

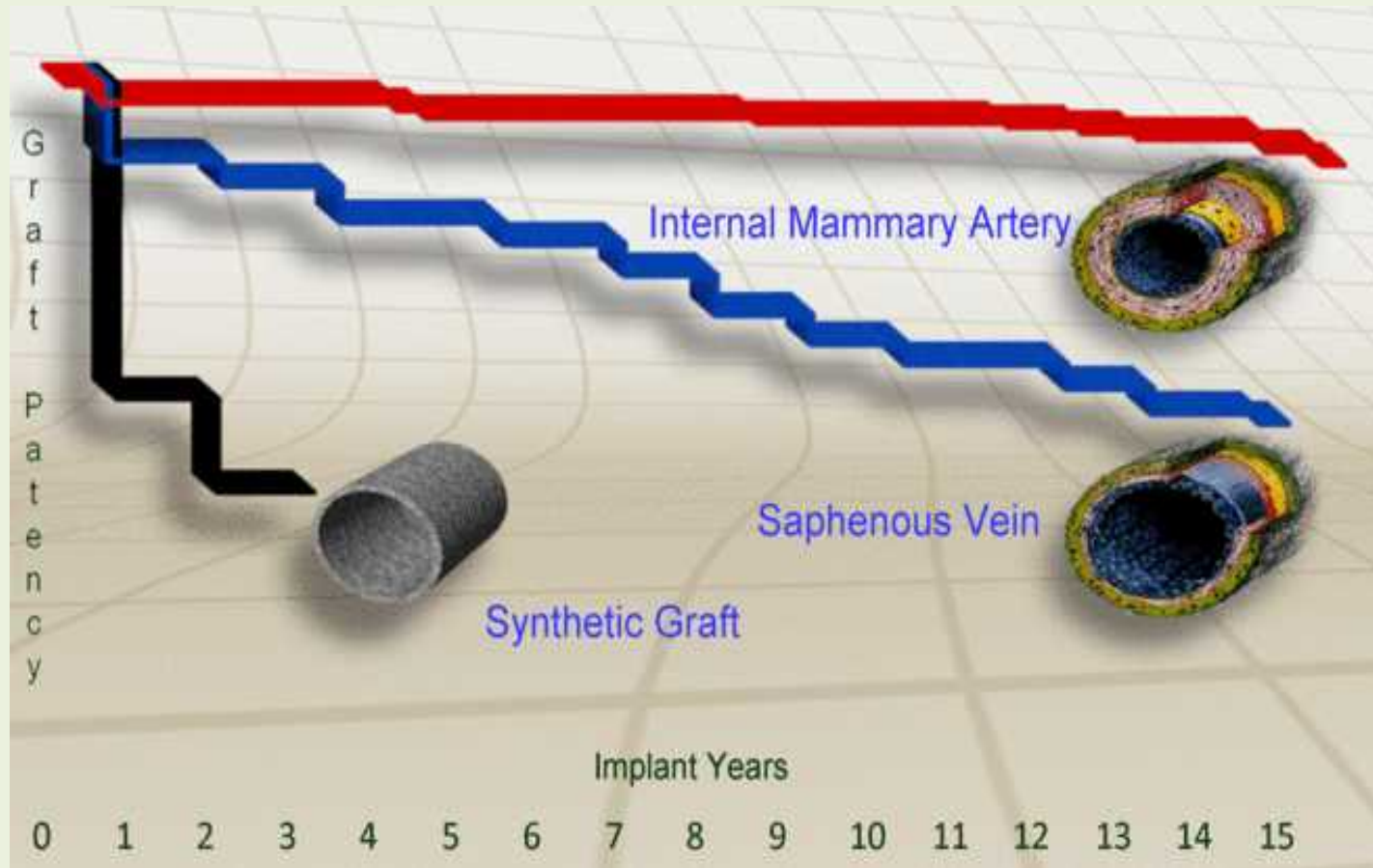
36th PANHELLENIC (INTERNATIONAL)
CONGRESS OF CARDIOLOGY

Graft interventions
Tips και tricks

Thessaloniki 29/10/2015

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Vein Grafts Don't Last as Long as Arterial Grafts



SVG Occlusion Rates from Surgical Studies

<u>Trial</u>	<u>One Year SVG occlusion rates</u>
PRAGUE-4 On-pump	41% (per patient)
PRAGUE-4 Off-pump	51% (per patient off-pump)
PREVENT IV	41.7% (per patient); 26.6 (per SVG)
RIGOR	31% (per patient); 19% (per SVG)
ROOBY On-pump	28.7% (per patient on-pump)
ROOBY Off-pump	36.5% (per patient off-pump)

<u>Trial</u>	<u>5 yr SVG occlusion rates</u>	<u>10 yr SVG occlusion %</u>
Fitzgibbon et al	25% (per SVG)	40% (per SVG)
Goldman et al	31% (per patient)	39% (per patient)

Pathobiology of SVG



Friable, degenerated atheromatous and thrombotic debris that develop when SVGs deteriorate



Distal Debris Embolization ----- Chemical Embolization



Slow or No- Reflow Phenomenon (10% to 15% of cases)



Myocardial infarction (31% of patients)



In – Hospital Mortality increases 10-fold

Distal embolization remains difficult to predict

Higher restenosis / occlusion rates than native coronaries

Predictors of 30-day and 1 Year MACE After SVG Intervention

- Lesion length
- SVG Degeneration score
- Larger plaque volume
- Female Sex
- Chronic renal insufficiency (serum creatinine >1.5 mg/dl)
- Degree of CK-MB elevation after SVG-PCI
- Disease progression at untreated intermediate lesions

Technical Aspects

- **Antithrombotics**
- **Direct Stenting**
- **Covered stents**
- **DES**
- **Emboic Protection Devices**
- **Other Issues**

Antithrombotics in SVG - PCI

- **GpIIb/IIIa blockers:**
- **No large RCTs**
- **Subset analysis show no ↓ in periprocedural MI**
- **One study showed better procedural success, but no impact on 30-day mortality**
- **Bivalirudin: One retrospective study showed lower enzyme elevation, NQMI & repeat procedures**
- **In ACUITY trial: outcomes similar but minor bleeds were less**

SVG Intervention Techniques: Predilatation v/s Direct Stenting

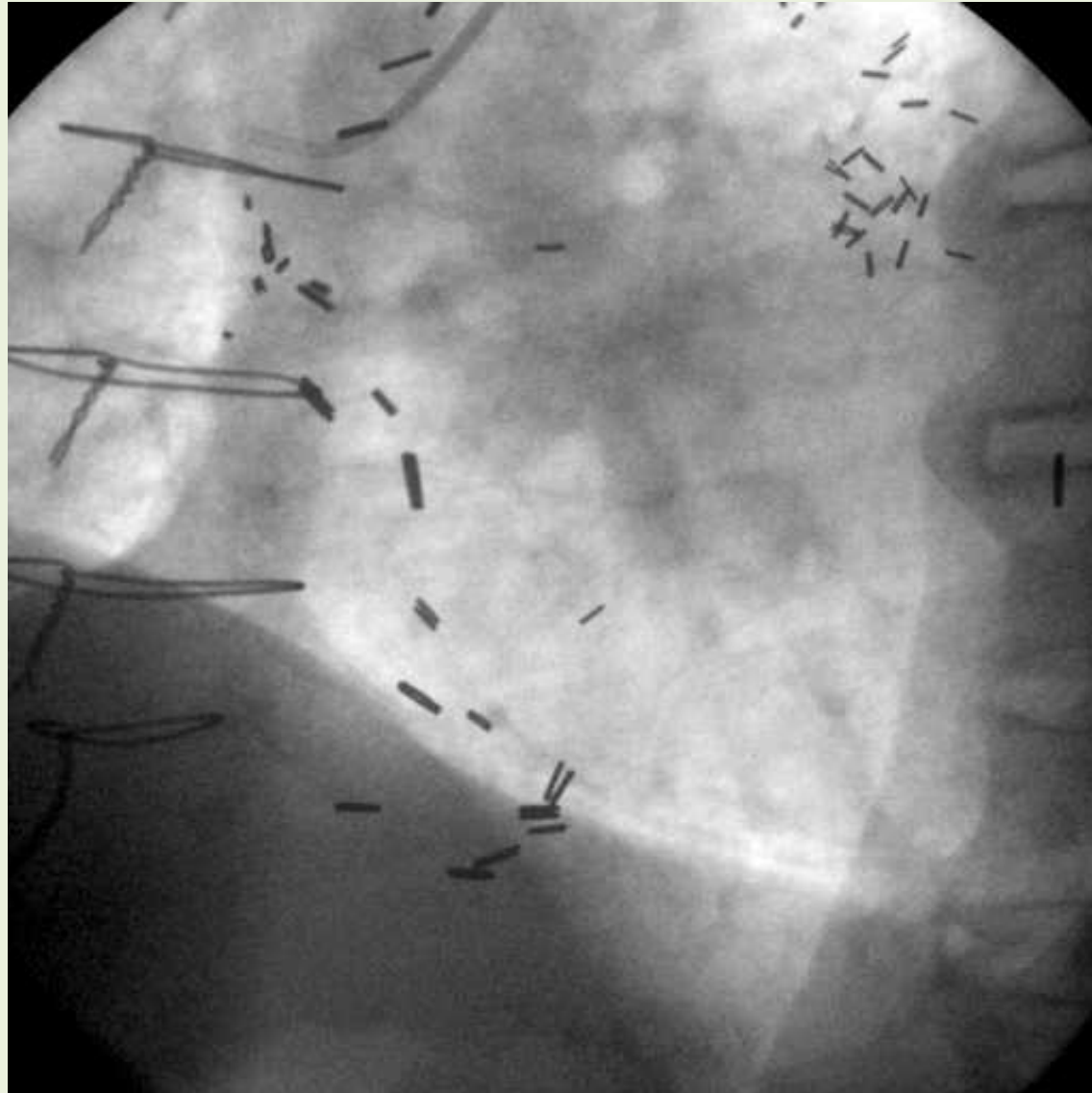
Direct stenting:

Potential benefit of trapping debris & less distal embolization

Registry data

- Less overall CK-MB elevations
- Fewer NSTEMIs with Direct stenting
- Predilatation is inevitable in some cases of chronic degenerated graft lesions which are hard and calcific
- Rotablation deemed overly risky & not recommended

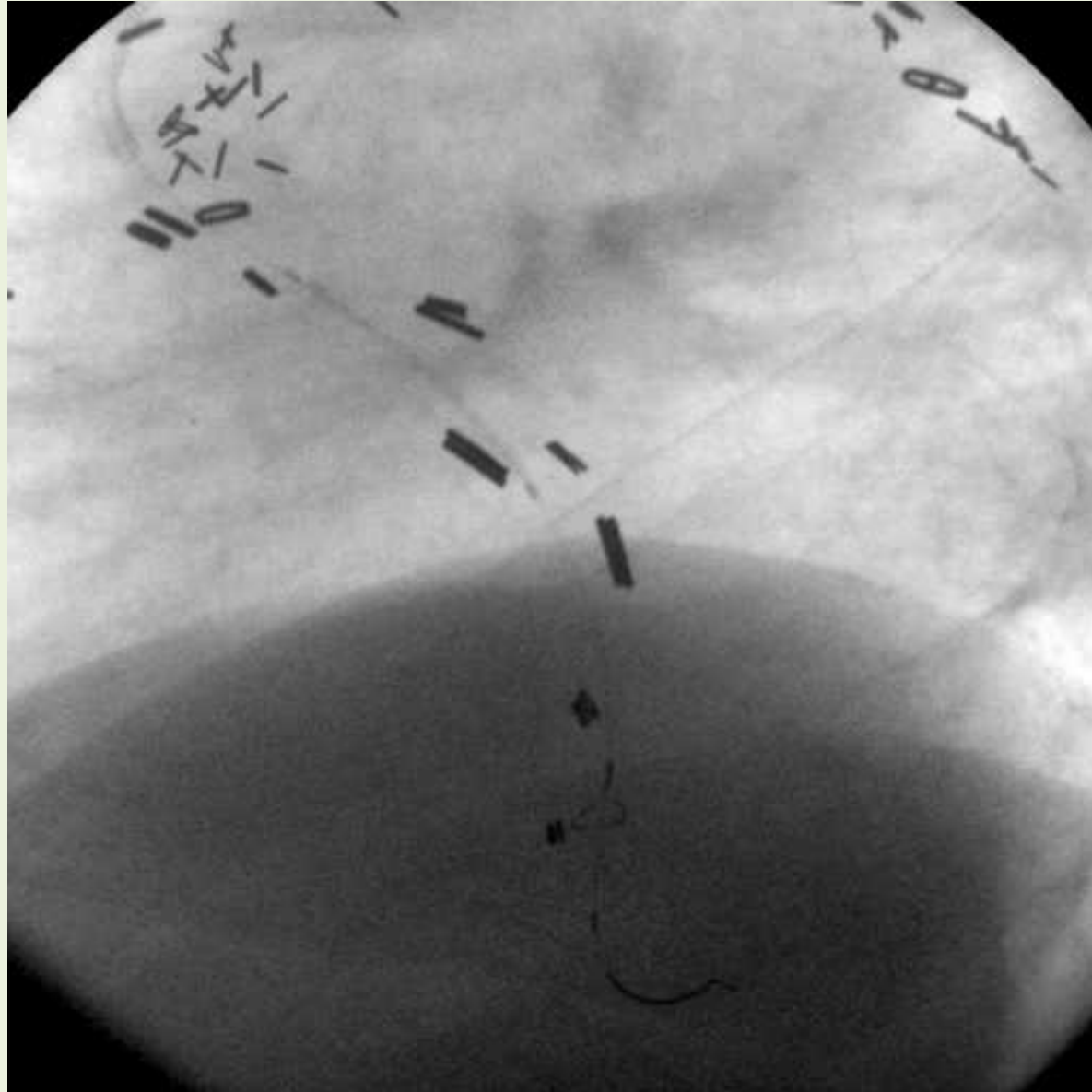
Direct Stenting



Direct Stenting



Direct Stenting



Direct Stenting



SVG Intervention Techniques: BMS or Covered Stents

In principle should be associated with less embolizations & periprocedural complications

SYMBIOT
JoSTENT
AneurX
MGuard



Typically no advantage in terms of MACE rates and slightly higher restenosis/TVR rates.

Hence, no evidence to suggest covered stents are better

SVG Intervention Techniques BMS v/s DES

Trial (%)	SOS		RRISC		ISAR- CABG	
	PES	BMS	SES	BMS	DES	BMS
MACE	37	49	15.8	29.7	15.4	22.1
Death	12	5	2.6	0	5.2	4.7
MI	15	31	2.6	0	4.2	6
TLR	5	28	5.3	21.6	7.2	13.1

One Year Outcomes

Similar results seen in 3 & 5 yr data where available

- Most large RCT's have 10-15% SVG cases
- Few small but well conducted RCT's specific to SVGs
- DES Better Than BMS

SOS: Stenting in Saphenous Vein Grafts

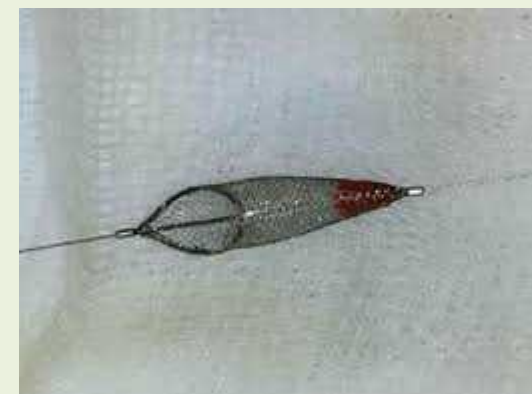
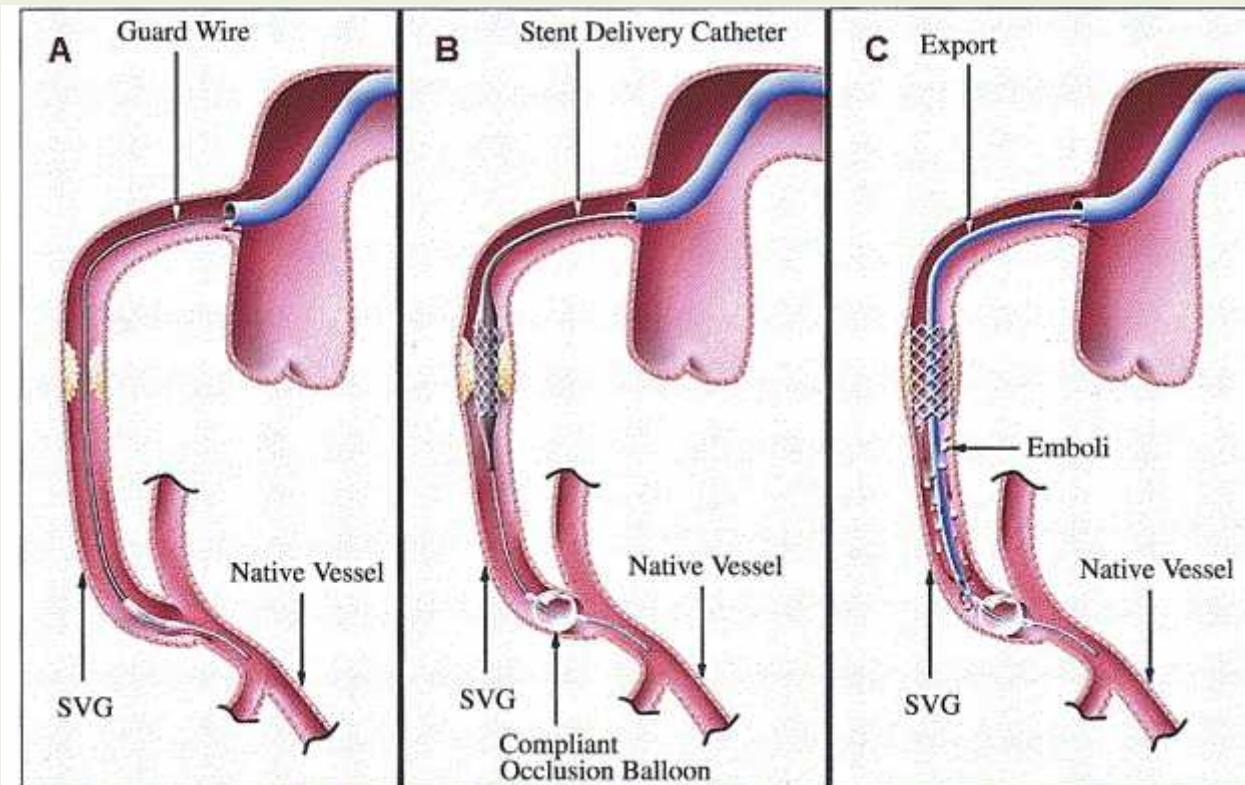
RRISC: Reduction of Restenosis in SVG's with Cypher

Embolic Protection Devices

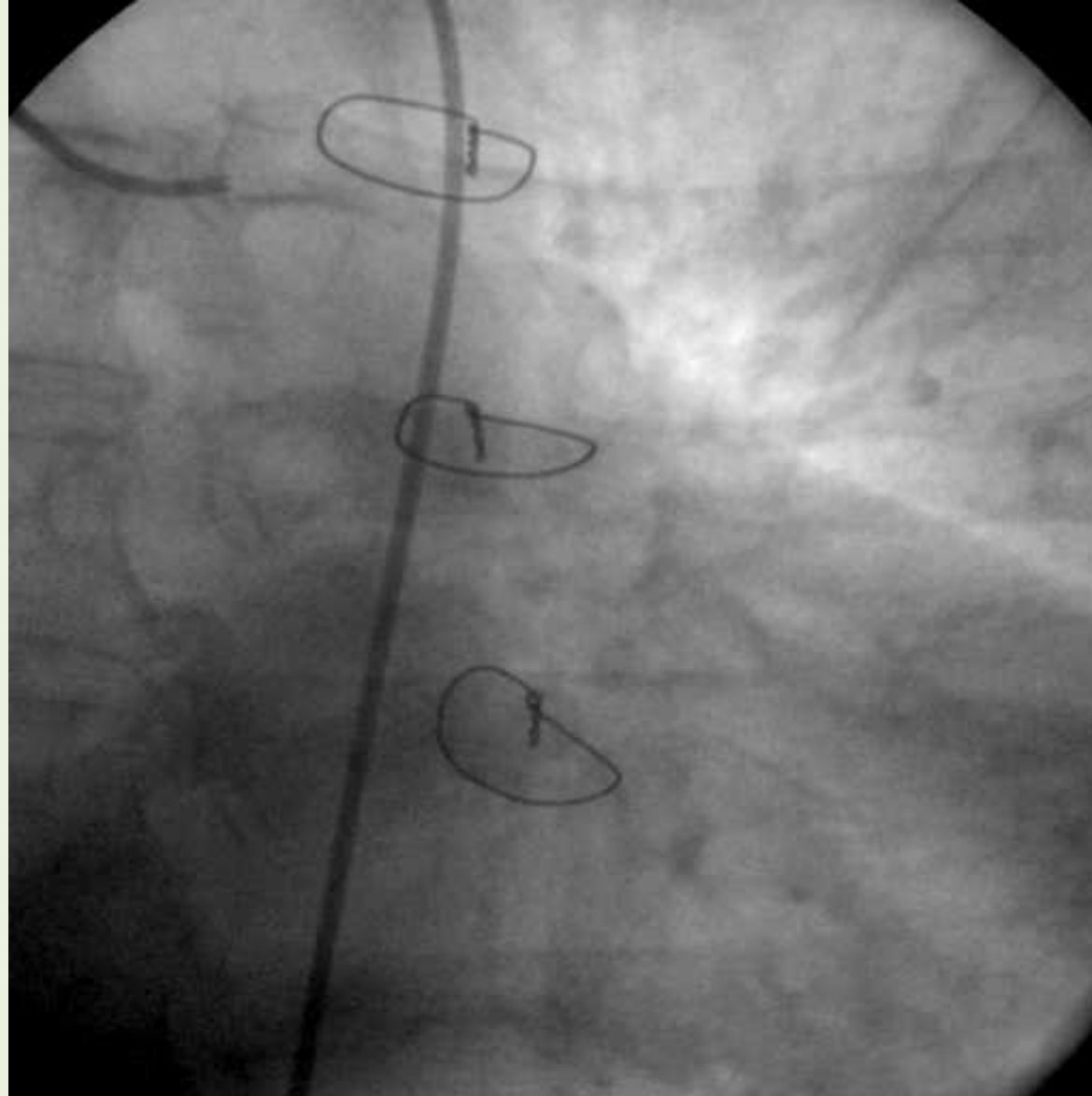
- Perhaps the best way to prevent distal embolization

Proximal: Balloon occlusion

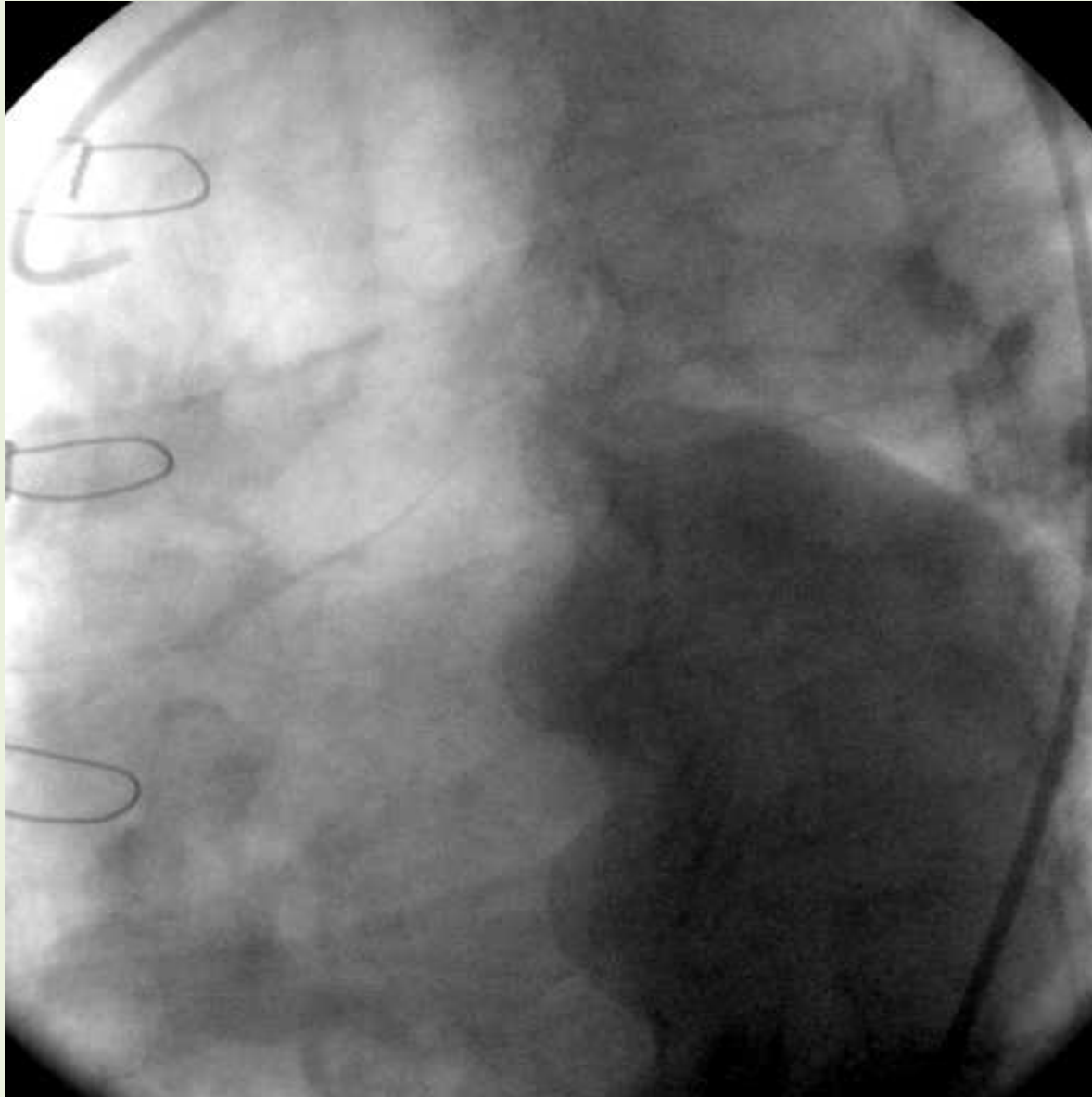
Distal: Filters or balloon occlusion



Embolic Protection Devices



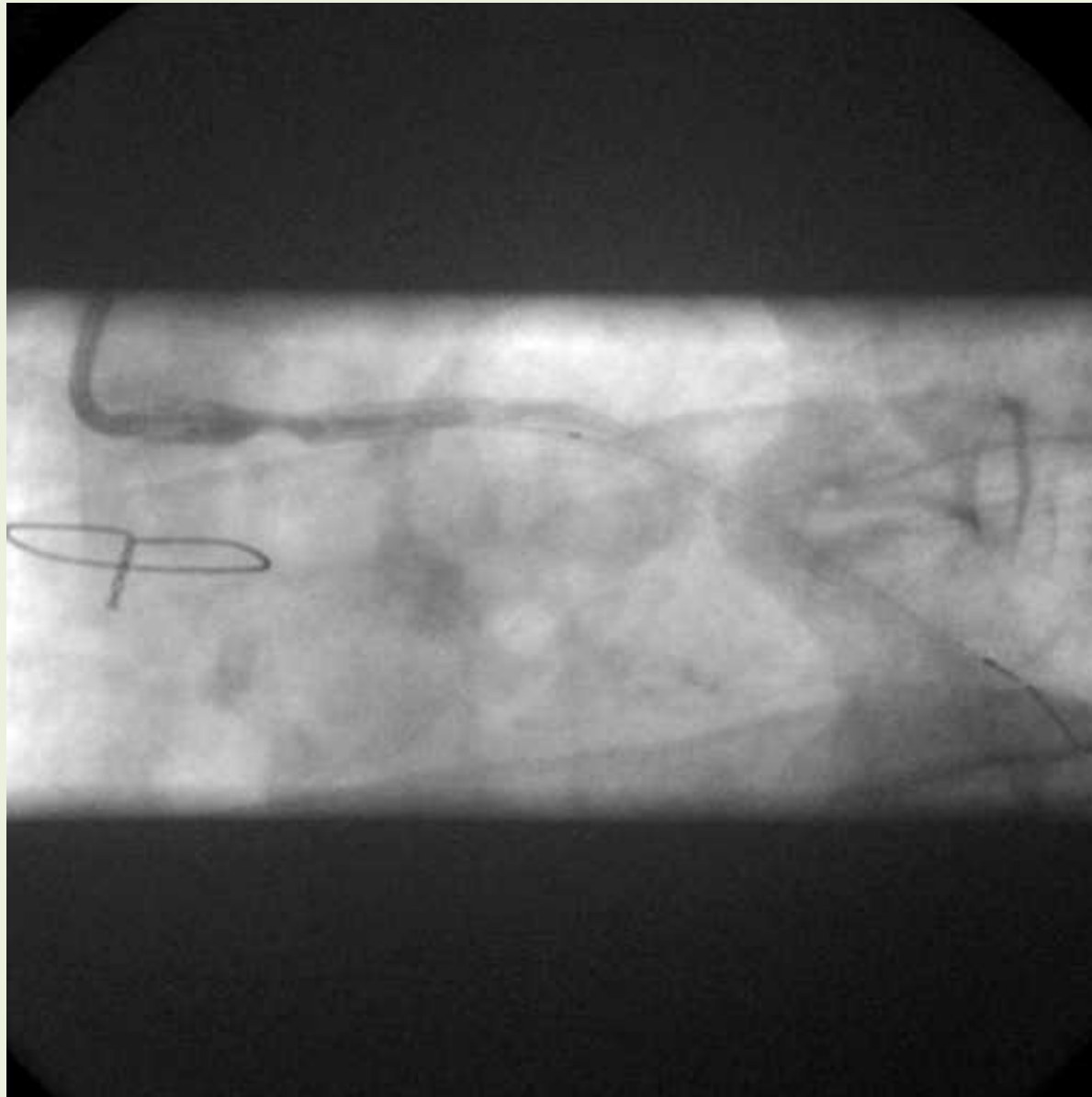
Embolic Protection Devices



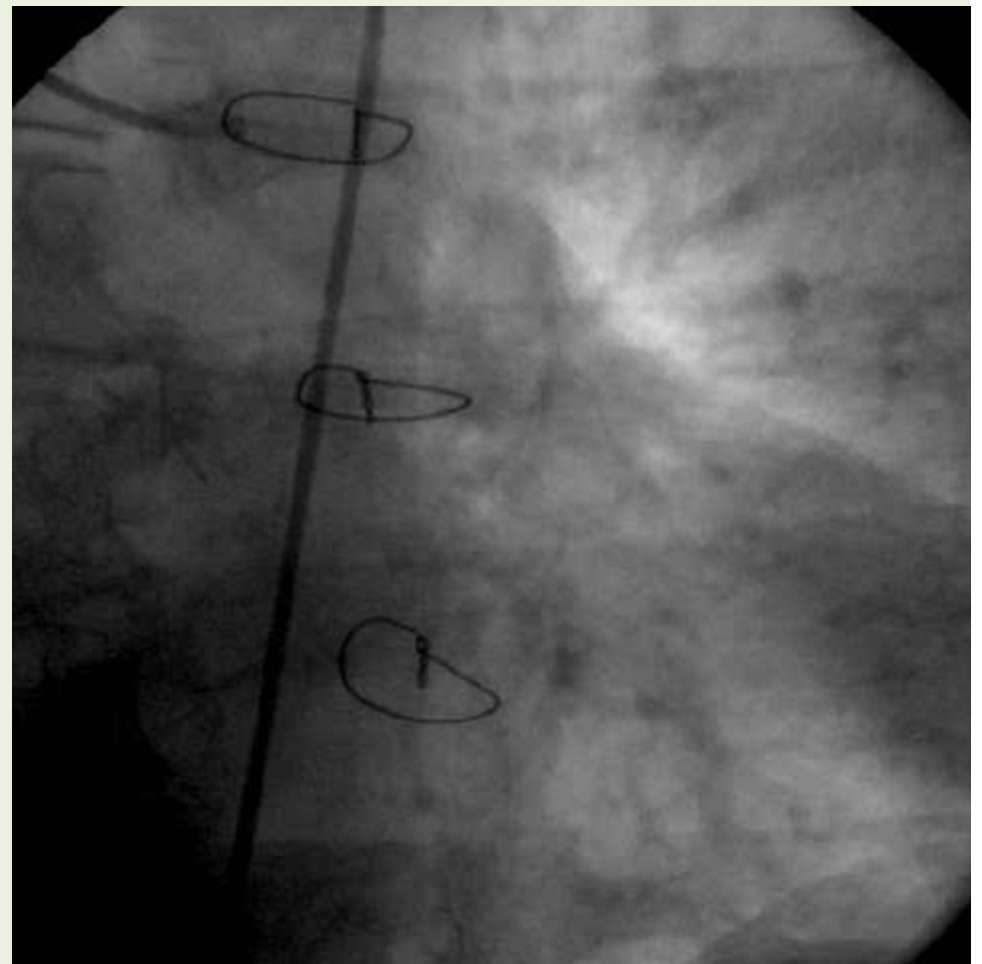
Embolec Protection Devices



Embolic Protection Devices



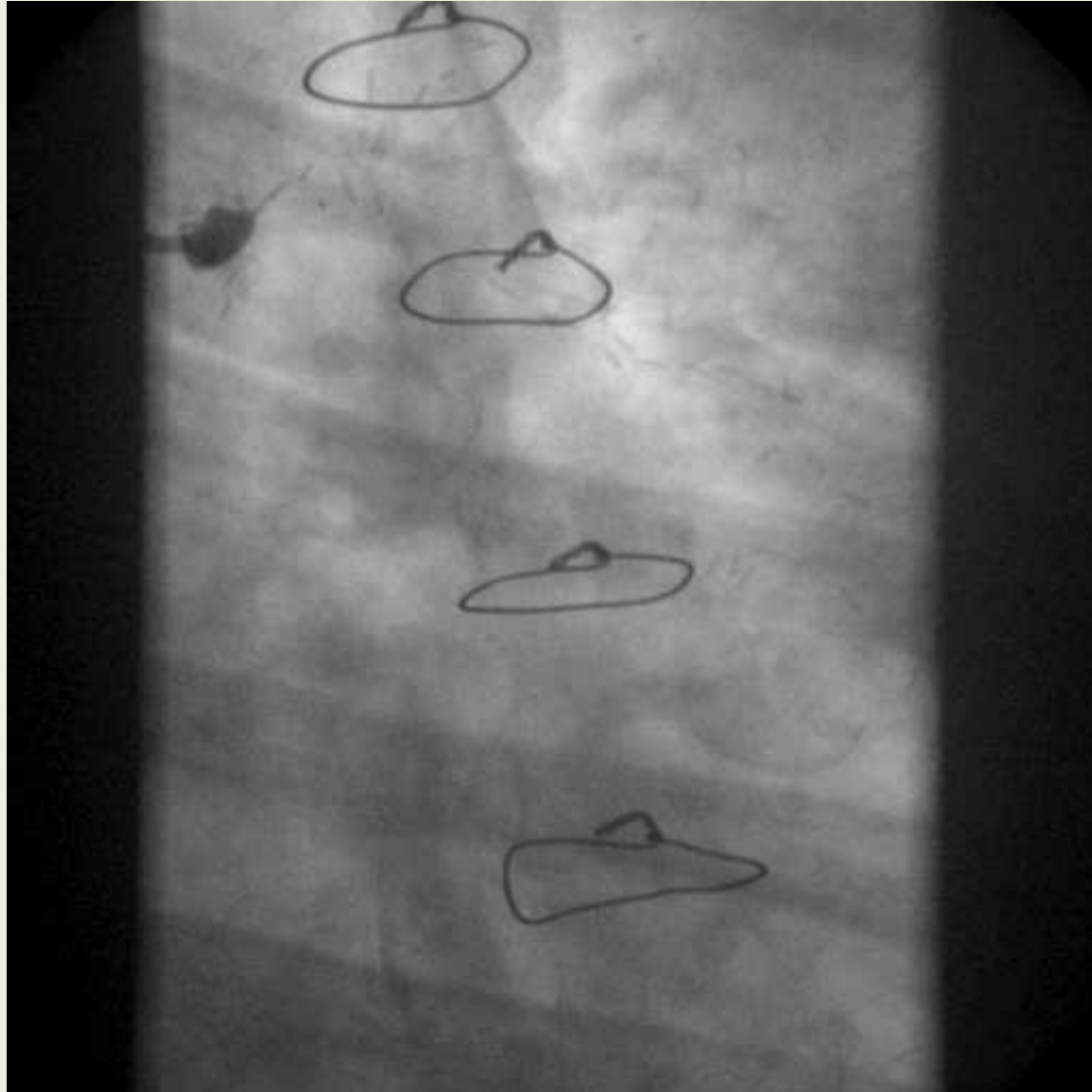
Embolic Protection Devices



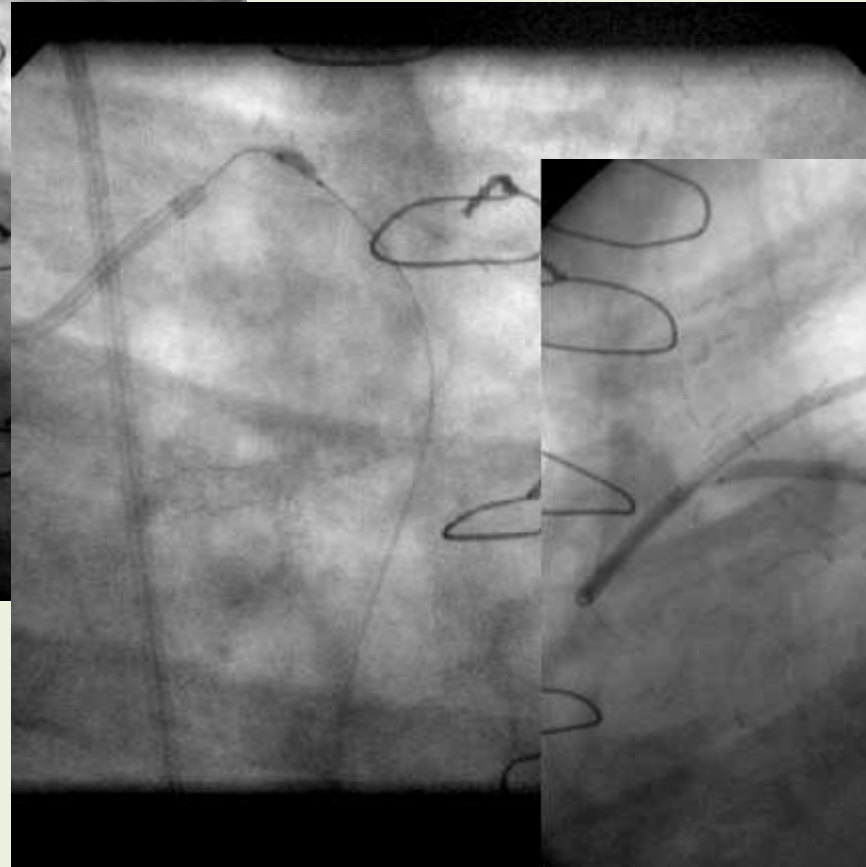
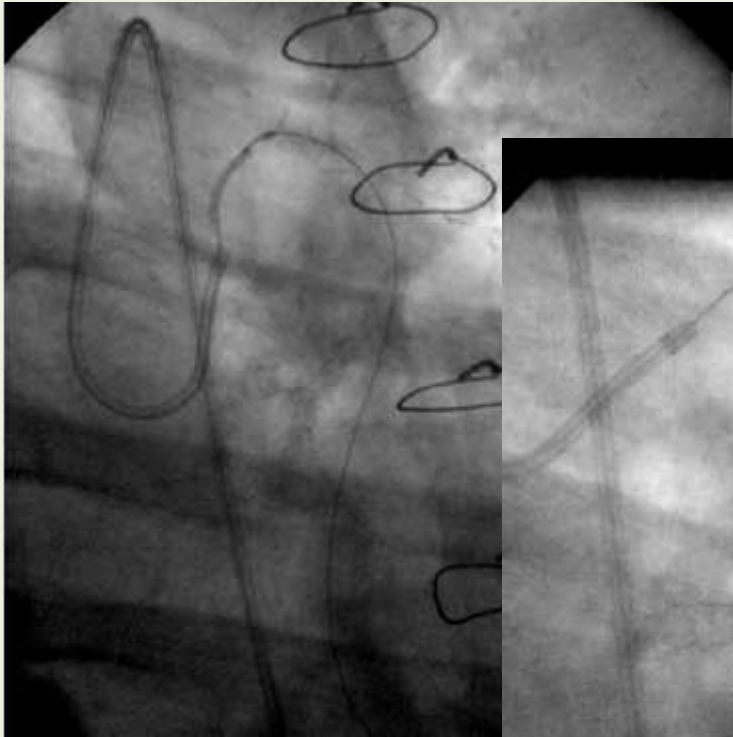
Treatment of Occluded SVGs

- **Low successful recanalization**
- **High in-stent restenosis (68%)**
- **High target vessel revascularization (61%)**
- **Treat acute occlusions in the setting of myocardial infarction.**
- **Recanalize the native coronary artery if feasible**

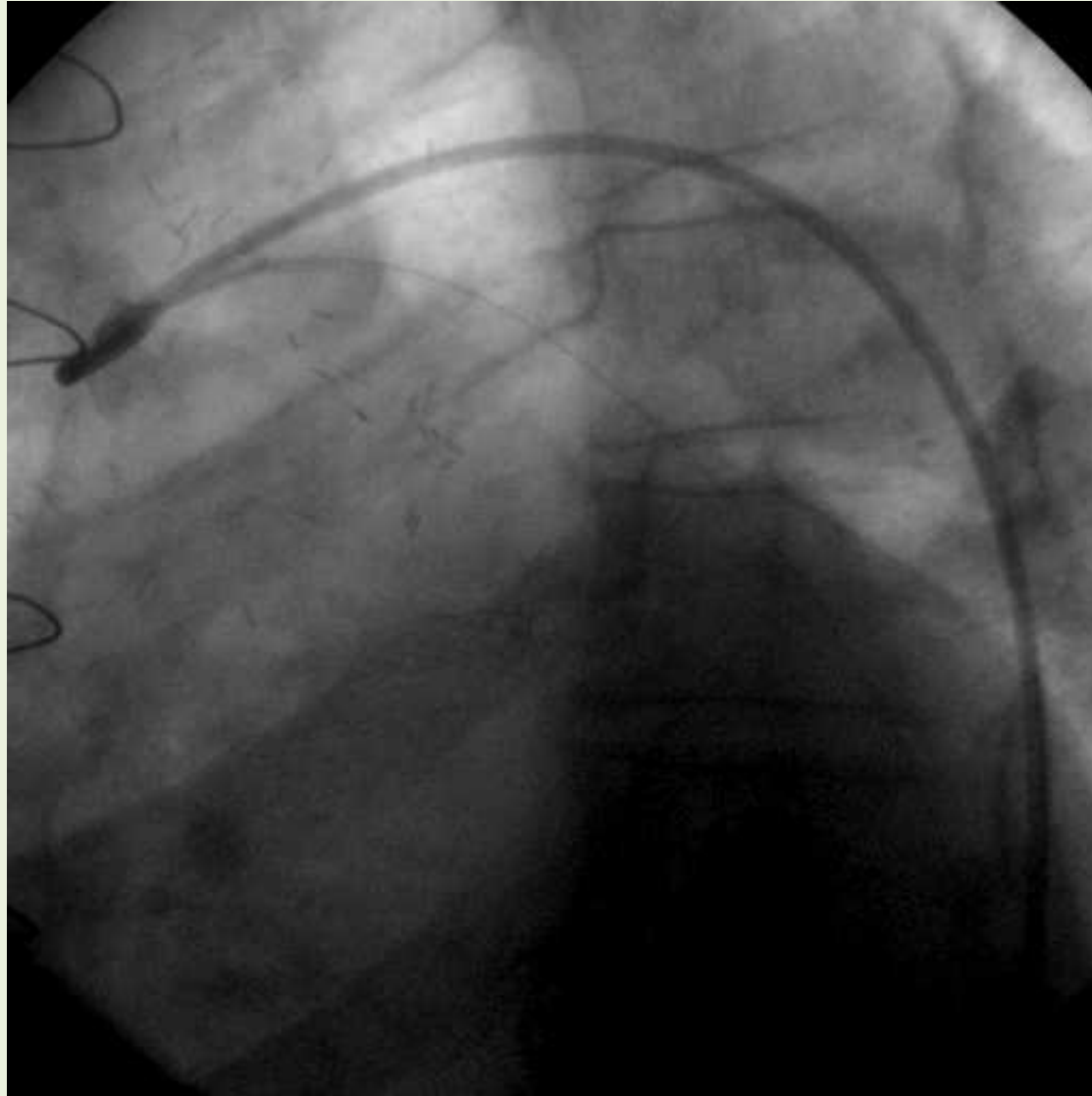
Treatment of Occluded SVGs



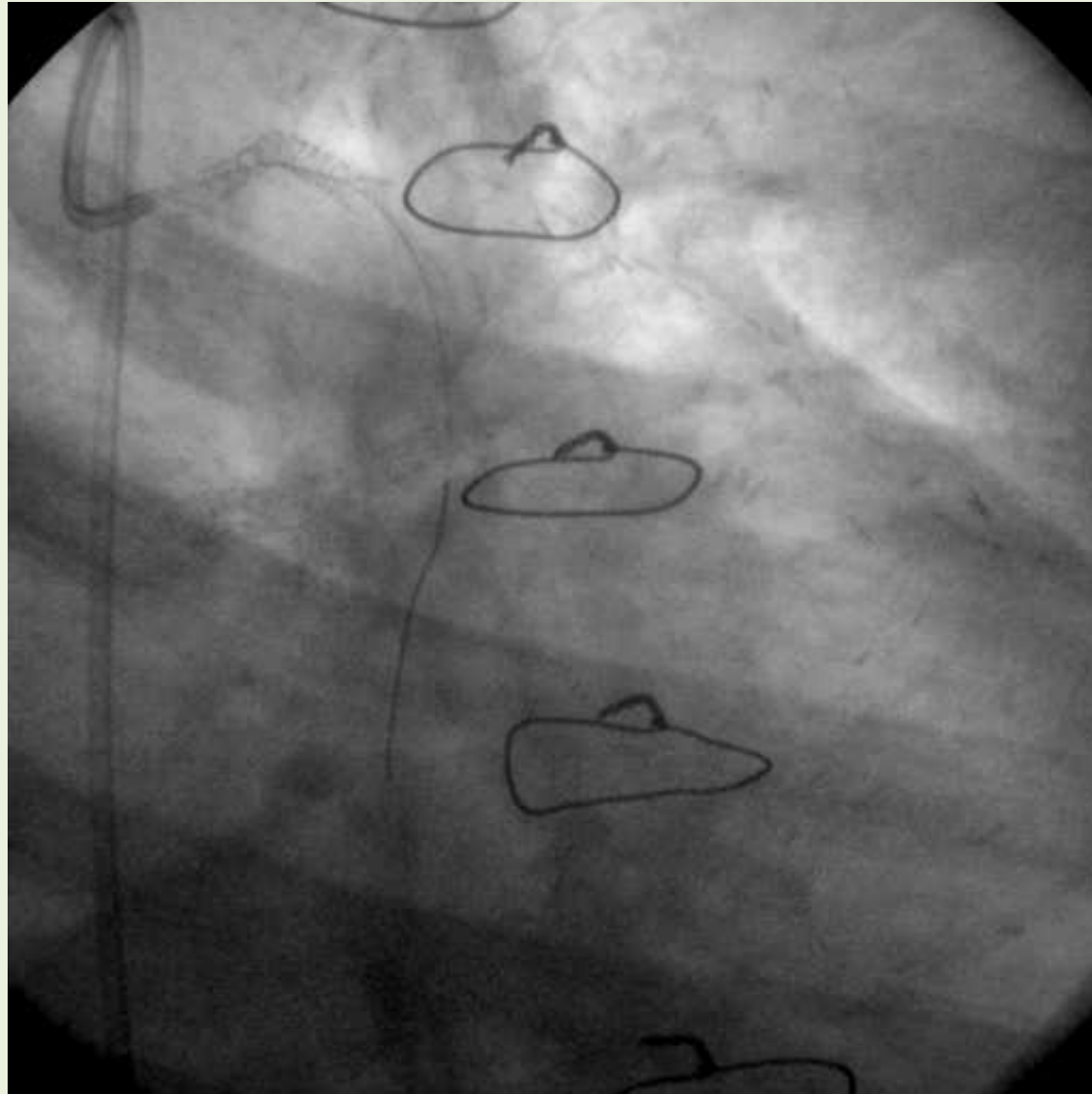
Treatment of Occluded SVGs



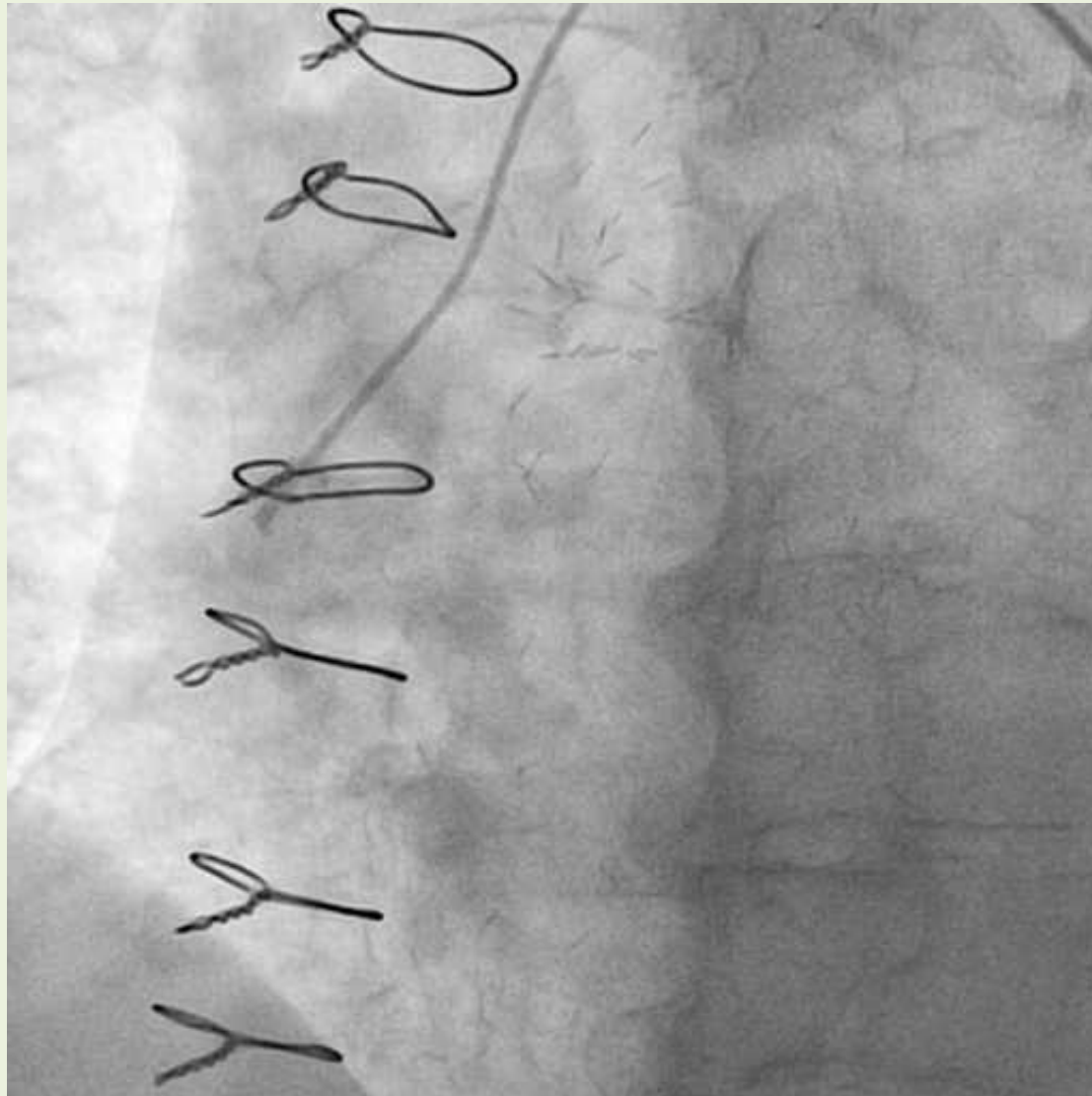
Treatment of Occluded SVGs



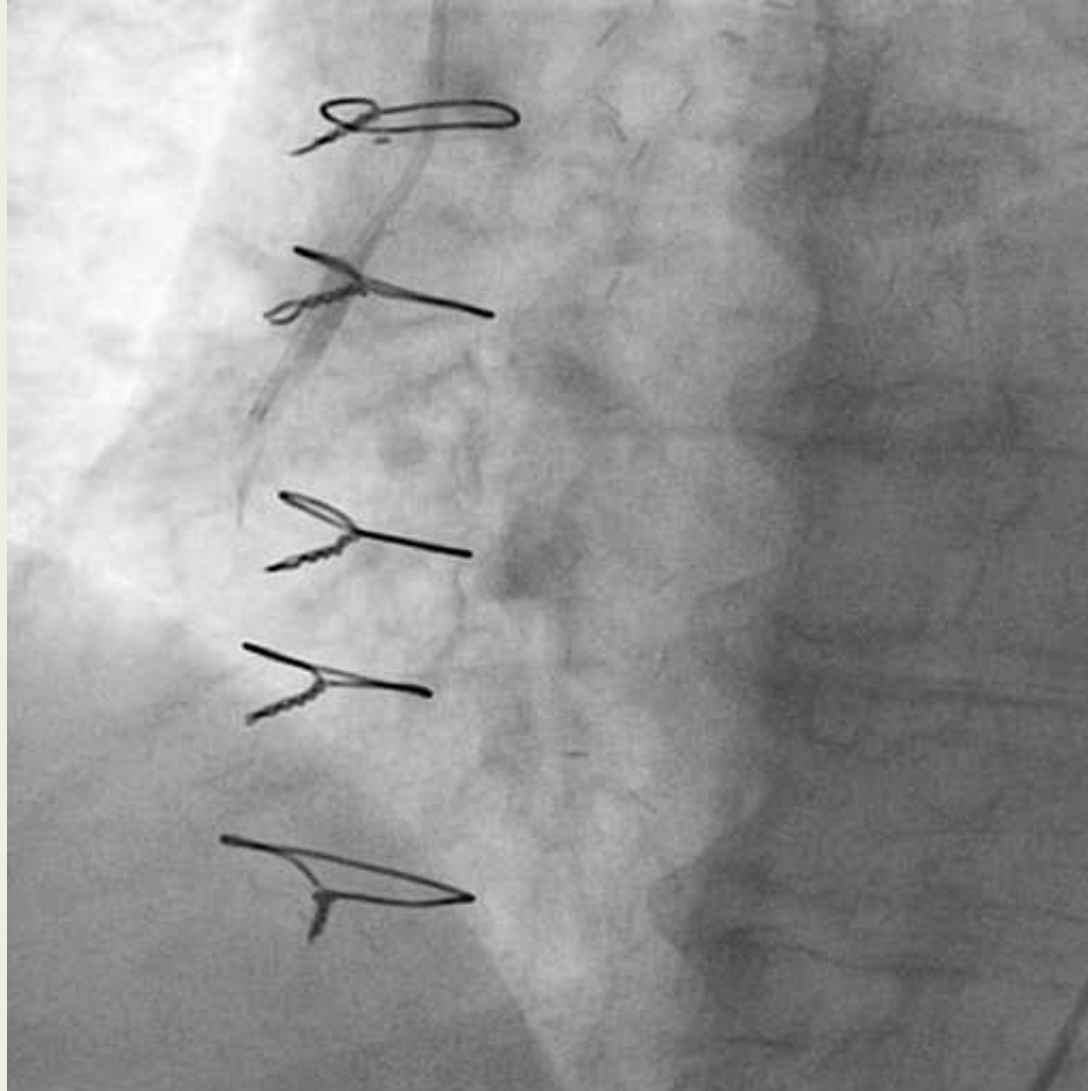
Treatment of Occluded SVGs



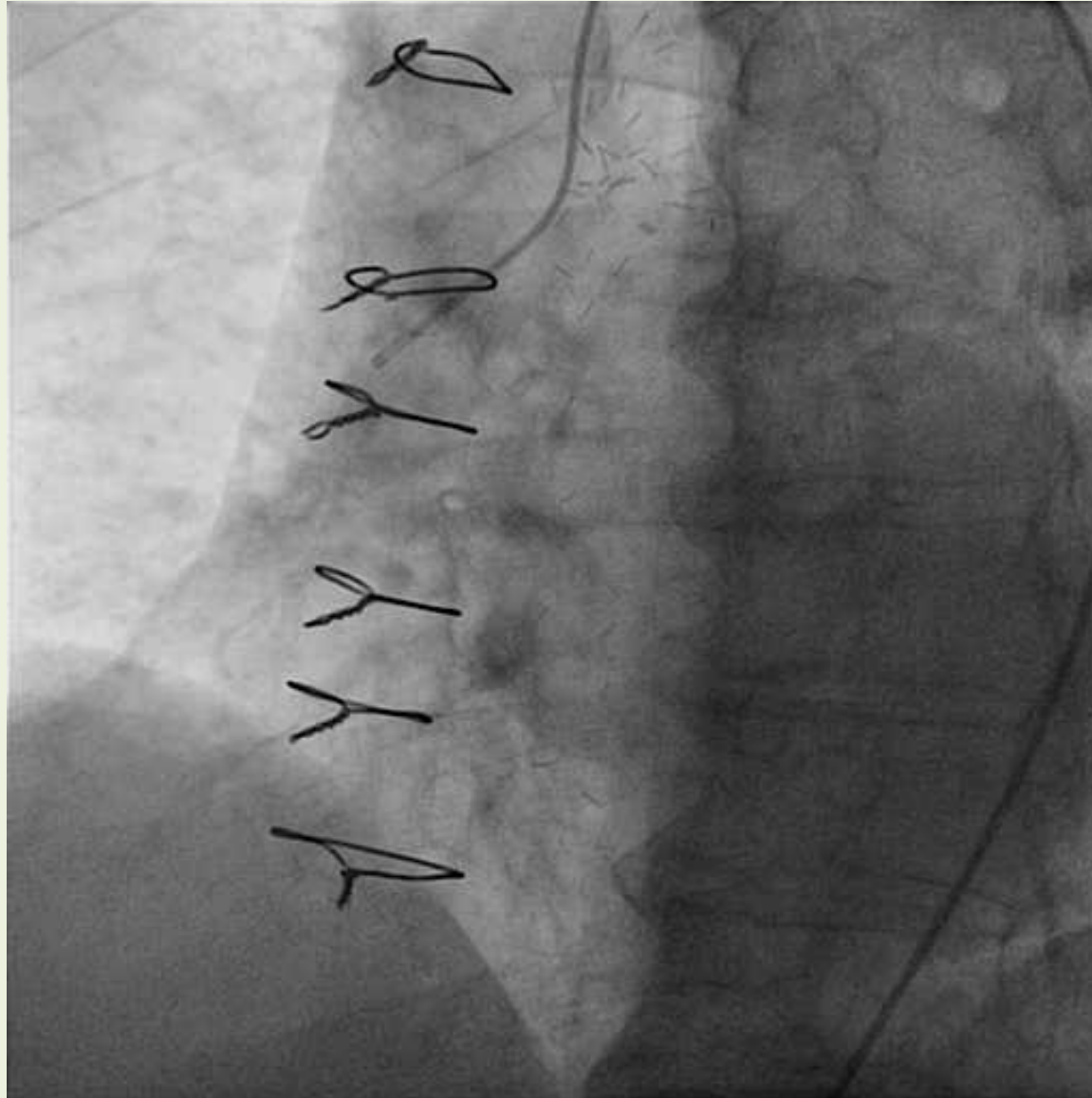
Treatment of Occluded SVGs in AMI



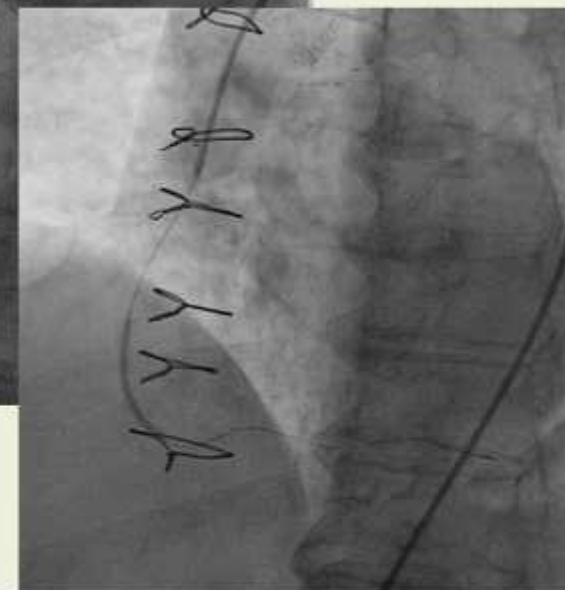
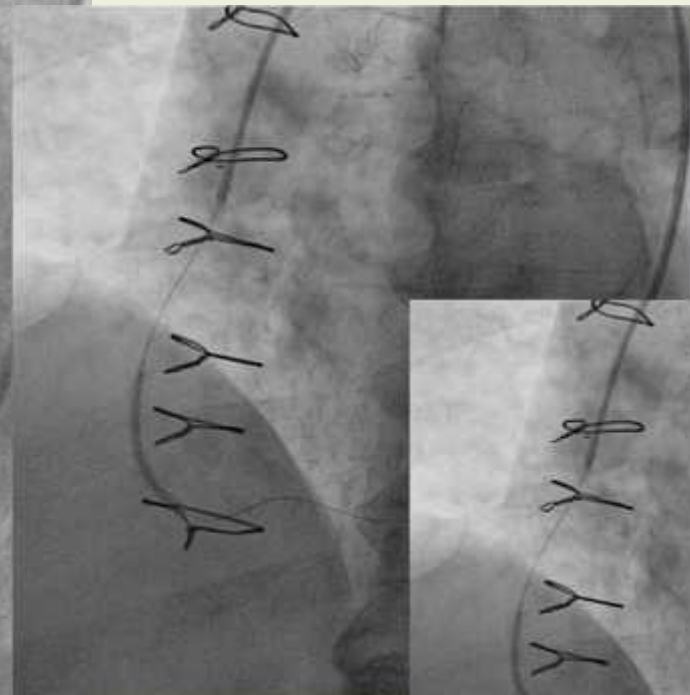
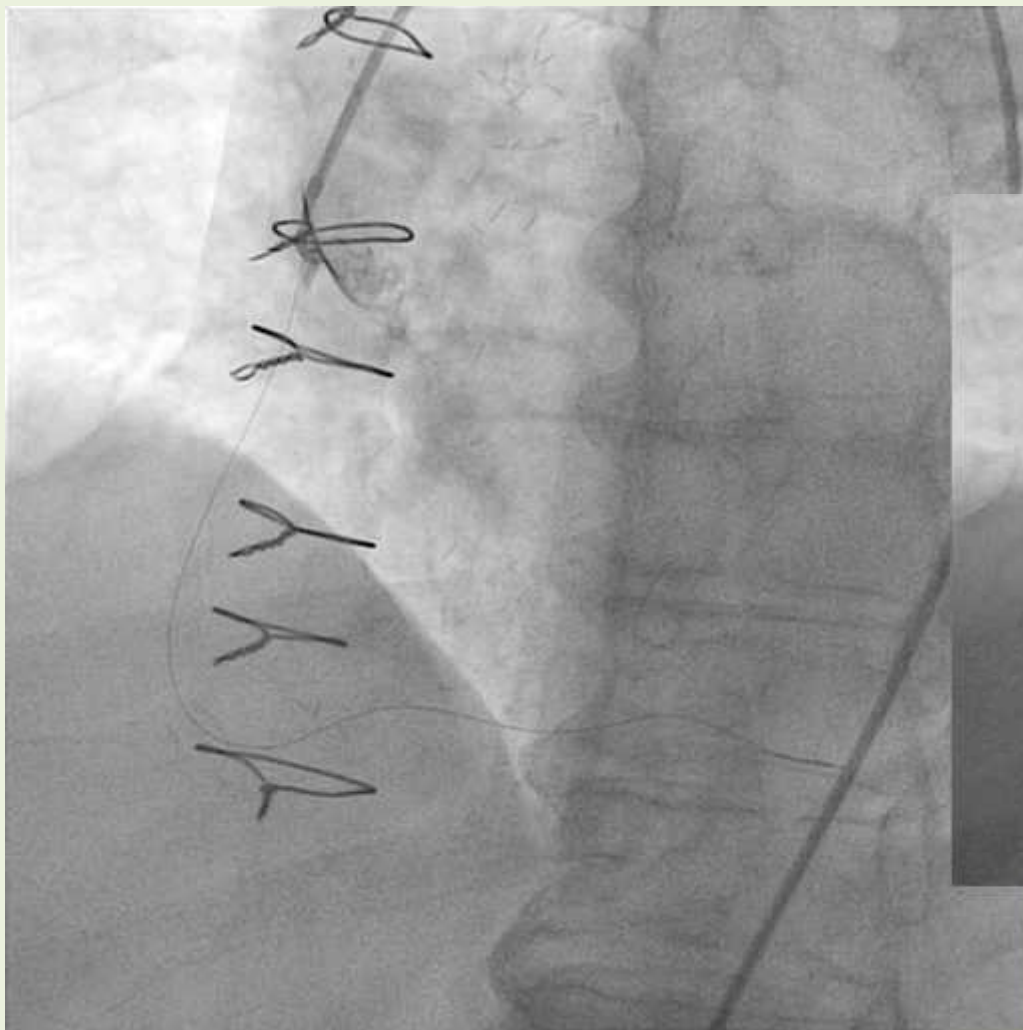
Treatment of Occluded SVGs in AMI



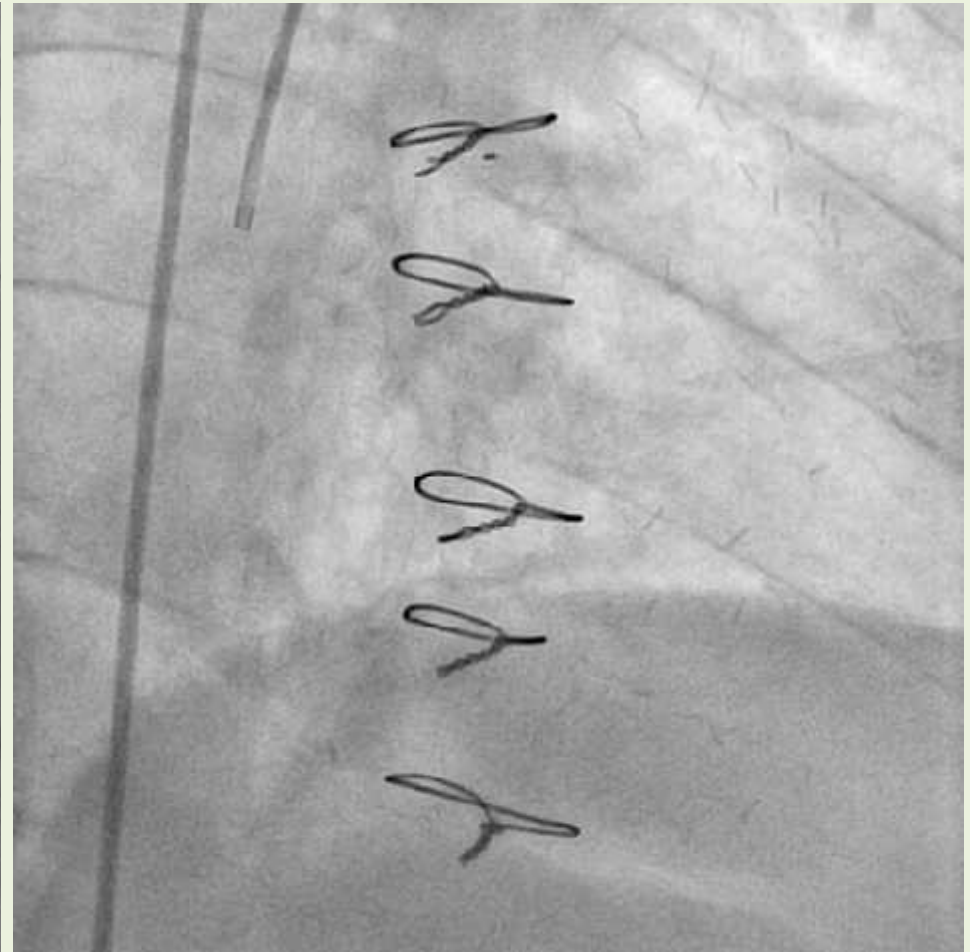
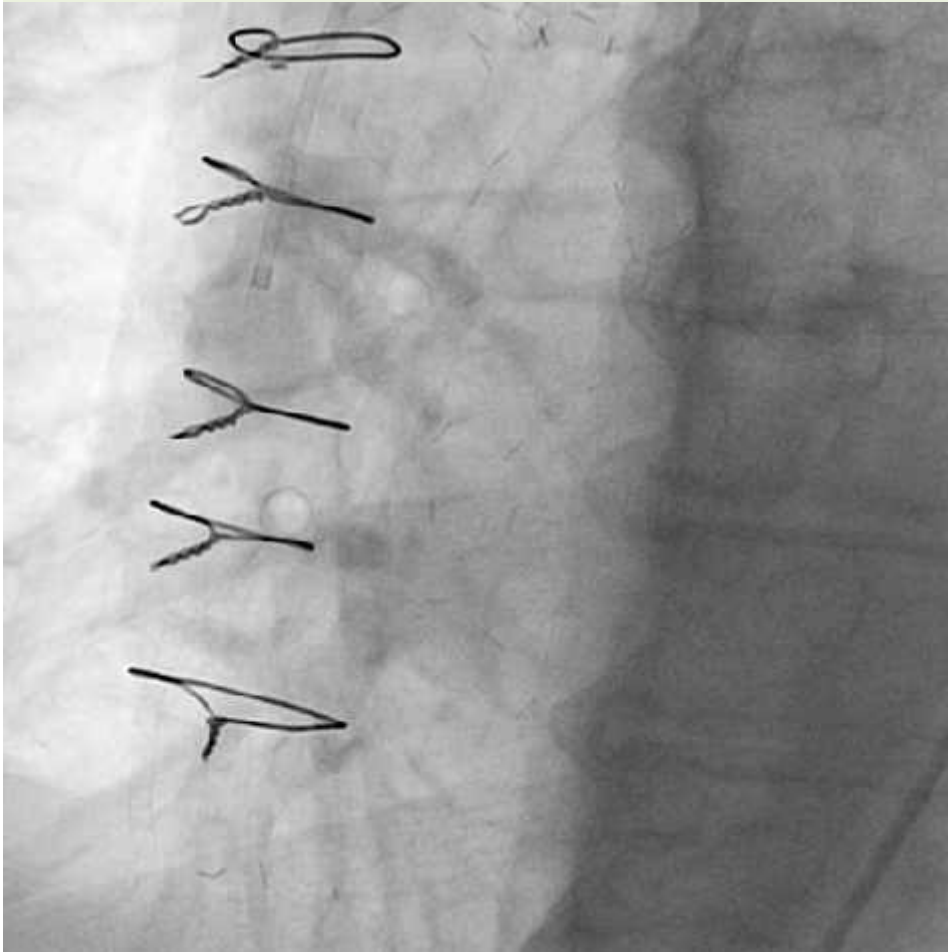
Treatment of Occluded SVGs in AMI



Treatment of Occluded SVGs in AMI



Treatment of Occluded SVGs in AMI



Other Issues

- **Undersized stents said to reduce distal embolization**
 - **Theoretically higher risk of restenosis and stent thrombosis?**
- **Pharmacotherapy to prevent No-reflow**
 - **NTG/SNP/Adenosine/Verapamil**
- **Use of FFR – Similar hemodynamic information as native coronaries**
- **Borderline lesions: VELETI trial (30-60% stenoses treated with lower 1- & 3 yr MACE rates!)**

Conclusions

- **Venous graft lesions account for a 1-10% of PCIs**
- **Pathology of graft degeneration makes SVG PCI technically challenging**
- **Careful use of drugs and devices can minimize complications**
- **Small tips and tricks are important for high success rates**

Thank you for your Attention

