

The Failing Venous Stent: Underlying Causes, How To Identify and Treat Them

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DISCLOSURE

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- No relevant financial relationship reported

The Failing Venous Stent

- ***Femoroiliocaval stent in a patient presenting with recurrent and/or new symptoms after adequate initial stenting***
- **Symptom(s)/Sign(s)**
 - Swelling
 - Pain
 - Heaviness
 - Tiredness
 - Tightness
 - Cramps
 - Worsening hyperpigmentation/lipodermatosclerosis
 - Recurrent/new venous leg ulcer

The Failing Venous Stent

- **Reasons for failure**

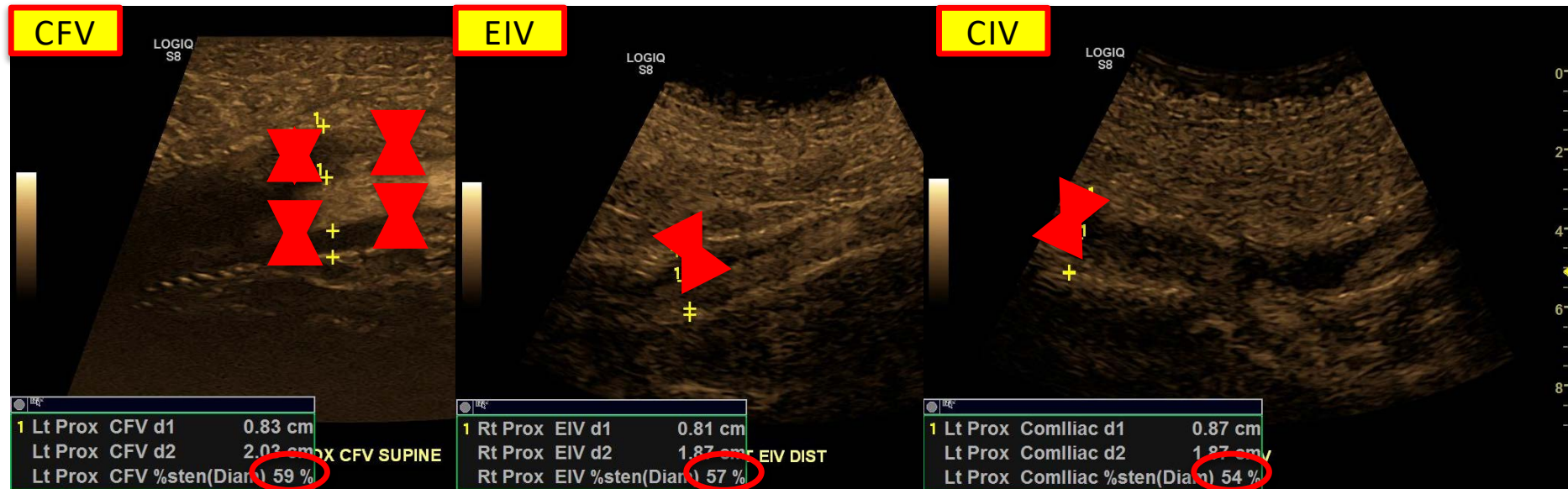
- Instent restenosis (ISR) [20%]
- Stent compression [7%]
- ISR and/or stent compression [25%]
- Stent occlusion [3%]

The Failing Venous Stent

- **Initial Diagnosis**
 - Venous duplex ultrasound (routine follow up)
- **Confirmation**
 - Intravascular ultrasound with intent to treat

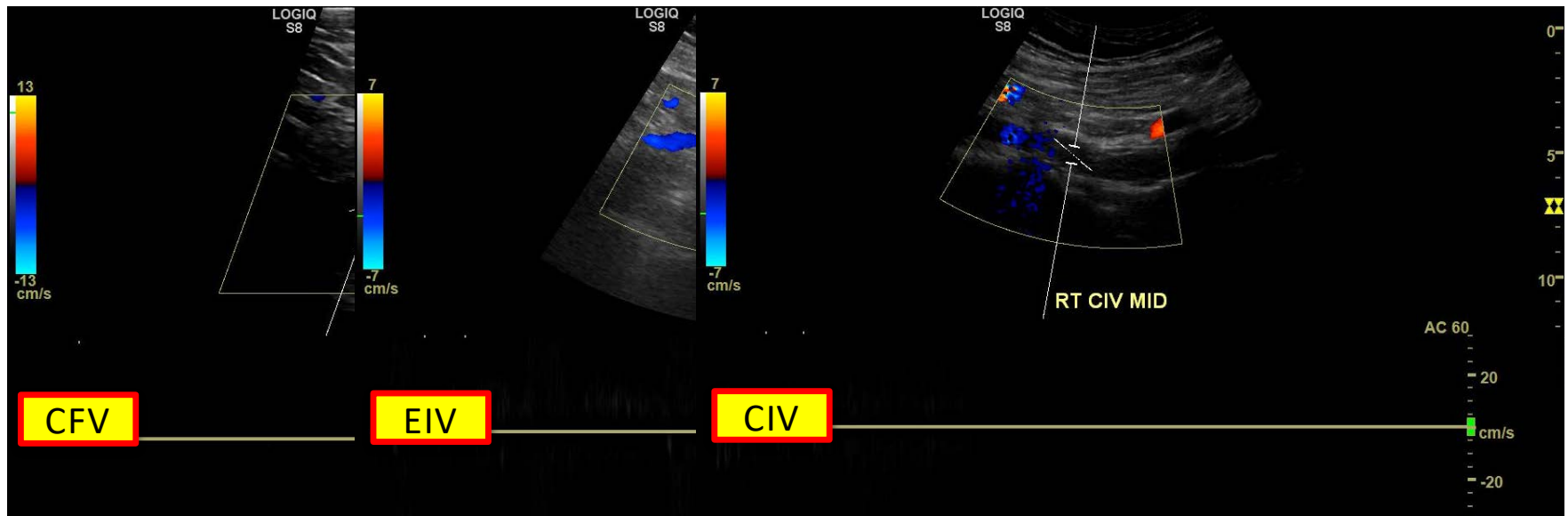
The Failing Venous Stent

- Venous duplex ultrasound (ISR)



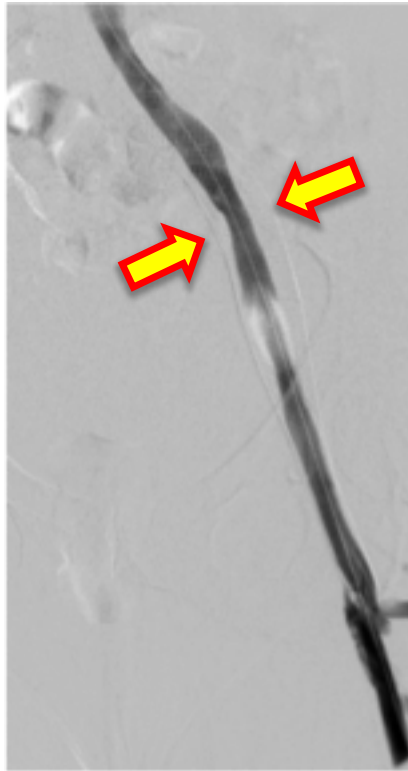
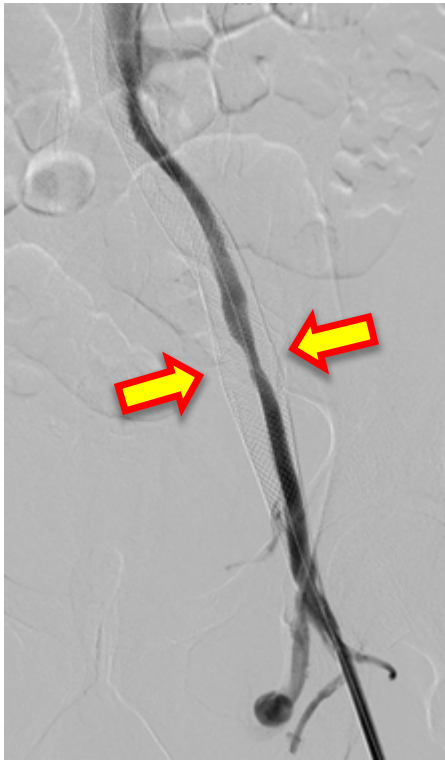
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- **Venous duplex ultrasound (Stent Occlusion)**



The Failing Venous Stent

- **Venogram (ISR)**



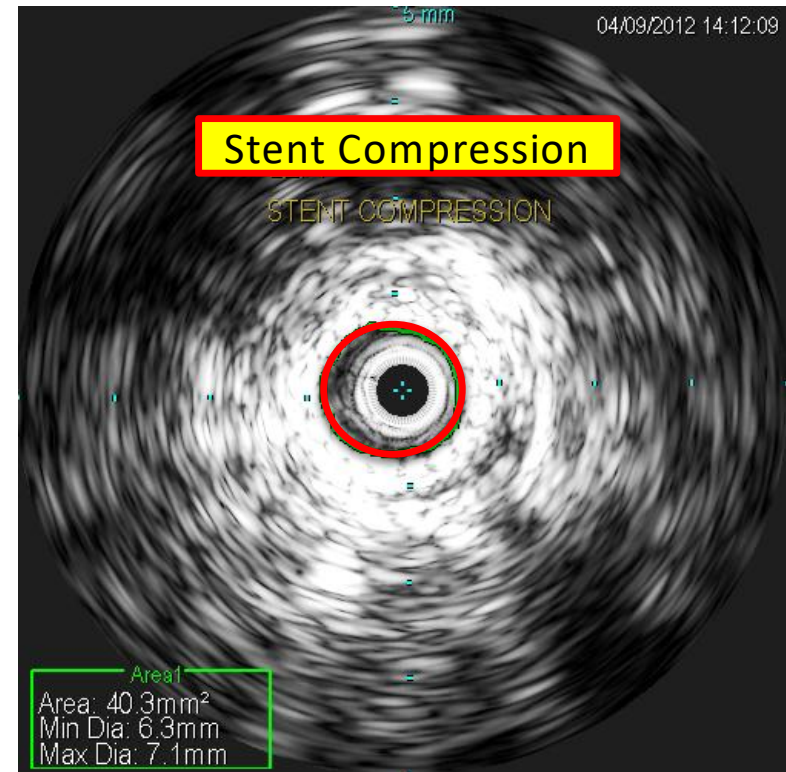
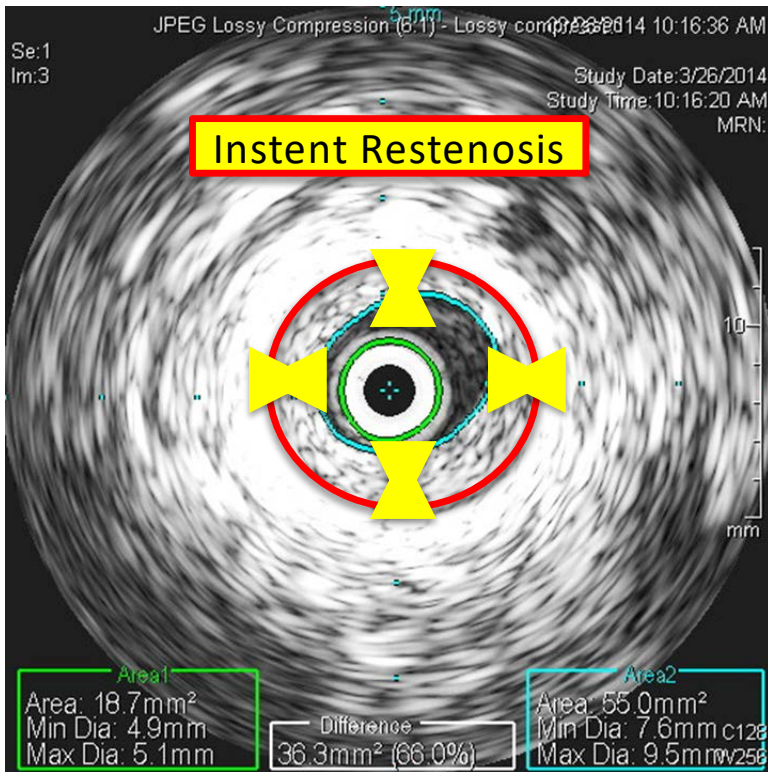
The Failing Venous Stent

- **Venogram (Stent Occlusion)**



The Failing Venous Stent

- **Intravascular ultrasound**



The Failing Venous Stent

- **Treatment**

- **ISR/Stent compression**

- Hy **IVUS planimetry areas** er than the

- ste ***Common femoral vein – 125mm²***

- La ***External iliac vein – 150mm²***

- **Stent** ***Common iliac vein – 200mm²***

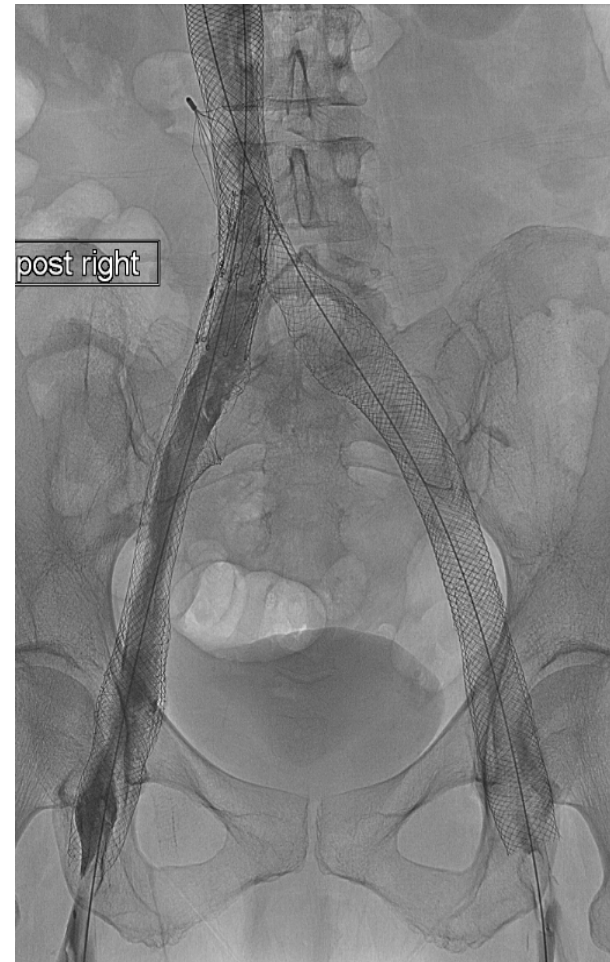
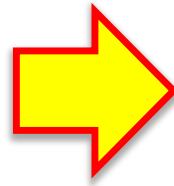
- Recanalization

- 0.035" Guidewire and guidecath / Laser recanalization /
Radiofrequency wire recanalization

- Balloon angioplasty post wire recanalization

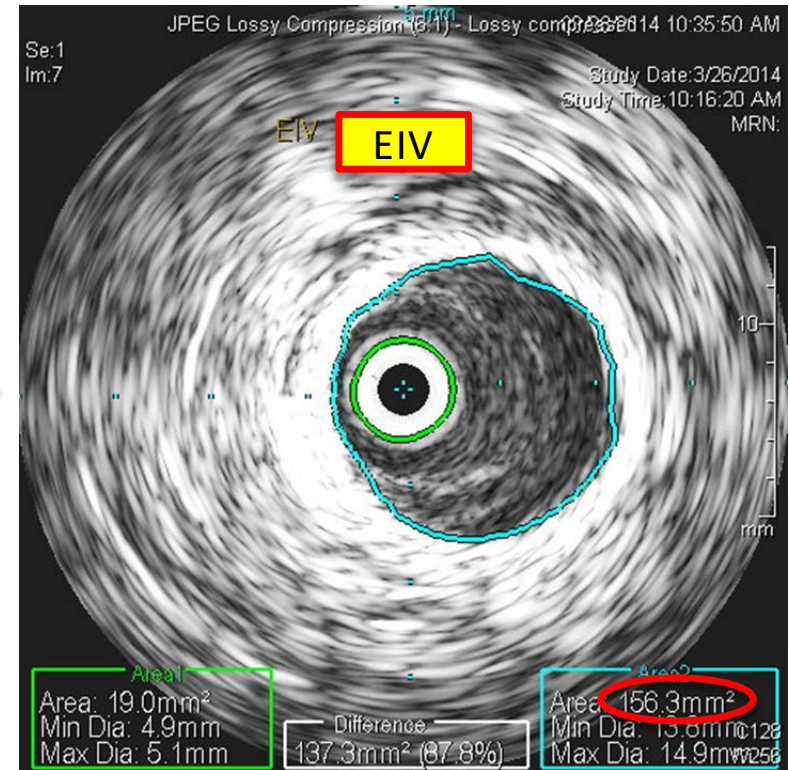
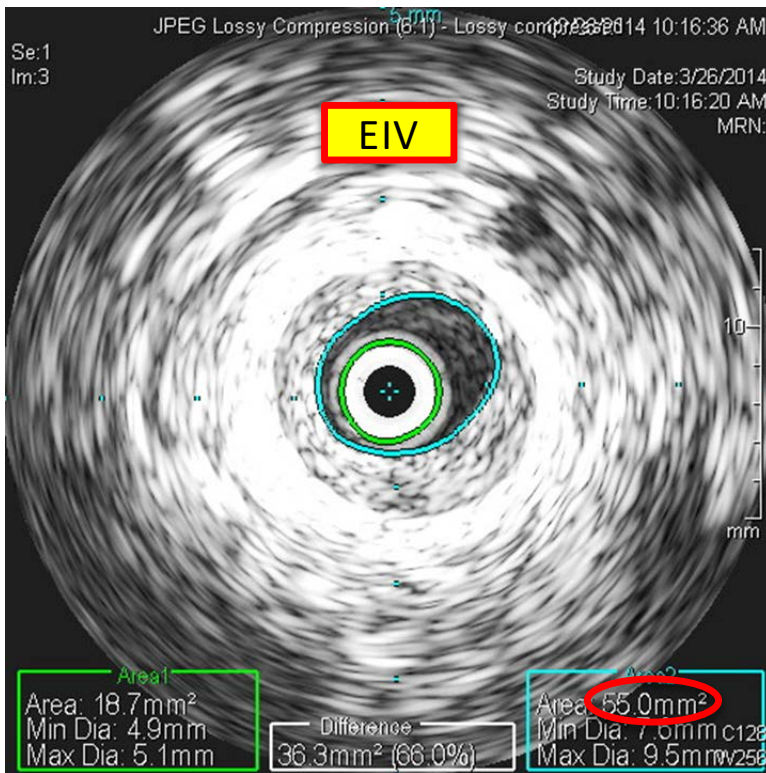
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- **ISR (Venogram)**



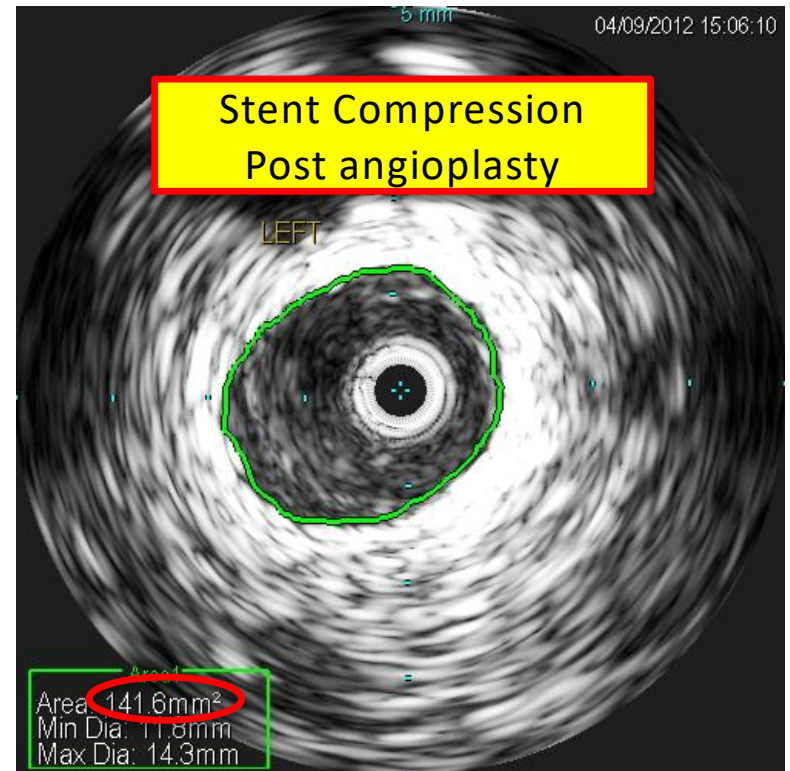
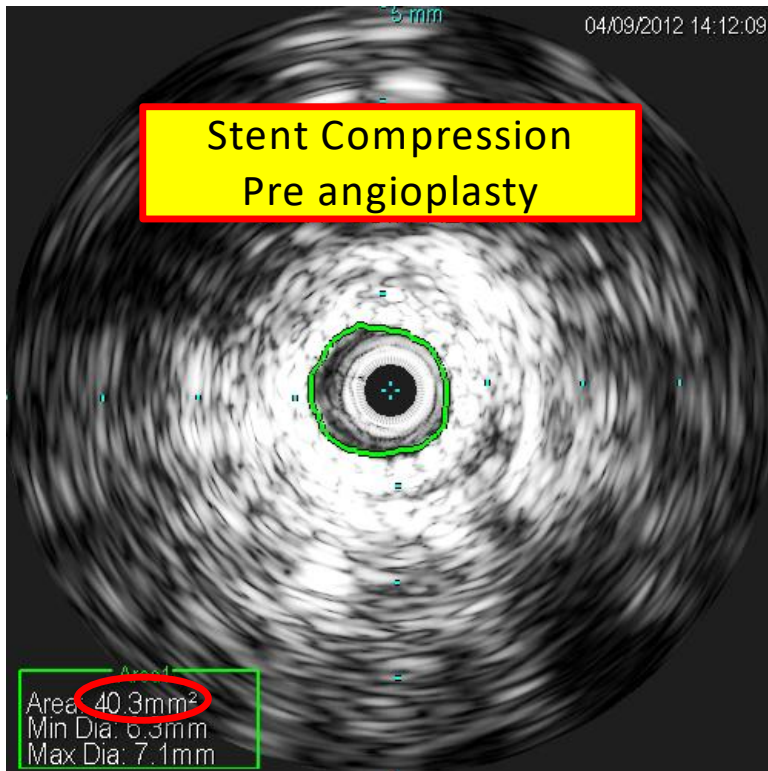
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- **ISR (IVUS)**



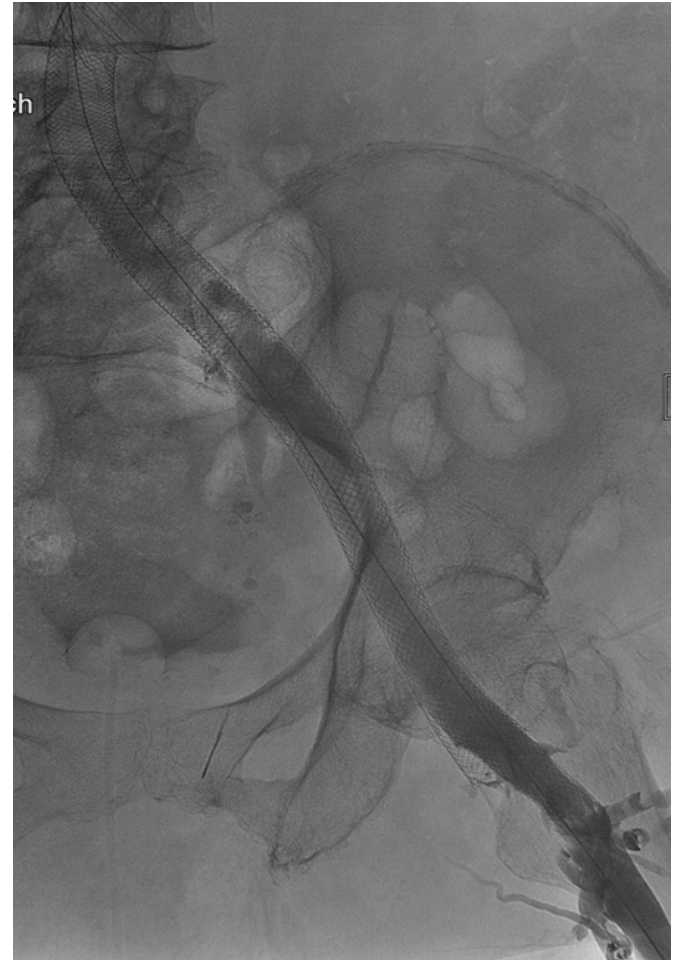
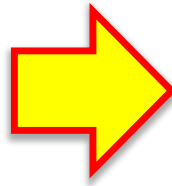
The Failing Venous Stent

- **Stent compression**



The Failing Venous Stent

- **Stent occlusion**



The Failing Venous Stent

- **Outcomes post intervention**

- Symptom relief noted as assessed by VCSS, VAS pain score, grade of swelling and ulcer healing
- Stent patency following reintervention:

ISR > stent compression > stent occlusion

Patency (48 months)	Initial stent (%) ¹	Recanalized native vein (%) ²	Recanalized stent (%)
Primary	72	33	45
Primary assisted	92	55	20
Secondary	95	65	30

¹Neglén P, Hollis KC, Olivier J, Raju S. Stenting of the venous outflow in chronic venous disease: long-term stent-related outcome, clinical, and hemodynamic result. *JVasc Surg.* 2007 Nov;46(5):979-990

²Raju S and Neglén P. Percutaneous recanalization of total occlusions of the iliac vein. *J Vasc Surg.* 2009 Aug;50(2):360-8.

The Failing Venous Stent

- **Can we prevent the stent from failing (ISR)**

Variables	OR	p
Stent Compression	1.54	0.43
Age (≥ 50 yrs)	0.23	0.91
Gender	2.66	0.21
Inflow	3.56	0.15
Thrombophilia	3.75	0.17
Anticoagulation	3.12	0.10
PTS	0.71	0.62

OR – Odds Ratio; PTS – Post Thrombotic Syndrome

The Failing Venous Stent

- **Can we prevent the stent from failing (Stent Compression)**

Variables	OR	p
Gender	1.60	0.11
Age (≥ 50 yrs)	1.48	0.07
Thrombophilia	0.24	0.81
Anticoagulation	0.12	0.92
PTS	0.31	0.84

OR – Odds Ratio; PTS – Post Thrombotic Syndrome

The Failing Venous Stent

- **Can we prevent the stent from failing (Stent Occlusion)**

Variables	OR	P value
Gender	2.7	0.41
Age (≥ 50 yrs)	2.4	0.54
PTS	1.7	0.72
Native vein occlusion	387.7	<0.01
Thrombophilia	3.7	0.23
ISR	0.3	0.41

OR – Odds Ratio; PTS – Post Thrombotic Syndrome

The Failing Venous Stent

- **Conclusions**

- Stent occlusion is a rare phenomenon
- ISR rarely progresses to near occlusion/occlusion
- Reintervention must be attempted in symptomatic patients
- IVUS mandatory in diagnosis and treatment
- Post venous stenting follow up essential
- Closer follow up required post recanalization

