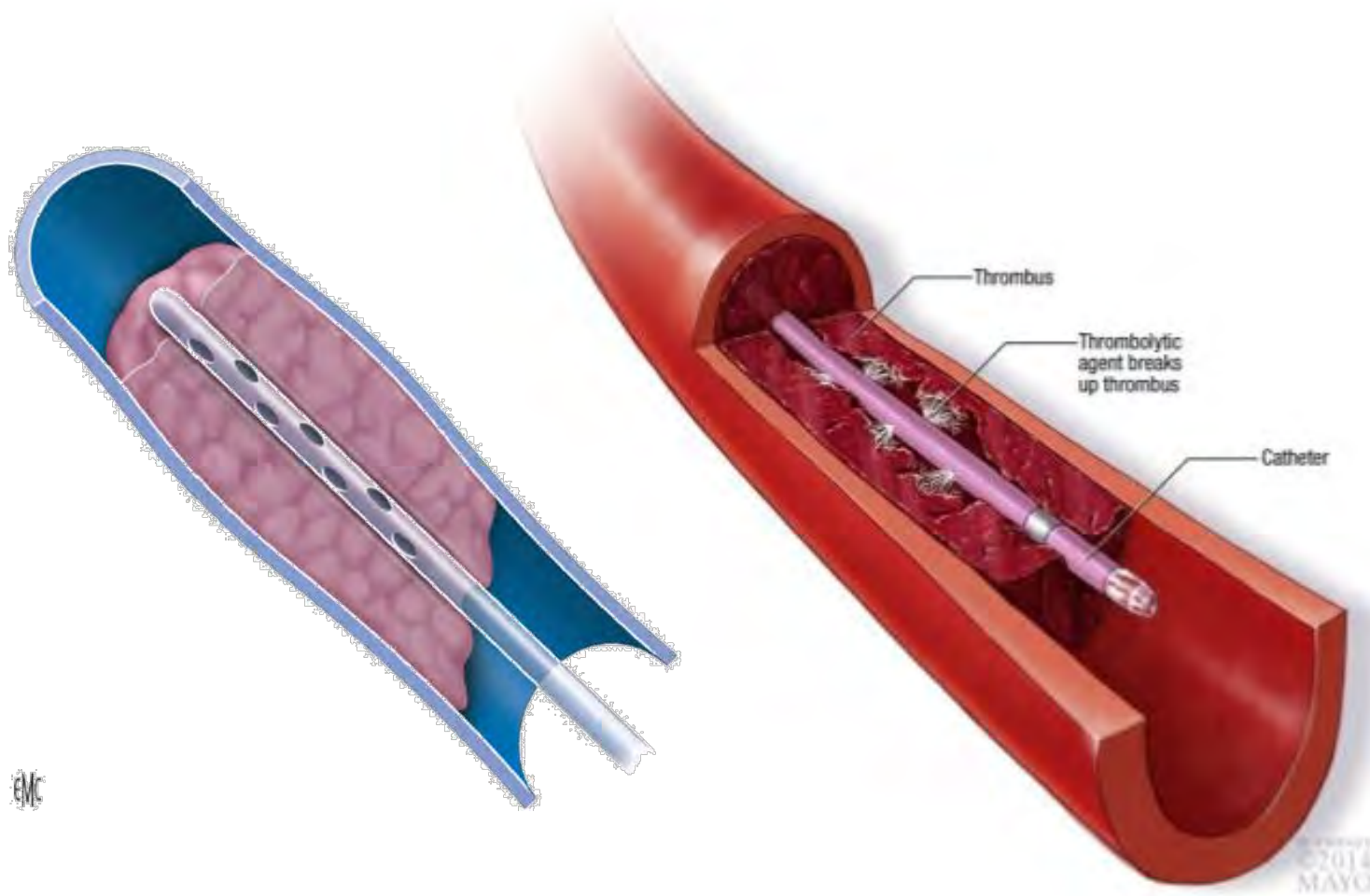
Pharmaco mécanique percutanée





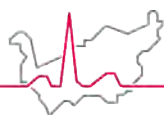
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Thrombolyse in situ



Charge thrombotique élevée:
Quantité rtPa vs thrombus résiduel





Thrombolyse par KT,

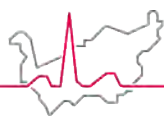
	Additional catheter-directed thrombolysis (n=90)		Standard treatment only (n=99)		p value*
	n	% (95% CI)	n	% (95% CI)	
Post-thrombotic syndrome at 24 months†	37	41.1% (31.5–51.4)	55	55.6% (45.7–65.0)	0.047
Iliofemoral patency at 6 months†‡	58	65.9% (55.5–75.0)	45	47.4% (37.6–57.3)	0.012
Post-thrombotic syndrome at 6 months§	27	30.3% (21.8–40.5)	32	32.2% (23.9–42.1)	0.77

Post-thrombotic syndrome defined as Villalta score of 5 points or higher. * χ^2 test. †Co-primary outcomes. ‡Five patients had inconclusive patency assessments and one was lost to follow-up at 6 months. §Secondary outcome.

Table 2: Short-term and long-term outcomes

Risque hémorragique considéré comme élevé

CaVenT Lancet 2012



Rethrombose facteurs défavorable

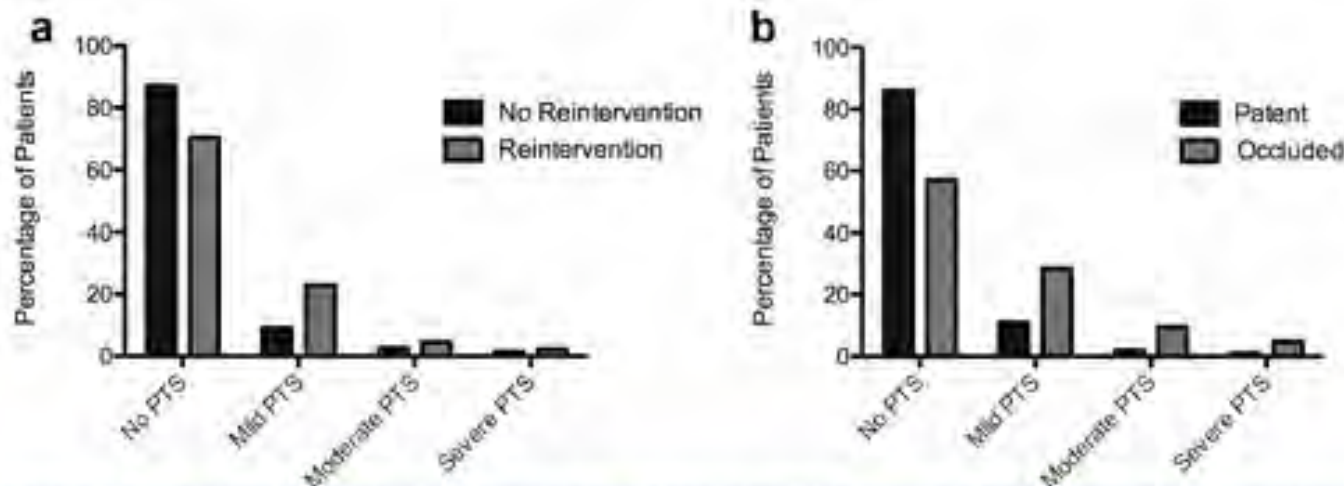
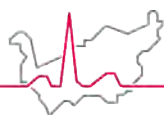


Fig 3. Proportion of patients with post-thrombotic syndrome (PTS; classified using the Villalta score) at 1 year for no reintervention vs reintervention cohorts **(a)** and complete reocclusion vs maintained patency (including reintervention and no-reintervention cases; **b**).



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Facteurs de risques rethrombose

Table II. Demographics, risk factors, anticoagulation compliance, thrombus extent, and procedural factors

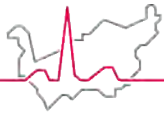
Characteristic	Reintervention		P value
	No	Yes	
Patients	88 (100)	45 (100)	NA
Age, years	46 (14-80)	32 (16-77)	.003 ^a
Symptoms, days	5 (1-28)	5 (1-21)	.743
Male sex	42 (47.7)	20 (44.4)	.720
Predisposing factors			
Smoker	22 (25.0)	11 (24.4)	.944
Cancer	7 (7.95)	1 (2.2)	.265
Thrombophilia	25 (28.4)	15 (33.3)	.560
Anticoagulation factors			
Noncompliance	1 (1.14)	9 (20.0)	<.001 ^a
Extent of thrombus	n = 95 limbs	n = 48 limbs	
Left side DVT	70 (73.7)	37 (77.1)	.69
Bilateral DVT	10 (10.5)	6 (12.5)	.781
IVC	12 (12.6)	17 (35.4)	.002 ^a
Popliteal	54 (56.8)	29 (60.4)	.722
Inflow factors			
Profunda covered or occluded	1 (1.1)	6 (12.5)	.006 ^b
Femoral vein occluded	0 (0)	3 (6.25)	.036 ^b
Popliteal vein occluded	0 (0)	2 (4.2)	.111
Stent across inguinal ligament	14 (14.7)	18 (37.5)	.003 ^b

DVT, Deep vein thrombosis; IVC, inferior vena cava; NA, not applicable. Data presented as number (%) or median (range).

^aP < .01.

^bP < .05.

Pouncey et al JVS 2022



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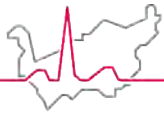
Facteurs de risques d'échec/récidive

- **Risk factor for failure with Angiojet**

- Symptoms > 7 days (1/3 success rate OR 19.6)

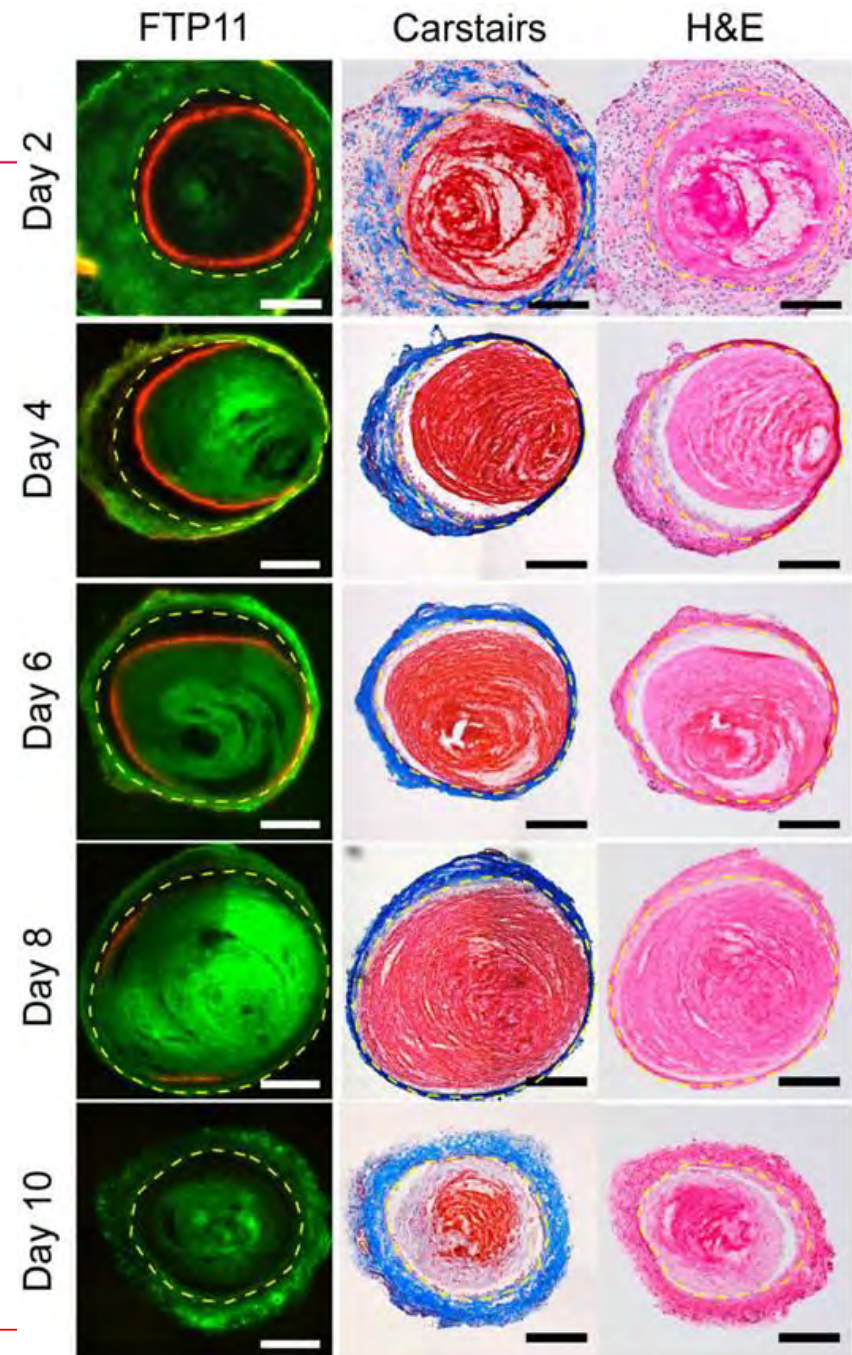
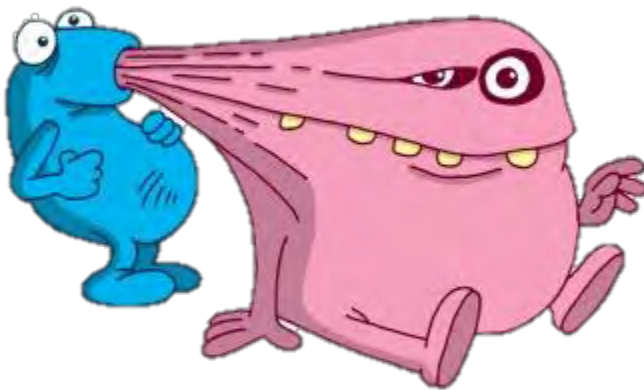
Huang et al Phlebology 2023

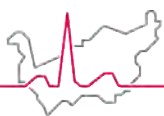
- **Nettoyage incomplet?**



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- Différentes strates
- Adhérence





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Instruments disponibles



AngioJet system - Zelante catheter



JETi Thrombectomy system



Indigo system - CAT 12 catheter



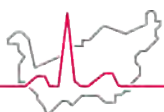
ClotRichter system



Aspirex system

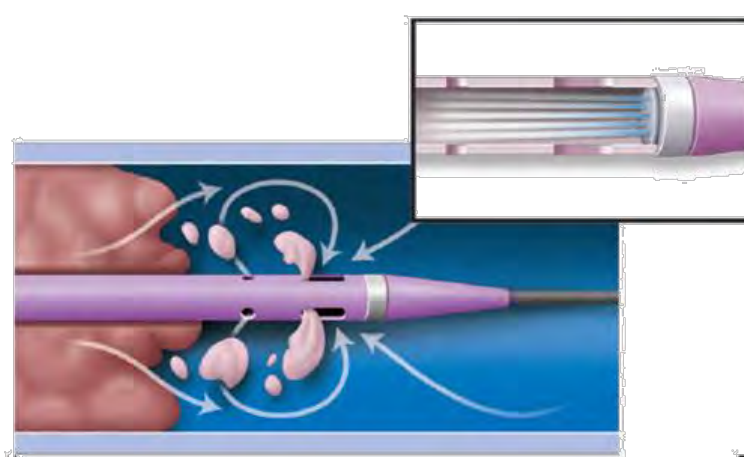
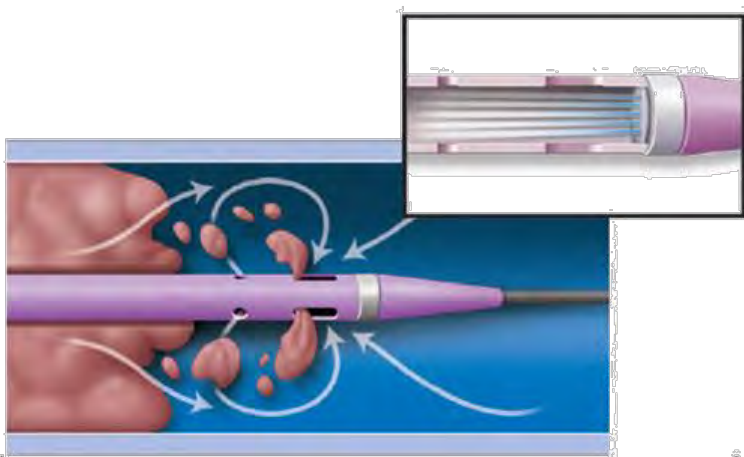
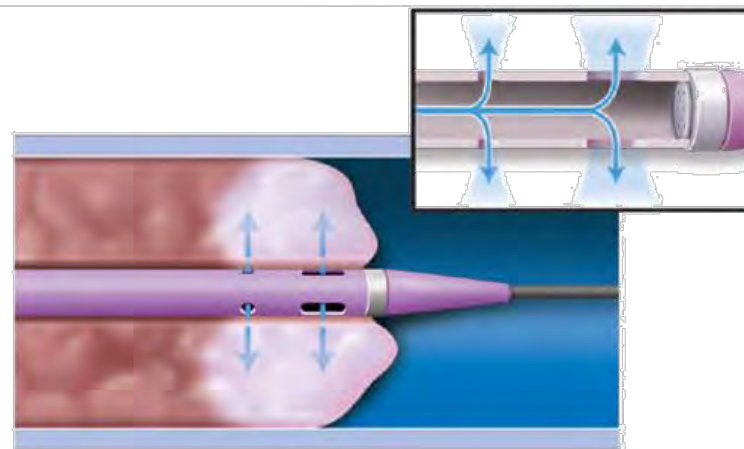
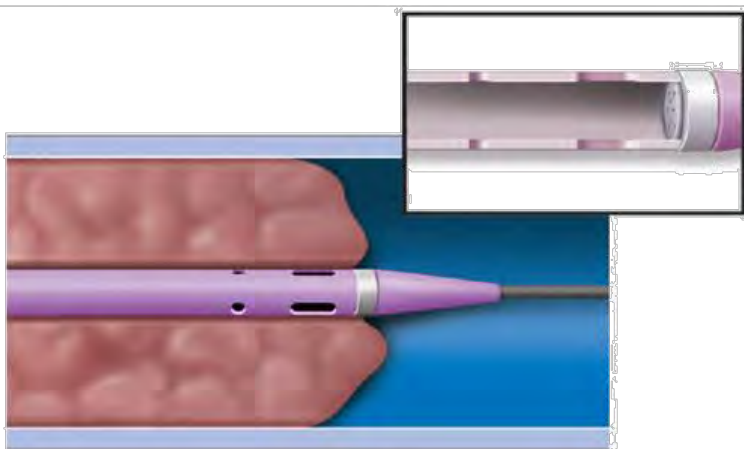


AngioVac system



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Thrombectomie (pharmaco) mécanique



A

B

Réduction **théorique** de la charge thrombotique



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Thrombectomy mécanique pure sans aspiration

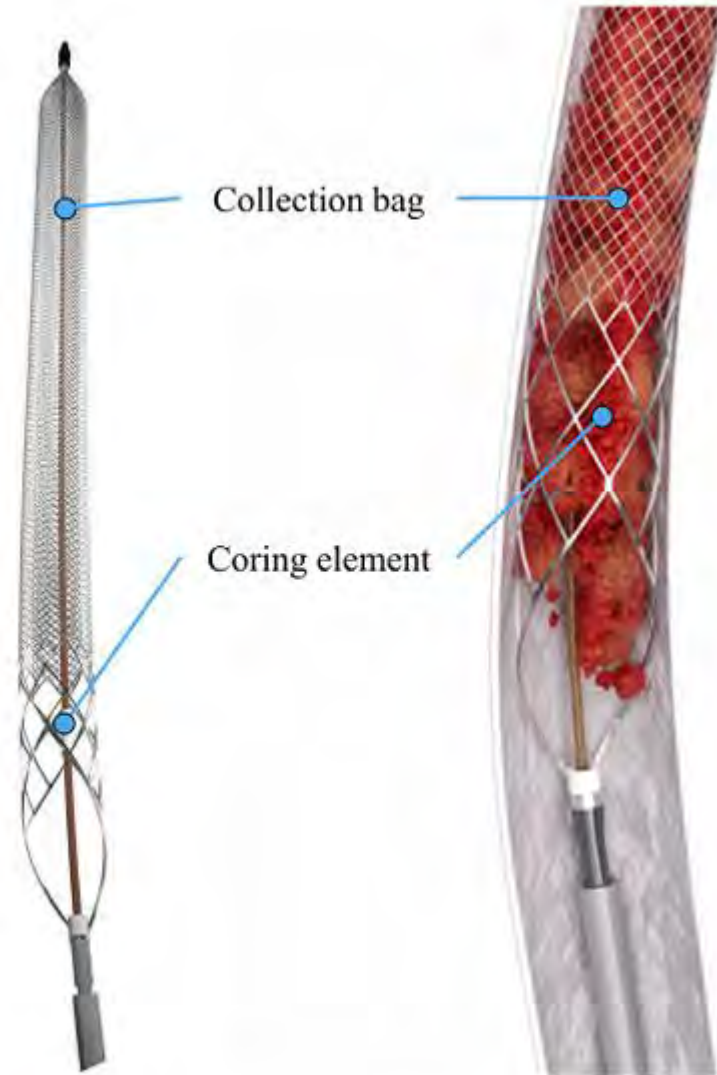
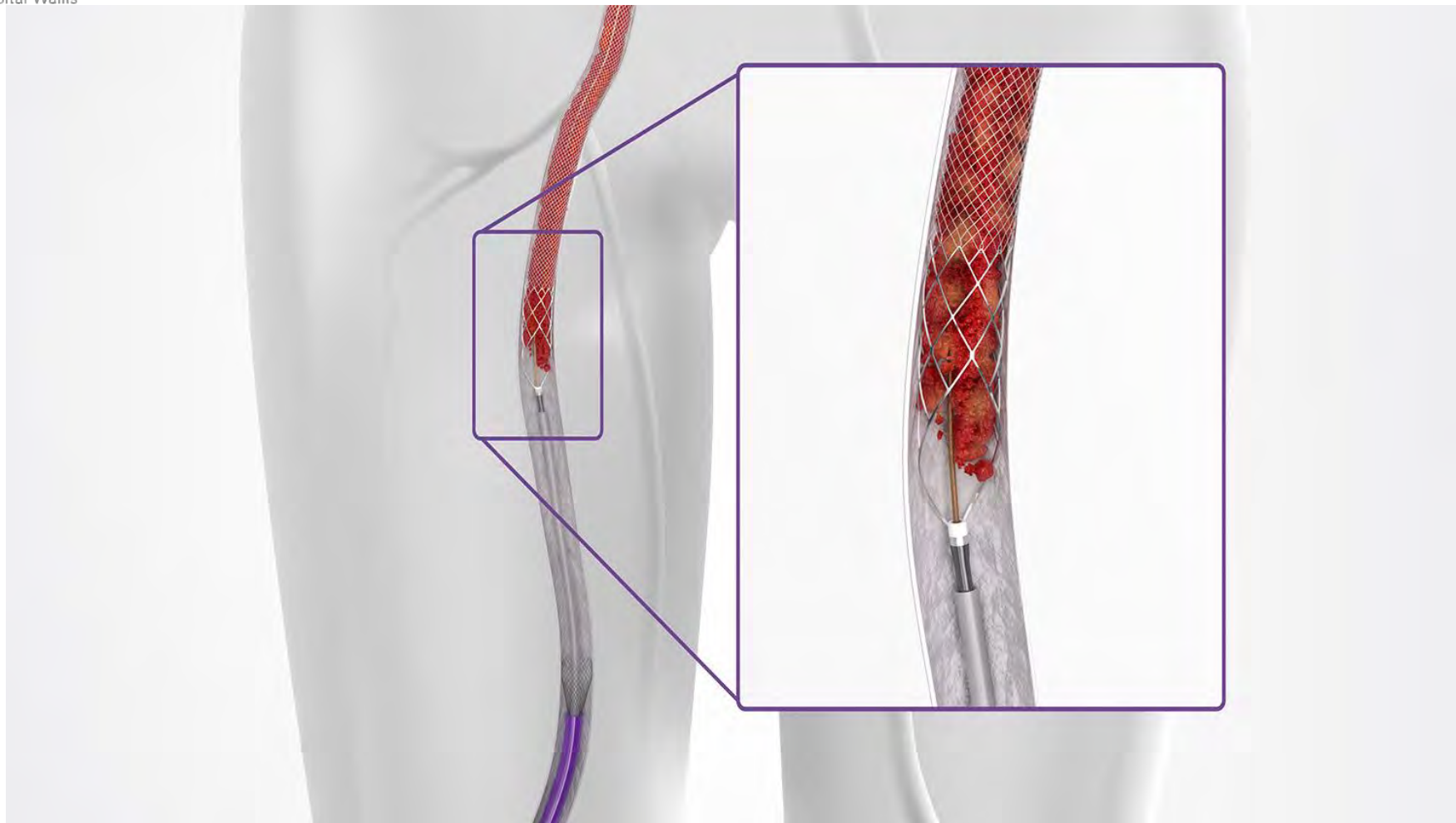
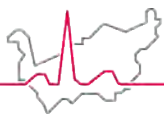
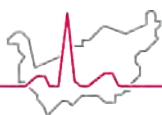


Figure 1.

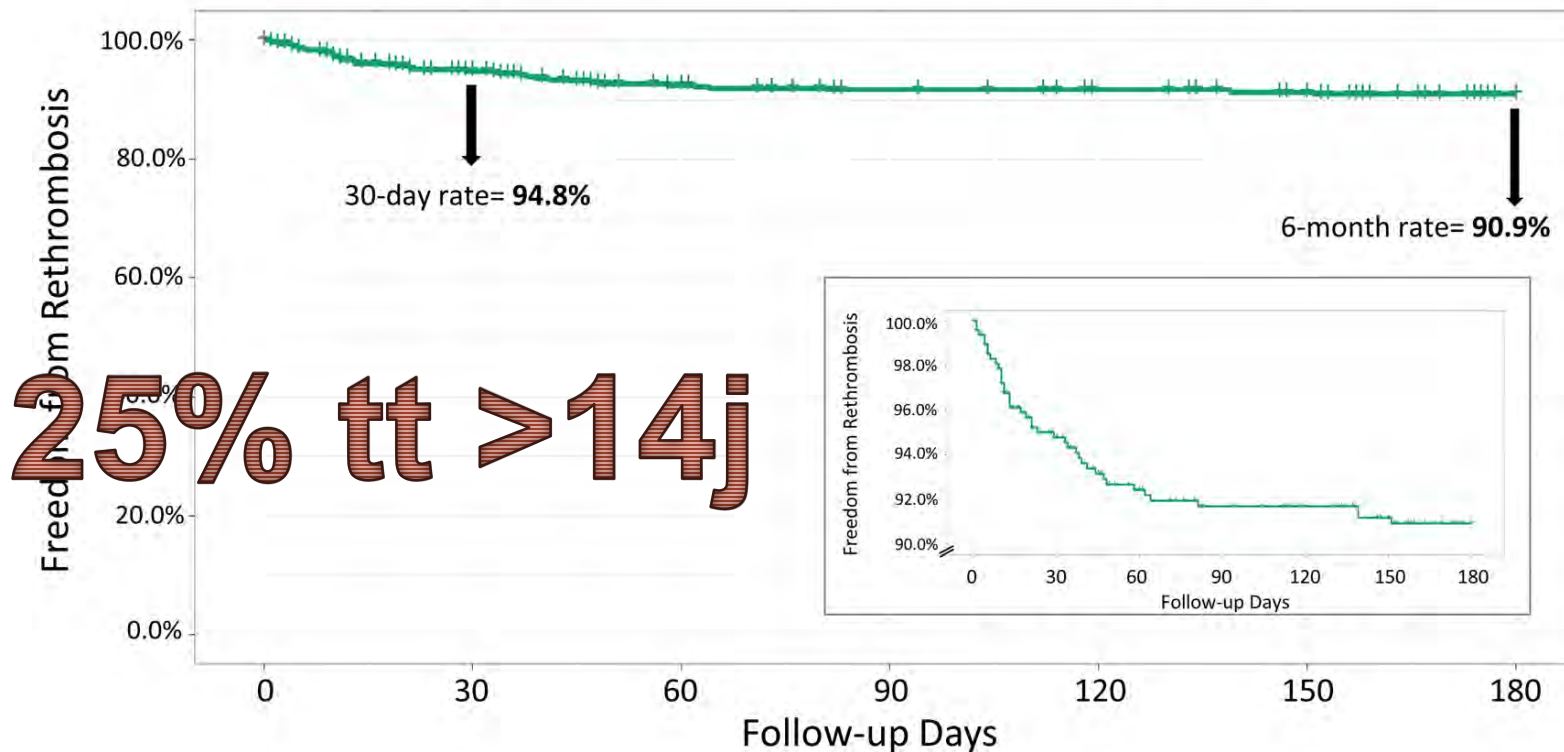




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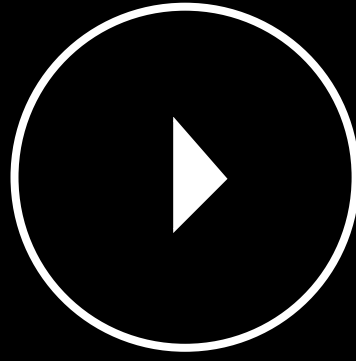
Clout registry

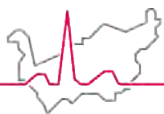
Kaplan-Meier Analysis of Rethrombosis SAE Events



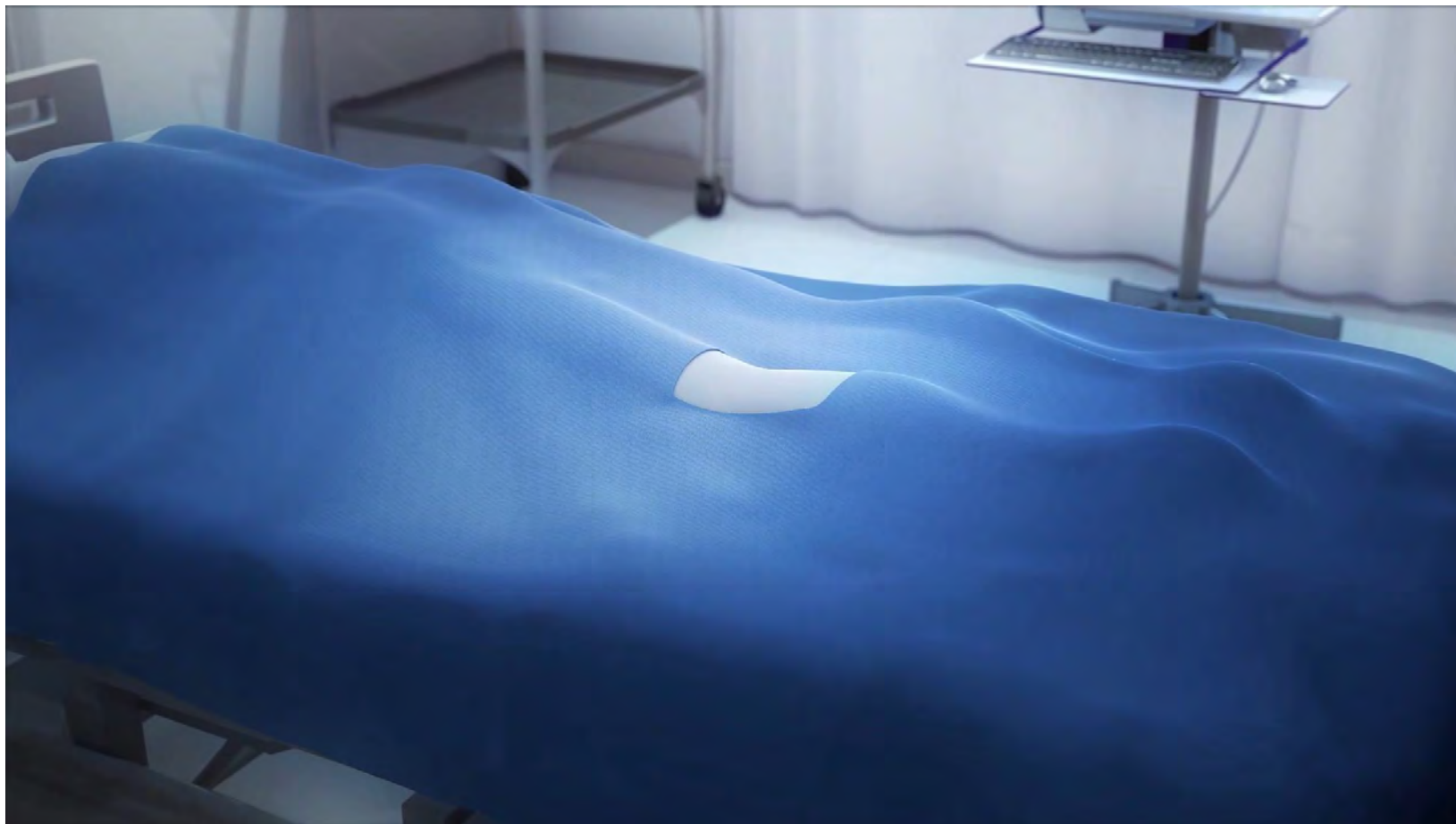
Follow-up days	0	30	60	90	120	150	180
# of events	0	24	34	37	37	39	40
Total # at risk	499	419	383	370	364	354	328

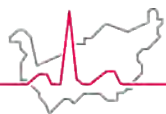
A. Shaikh et al Cardiovasc Intervent Radiol (2023)





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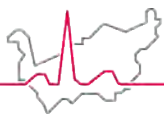




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Sion >80ans atcd irrad pelvienne





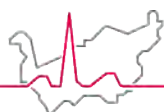
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An iliac et TVP ilio femorale



Thrombectomie endovasculaire et stent

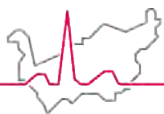




Clout 2 years

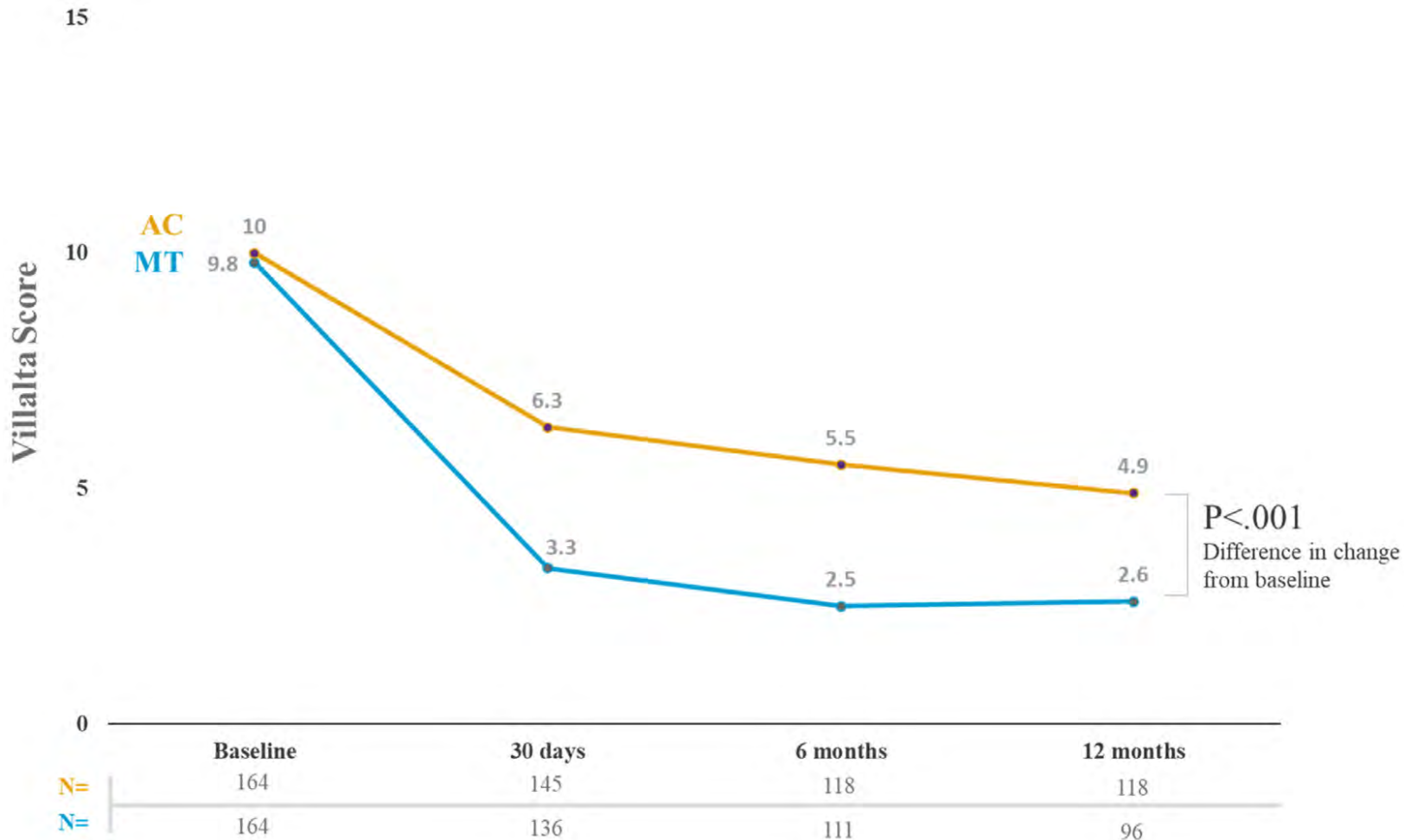
390.1. Outcomes to 2 Years

	Baseline	30- Day	6- Month	1- Year	2- Year	P Value [†]
DUS, by limb						
Flow present (%)	27.2	85.3	92.7	95.5	94.6	< 0.0001
Compressible (%)	28.0	87.6	91.9	96.7	96.2	< 0.0001
Villalta score, by limb (median)	9.0	3.0	1.0	1.0	1.0	< 0.0001
By limb (%)						
Any PTS (Villalta >4)	81.2	28.4	23.2	19.3	18.2	< 0.0001
Moderate to severe	46.9	9.1	8.9	8.8	4.5	< 0.0001
PTS (Villalta >9)						
rVCSS, median	6.0	3.0	3.0	3.0	2.0	< 0.0001
Edema, mid-calf circum. (cm, median)	39.0	38.0	38.0	38.0	37.0	0.0023
NPRS, median	5.0	2.0	0.0	0.0	0.0	< 0.0001
EQ-5D, median	0.687	0.861	1.000	1.000	1.000	< 0.0001

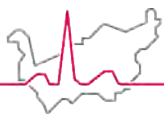


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Clotting VS anticoagulation matched ATTRACT trial

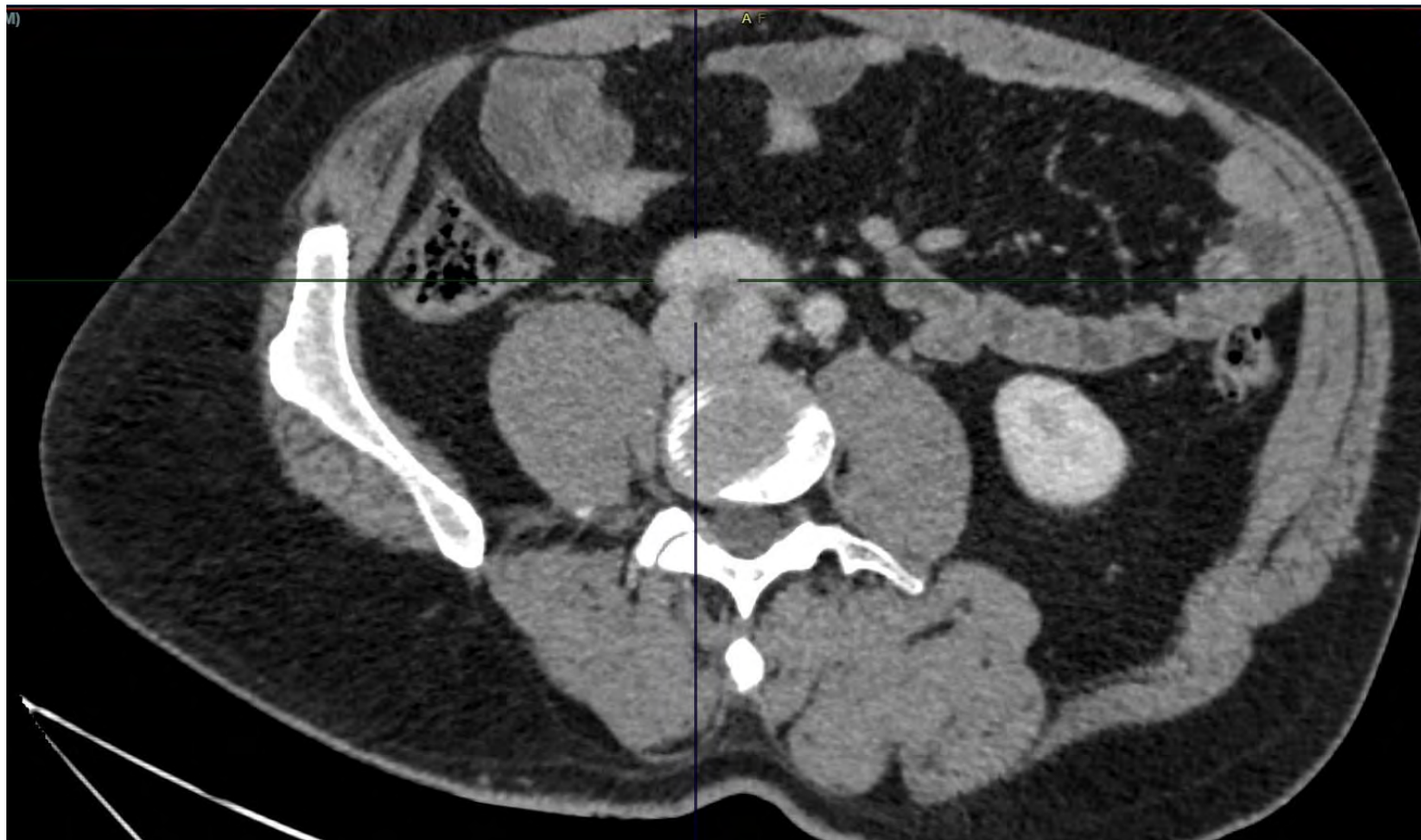


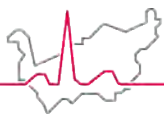
Abramowitz et al JVSv 2024



Hôpital du Valais
Spital Wallis

Veine cave

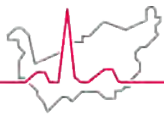




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Thrombus v. cave + thrombophilie

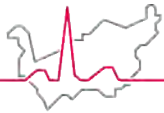




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complication: PE 0,6% (CLOUT)

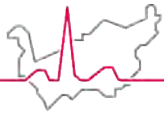




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Expérience sédunoise

- **Juin 2023**
- **5 patients**
- **Durée des Symptômes**
 - 25-26-15-9-8 jours
- **0 Complications**
- **0 Récidive**
- **0 thrombus résiduel**



Prise en charge 2019

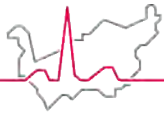
- **Le plus précoce possible (<10j), rethromboses dans les cas plus tardifs.**
- **US spécialisé pour évaluer extension caudale**
- **PhleboCT et pulm**
- **Thrombectomie chirurgicale hybride puis anticoagulation**

- **CAVE:**
- **Néoplasie ou Maladie concomitante**
- **Thrombophilie +/- candidat**
- **TVP au moins ilio-fémorale (TVP jambière ou femorale isolée sans atteinte du carrefour exclue)**
- **Risque de SPT élevé (critère subjectifs...)**
- **→ Minorité de patients**



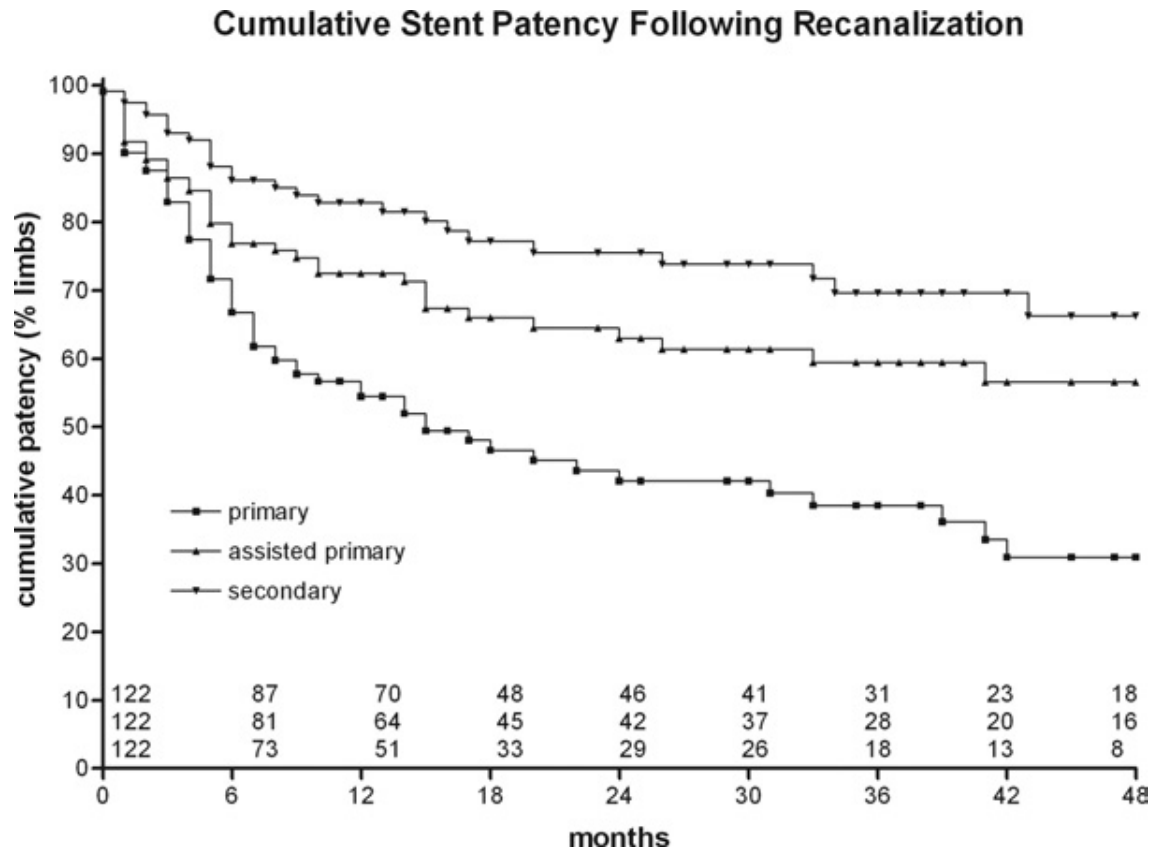
Prise en charge 2024

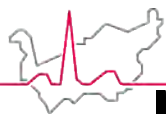
- Semi élective jusqu'à **6 semaines minimum**
- US spécialisé pour évaluer extension caudale et site de ponction
- PhleboCT +/- pulm
- Thrombectomie percutanée pure puis anticoagulation
- CAVE:
- Néoplasie ou Maladie concomittante **si espérance de vie très courte**
- Thrombophile **pas** contre indication
- TVP au moins ilio-fémorale (TVP jambière ou femorale isolée sans atteinte du carrefour exclue)
- Risque de SPT **modéré** à élevé (critère subjectifs...)
- → **Quantité significative** de patients



Recanalisation tardive

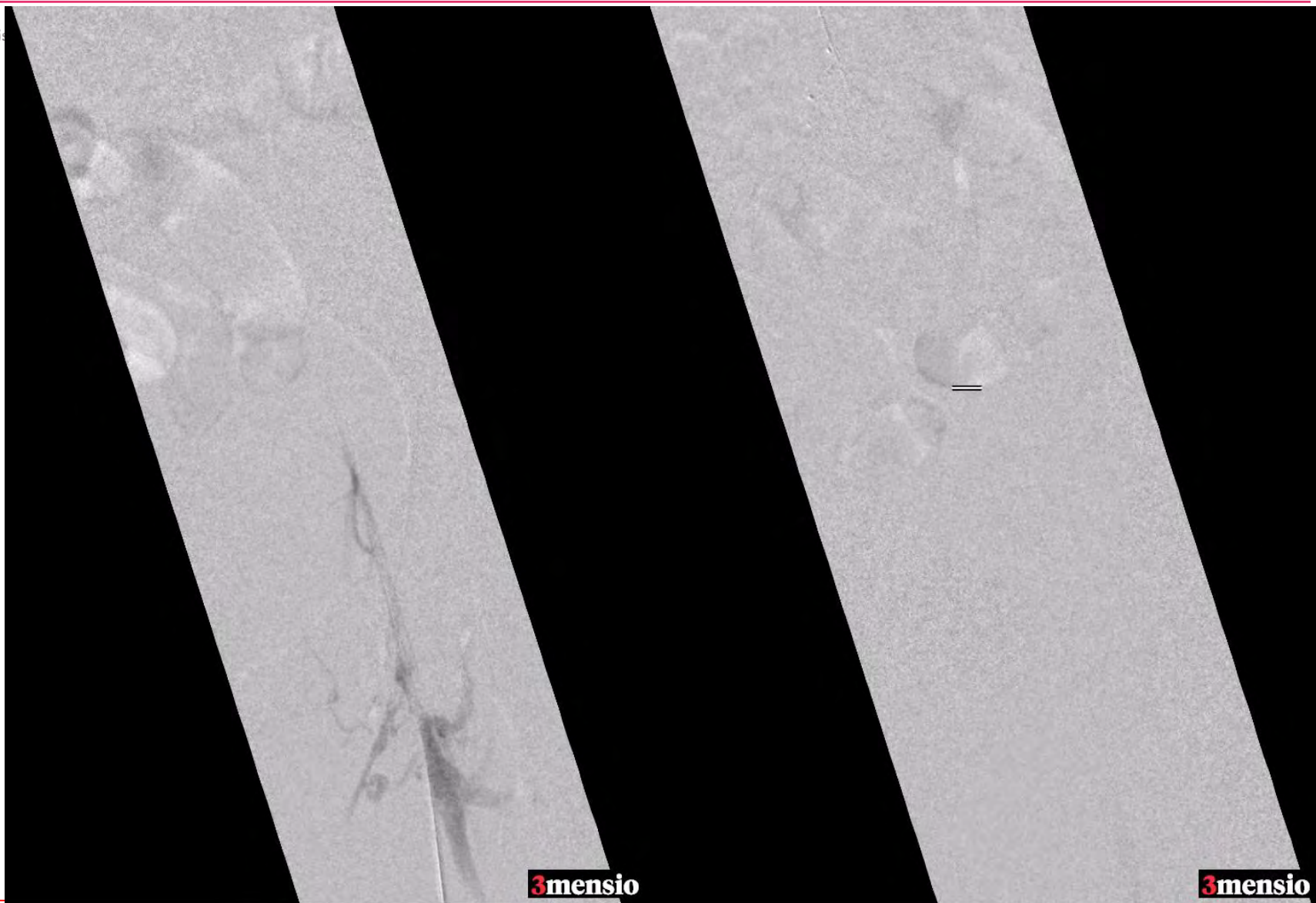
- **Succès 83-86%** (Raju and Neglen 2009, Hartung 2019)
 - Rétrospectif, patients choisis
- **Recanalisation et stent**

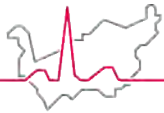




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Recanalisation à 12m de la TVP

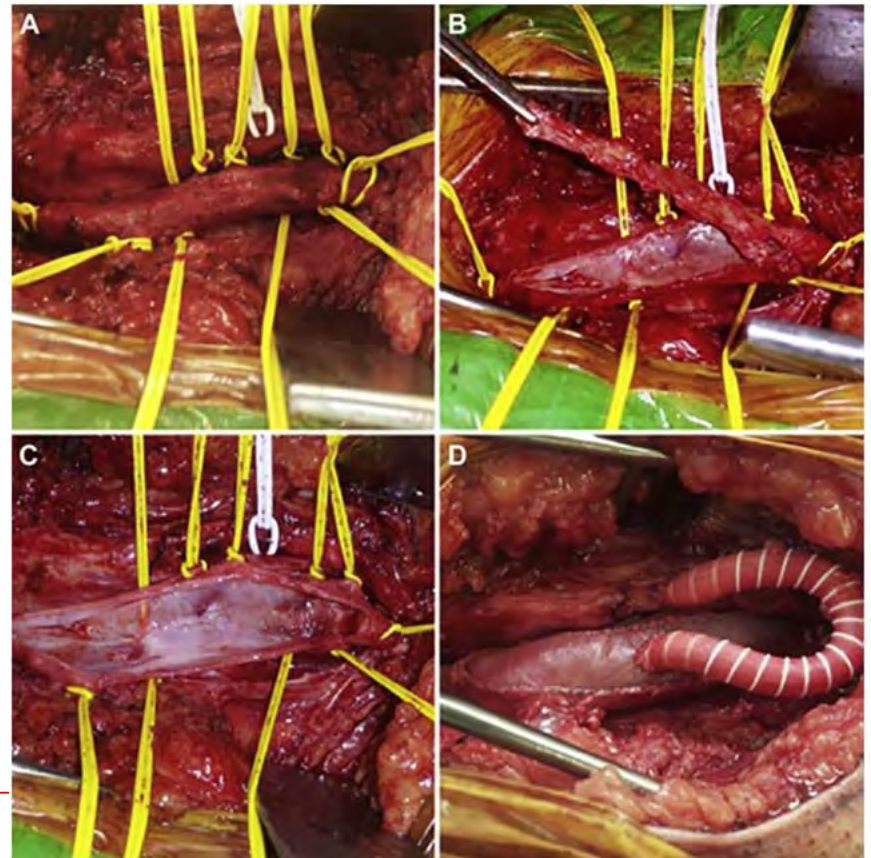


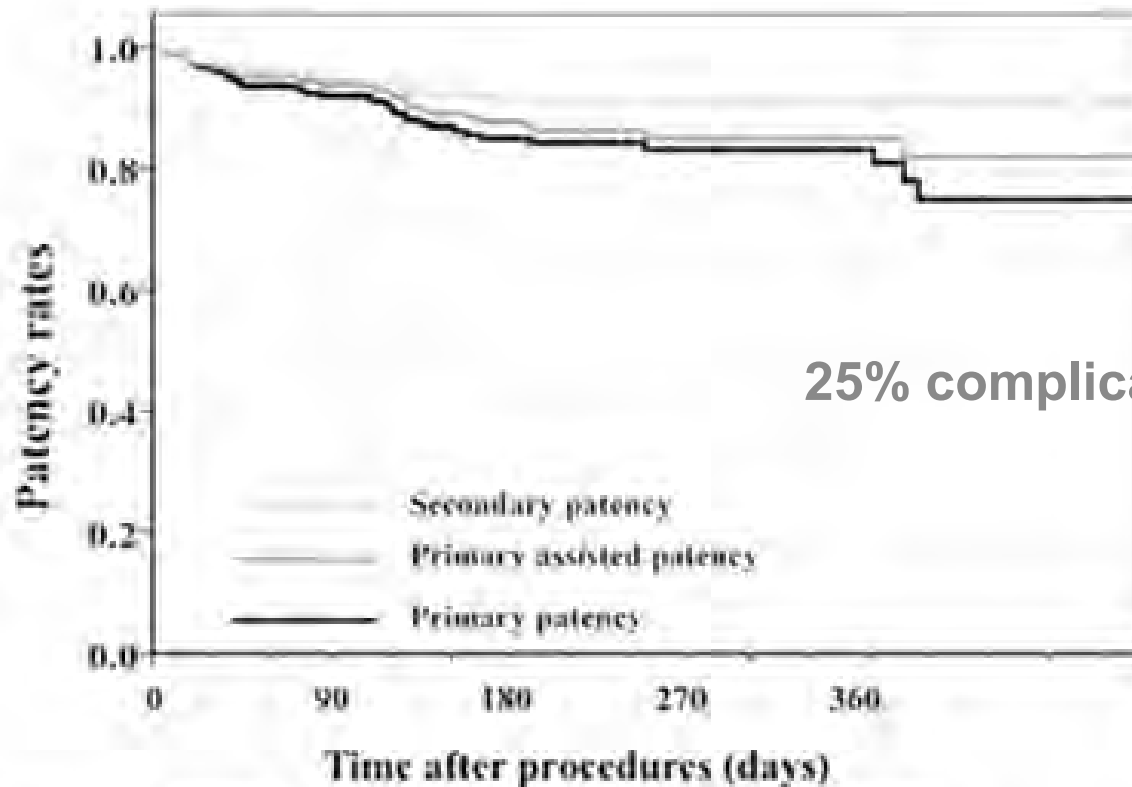


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Limites du tt tardif

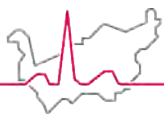
- **Inflow fémoral**
 - Endophlebectomy
Ablation cicatrice fibreuse
 - Stenting extensif
Perte de collaterales





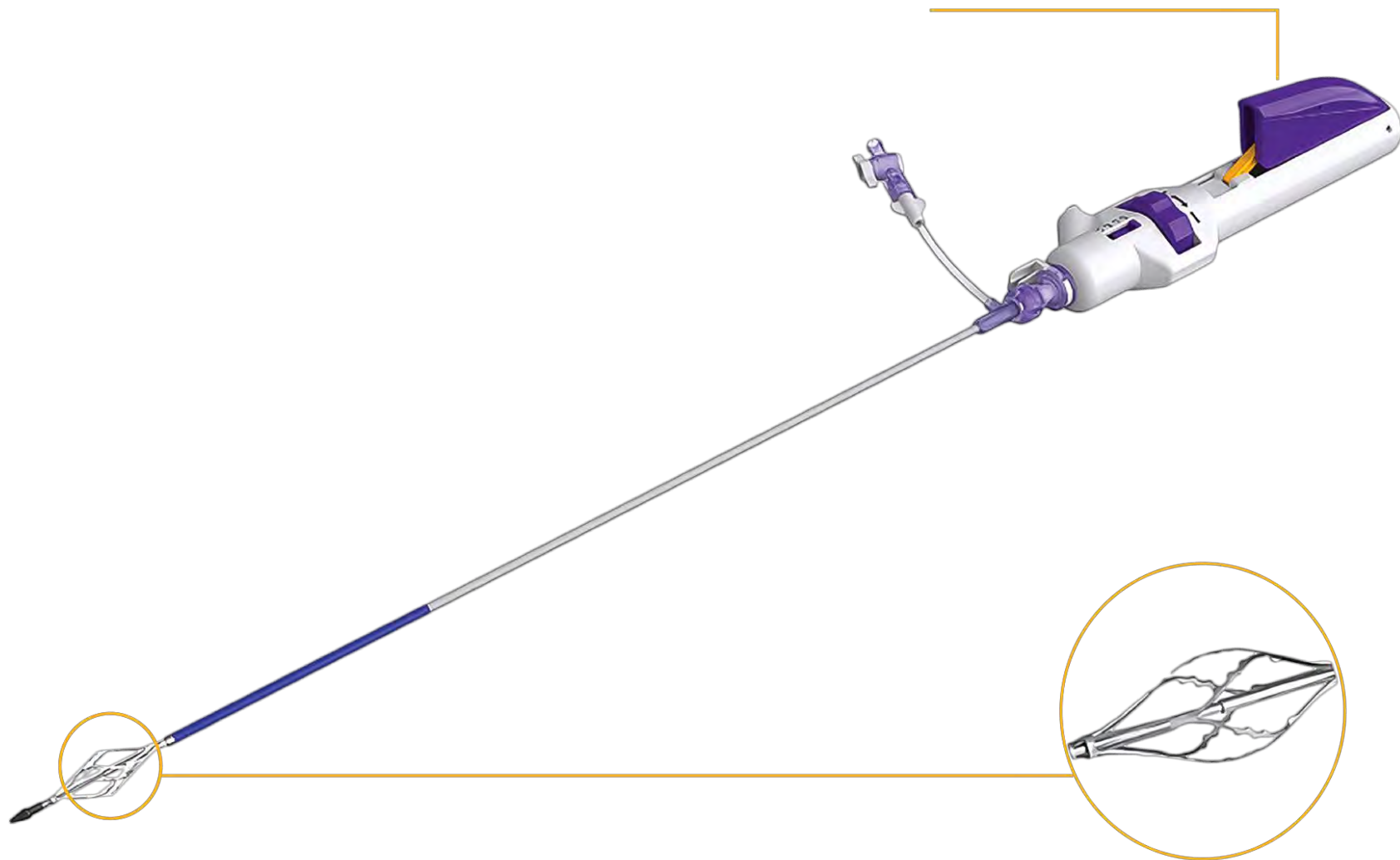
Month	Baseline	3 months	6 months	9 months	12 months
Primary Patency	153	135	128	125	124
% Patent	100%	88.2%	83.6%	81.6%	81%
Standard Error	0	0.011	0.019	0.023	0.034
Primary ass. pat.	153	135	130	129	128
Secondary pat.	153	144	140	138	137

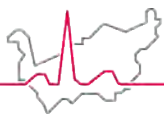
Dumantepe et al JVS 2020



Hôpital du Valais
Spital Wallis

Futur...?

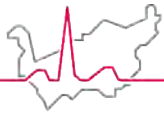




Hôpital du Valais
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Ruée vers l'or...

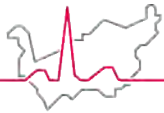




Hôpital du Valais
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Inconnues...

- **La veine cave?**
 - Rappel d'un device par la FDA pour causes de complications majeures
- **Régime antithrombotique exact?**



Take Home

- **TVP aigue mérite une évaluation à court terme multidisciplinaire angio/hémato/chirurgicale**
- **Pas une urgence nocturne dans la plupart des cas.**
- **Le tt invasif percutané est désormais performant**
- **Agents thrombolytiques non plus leurs place dans la TVP (mais restent utilisés exceptionnellement)**
- **L'anticoagulation reste primordiale**