

# Mechanical/ pharmacomechanical thrombectomy for acute DVT

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# Deep Vein Thrombosis

Life-time incidence of 2.5-5.0%

Development of **Post Thrombotic Syndrome** in 40-60%

Increased risk in iliofemoral thromboses

- Negative impact on Quality of Life
- Increased health care costs

# Post Thrombotic Syndrome

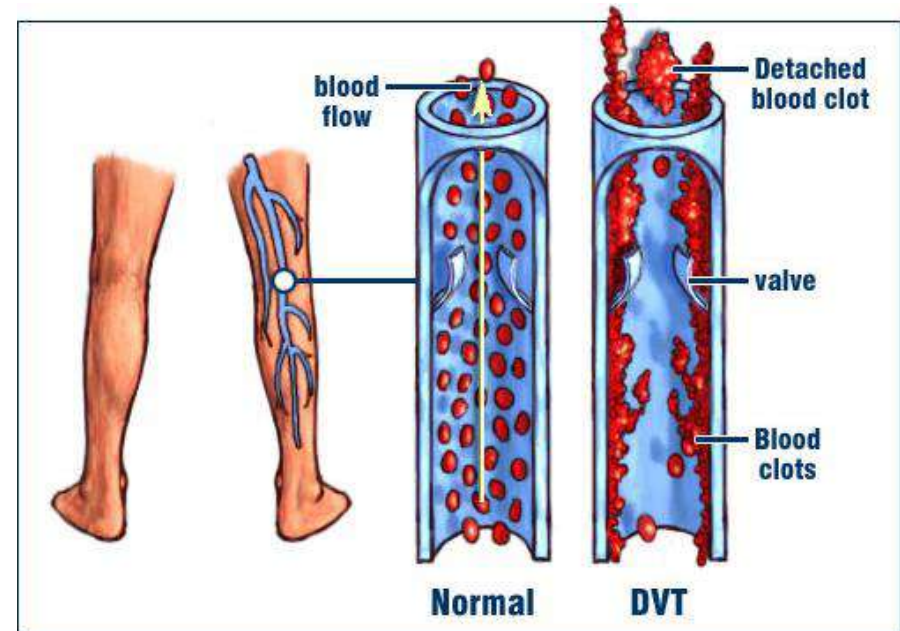
Venous hypertension due to

- Venous obstruction
- Valvular reflux

## Open vein theory

Treatment potential of early thrombus removal

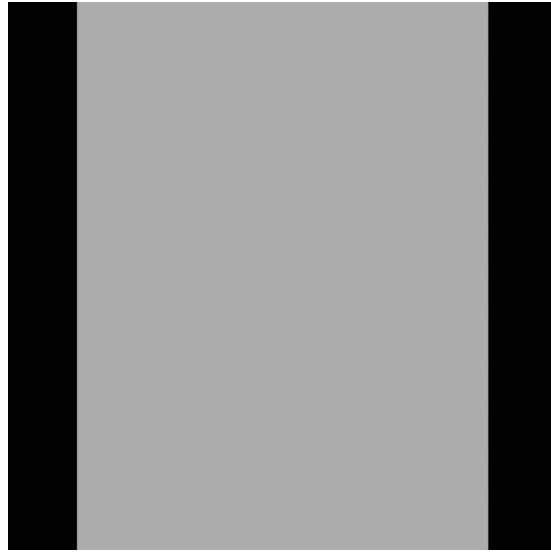
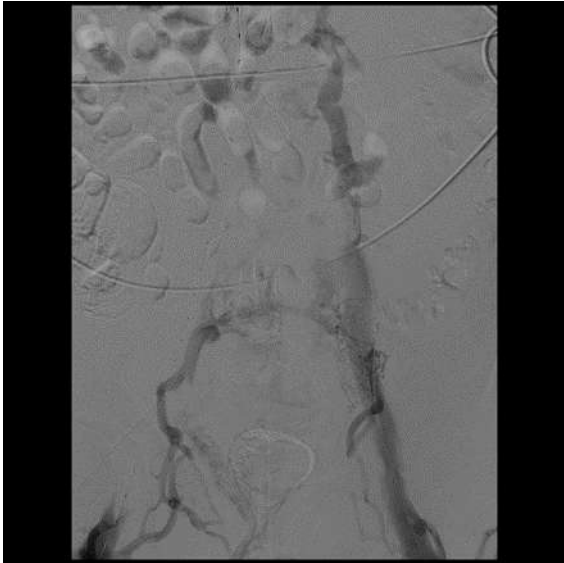
- Restore patency
- Preserve valve function



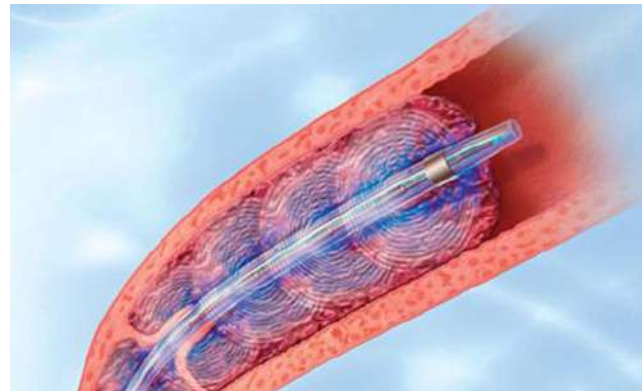
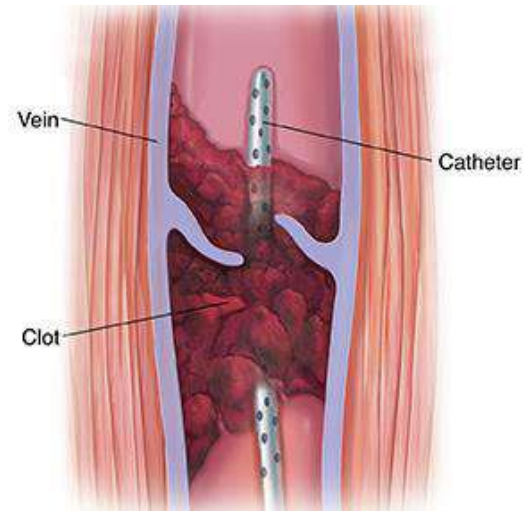
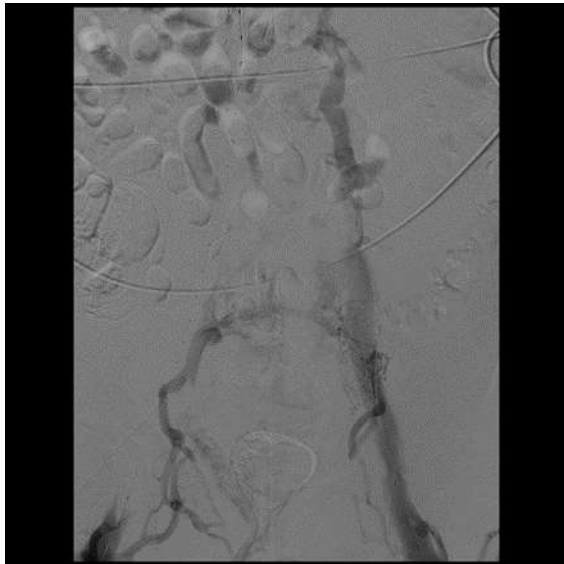
# Early thrombus removal

Treatment	Complete lysis	Major Bleeding	PTS
Oral anticoagulant therapy	2%	0-3%	27-89%
Systemic thrombolysis	28%	8%	34%
Catheter- directed thrombolysis	31-61%	0-11%	10-47%
Ultrasound- Accelerated Catheter- directed thrombolysis	70-83%	0-5%	29-47%
Pharmaco-mechanical thrombectomy	90-100% Combined with CDT	1-4%	27%
Mechanical thrombectomy	98%	1-2%	..


# CDT and UACDT



# CDT and UACDT



## Reduction PTS?!

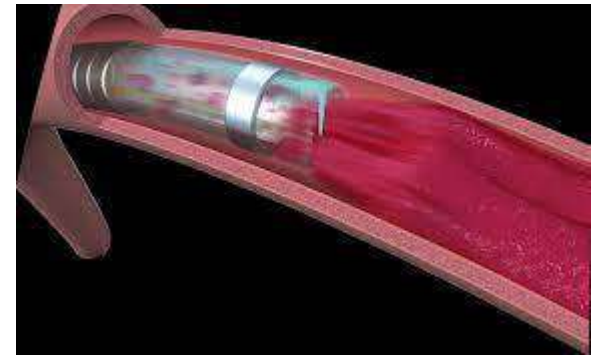
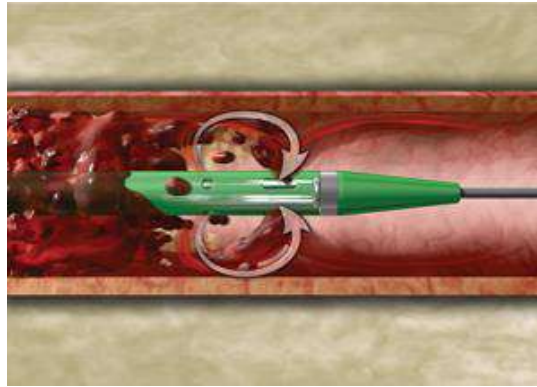
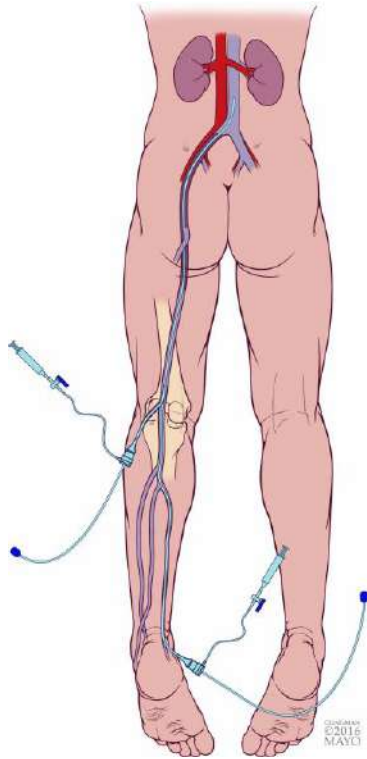
- Newer techniques improve lysis
- RCT's (UA)CDT versus conservative treatment no significant difference PTS
- Successful lysis  reduction severe PTS
- Improvement outcome
  - Patient selection
  - Optimising timing/hospital logistics
  - Reduction complications/ early withdrawal intervention
  - Optimising thrombus removal devices
  - Additional stenting/ long term open vein

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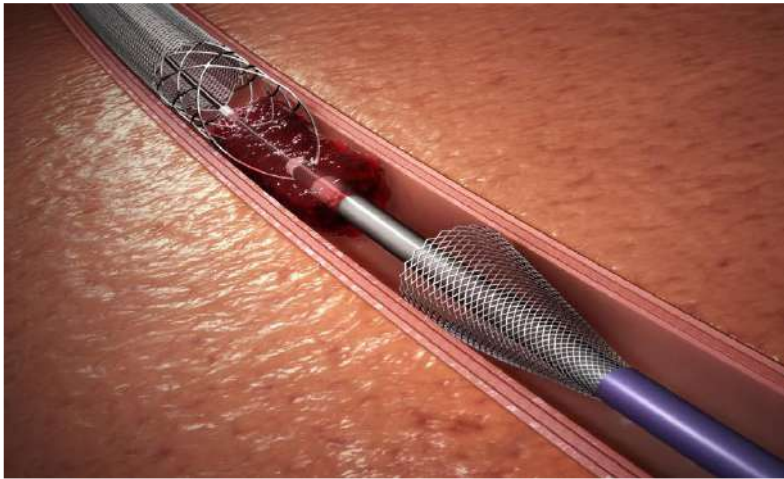


# Pharmacomechanical thrombectomy



Rheolytic devices

# Mechanical thrombectomy



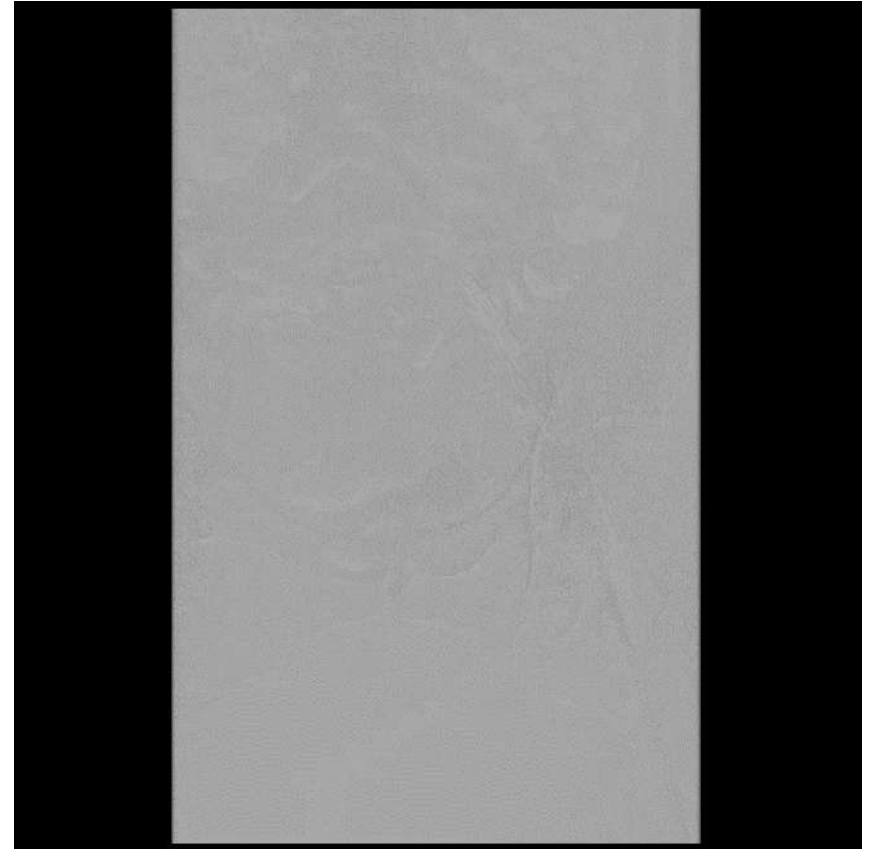
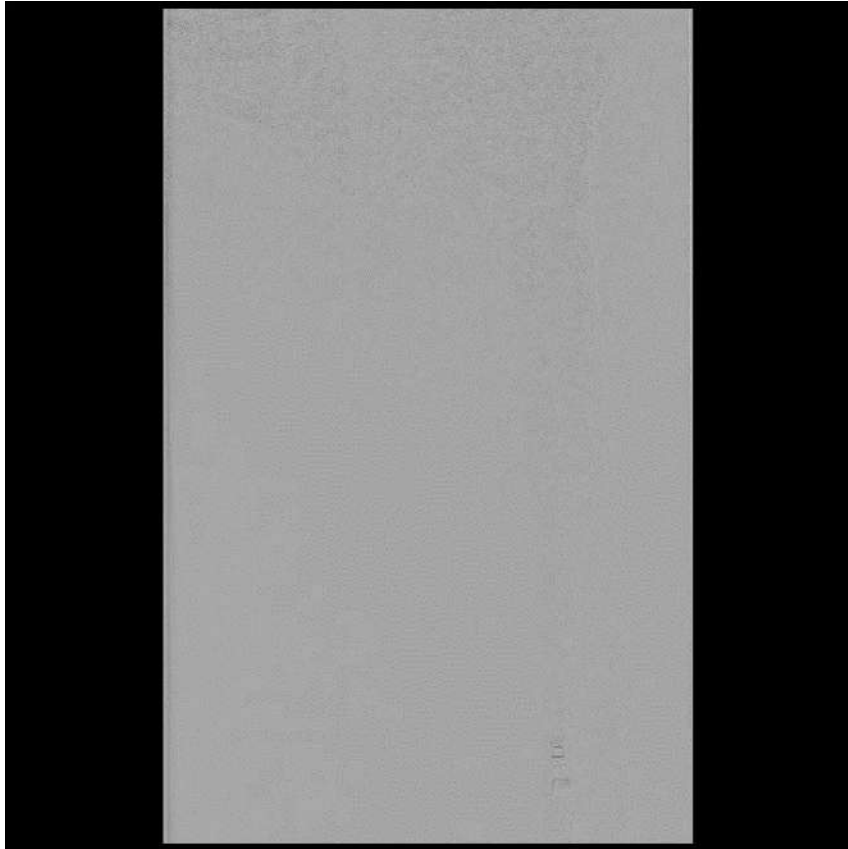
Aspiration and rotational devices  
Multiple runs  
No thrombolytics

## Case

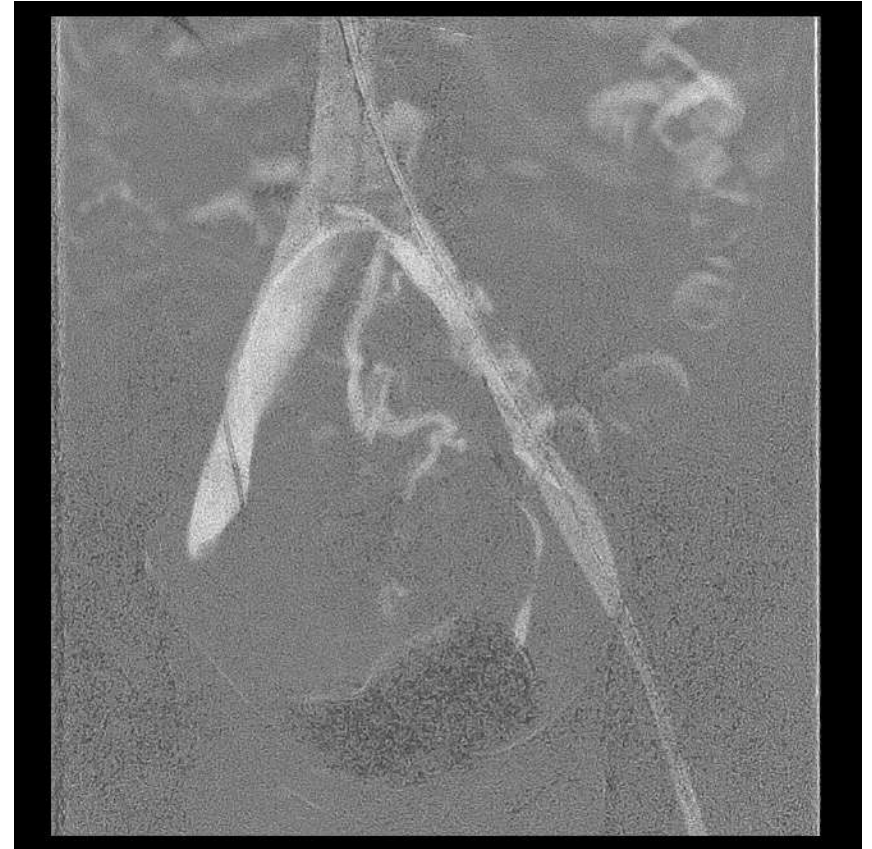
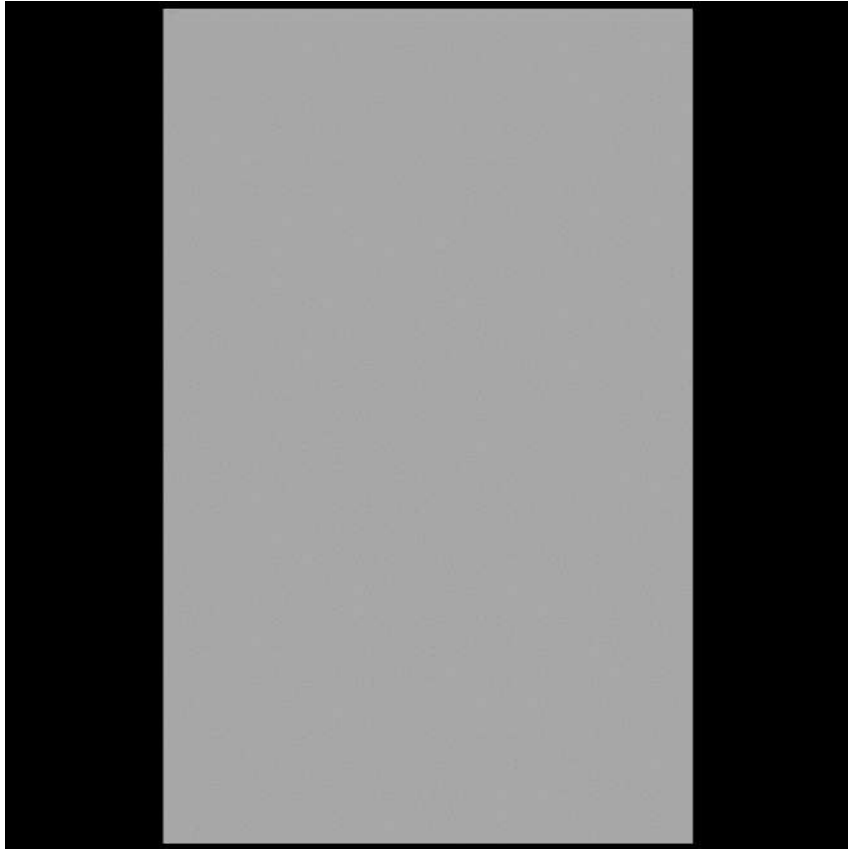
- F, 49 years
- No medical history
- 3 days pain and swelling left leg
- Duplex iliofemoral DVT
- Intervention versus conservative therapy
- Shared decision



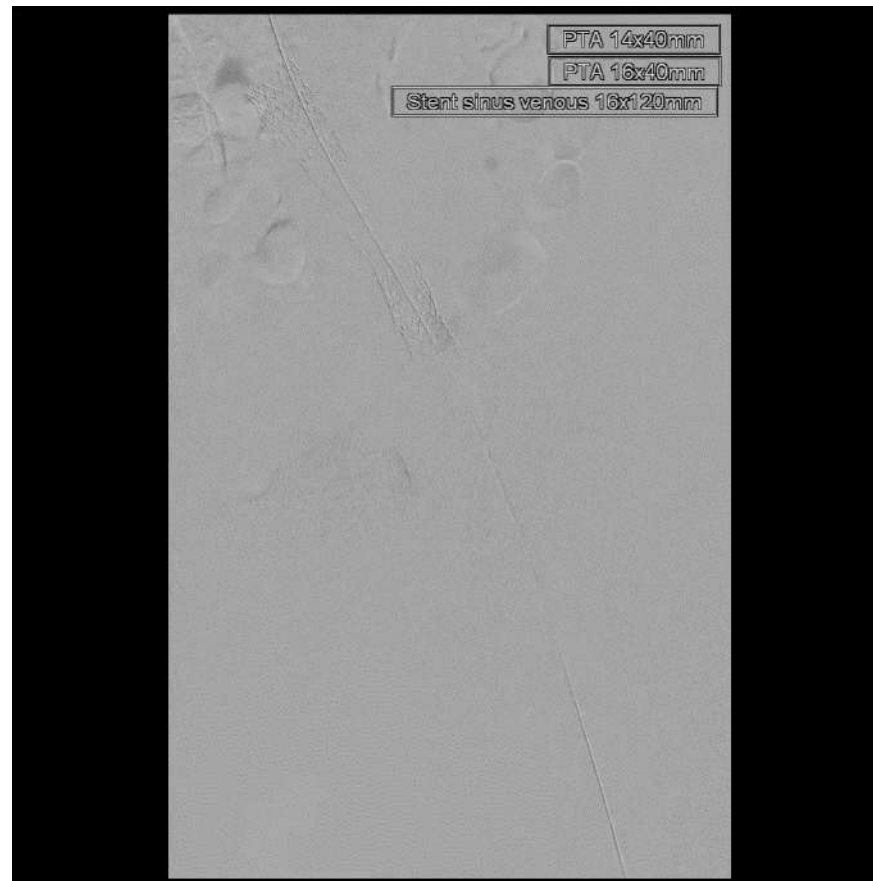
# Intervention



# Intervention



# Intervention



# Pharmacomechanical thrombectomy versus thrombolysis

## Comparative studies

- Lower risk major bleeding
  - Significant reduction transfused RBC 0.2 vs 1.2
- Less/ no thrombolytics
  - Duration urokinase therapy mean 26.3 vs 48 hours
  - Mean urokinase dose 2.7 vs 5.6 million units
- Shorter hospital stay
  - 4.6 vs 8.4 days
- Shorter ICU stay
  - 0.6 vs 2.4 days
- No significant differences venous patency and symptom improvement

# Mechanical thrombectomy

- Thrombus age less important (collagen)
- When contraindication for thrombolytics
- Often additional CDT needed
- Blood loss during intervention
- Hemolysis- kidney injury
- Device costs
- Experience



# Mechanical thrombectomy versus thrombolysis

Systematic review and meta- analysis

17 studies 2001-2019

1417 patients

Heterogeneity!

- Devices
- Outcome measures

	Mechanical thrombectomy	Thrombolysis
Successful lysis (>50%)	95%	96%
Primary patency (6m)	94%	68%
PTS	Not possible	Not possible
Valvular reflux	53%	61%
Recurrent DVT	Not possible	Not possible
Major bleeding	1%	6%
Hematuria (hemolysis)	93%	2%
PE	1%	2%

## Conclusion

- Mechanical/ pharmacomechanical thrombectomy safe
- Compared to CDT alone lower risk bleeding complications
- Ongoing device improvement
- Randomised studies
  - Efficacy thrombectomy vs anticoagulation/ thrombolysis
  - Compare different devices
  - Guide future strategies