CHU Hôpitaux de Bordeaux

CONTROVERSIES & UPDATES IN VASCULAR SURGERY
JANUARY 22-24 2015
MARRIOTT RIVE GAUCHE & CONFERENCE CENTER PARIS, FRANCE

Comment je débouche les artères du pied ?

How I treat foot arteries ?

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Disclosure

Speaker name:

.....

- I have the following potential conflicts of interest to report:
- Consulting Abbott, Alvimedica, Bard, Biotronik, Boston-scientific, Cook, Cordis, Gore, Lutonix, Medtronic, Spectranetric

A Trending Technique

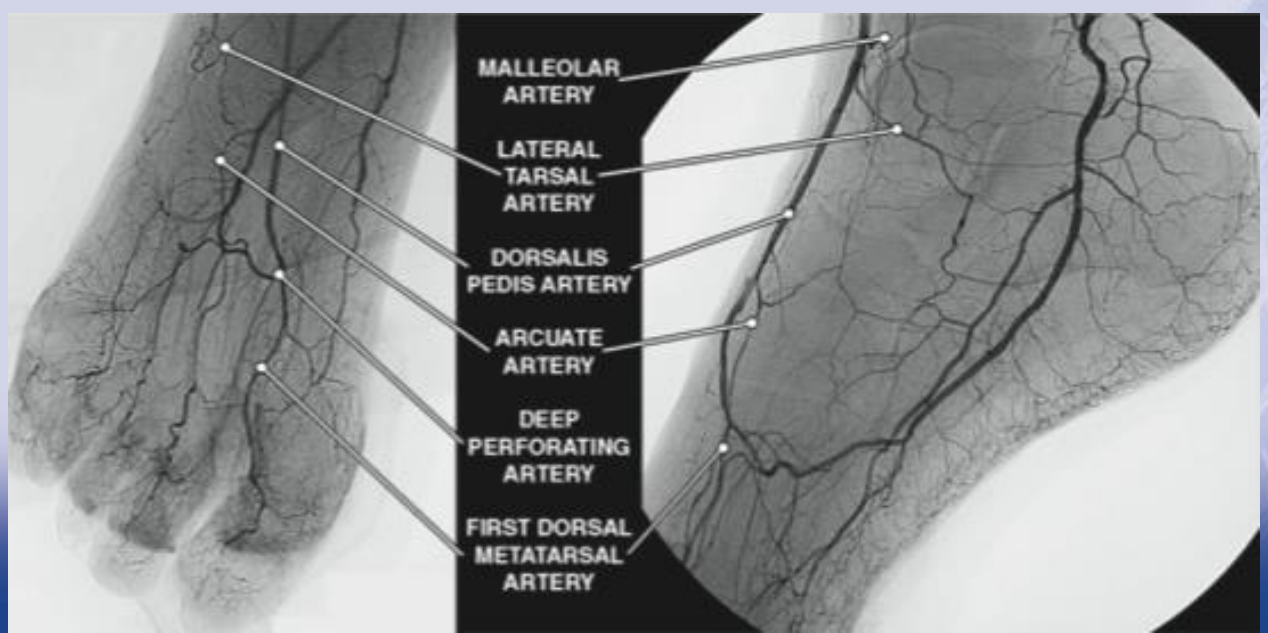
- In the past 5 years new techniques and materials have made endovascular recanalization of distal arteries an alternative to inframalleolar bypass for limb salvage in patients with severe arterial occlusive disease
- Revascularization of/in the foot is now performed by using percutaneous transluminal angioplasty

Anatomic Reminder

- The main pedal-plantar connection is the pedal-plantar loop, which consists of the anastomosis of :
  - the dorsalis pedis artery in the first metatarsal space
  - to the plantar arch
  - and lateral plantar artery via the deep perforating artery

Anterior Pedal Circulation

- Anterior pedal angiosomes :
  - the dorsum of the foot supplied by the anterior circulation (red),
  - and the first toe (purple) supplied by the anterior circulation via the first dorsal metatarsal artery or by the posterior circulation
- **Dorsalis pedis artery → metatarsal jonction → lateral plantar artery**



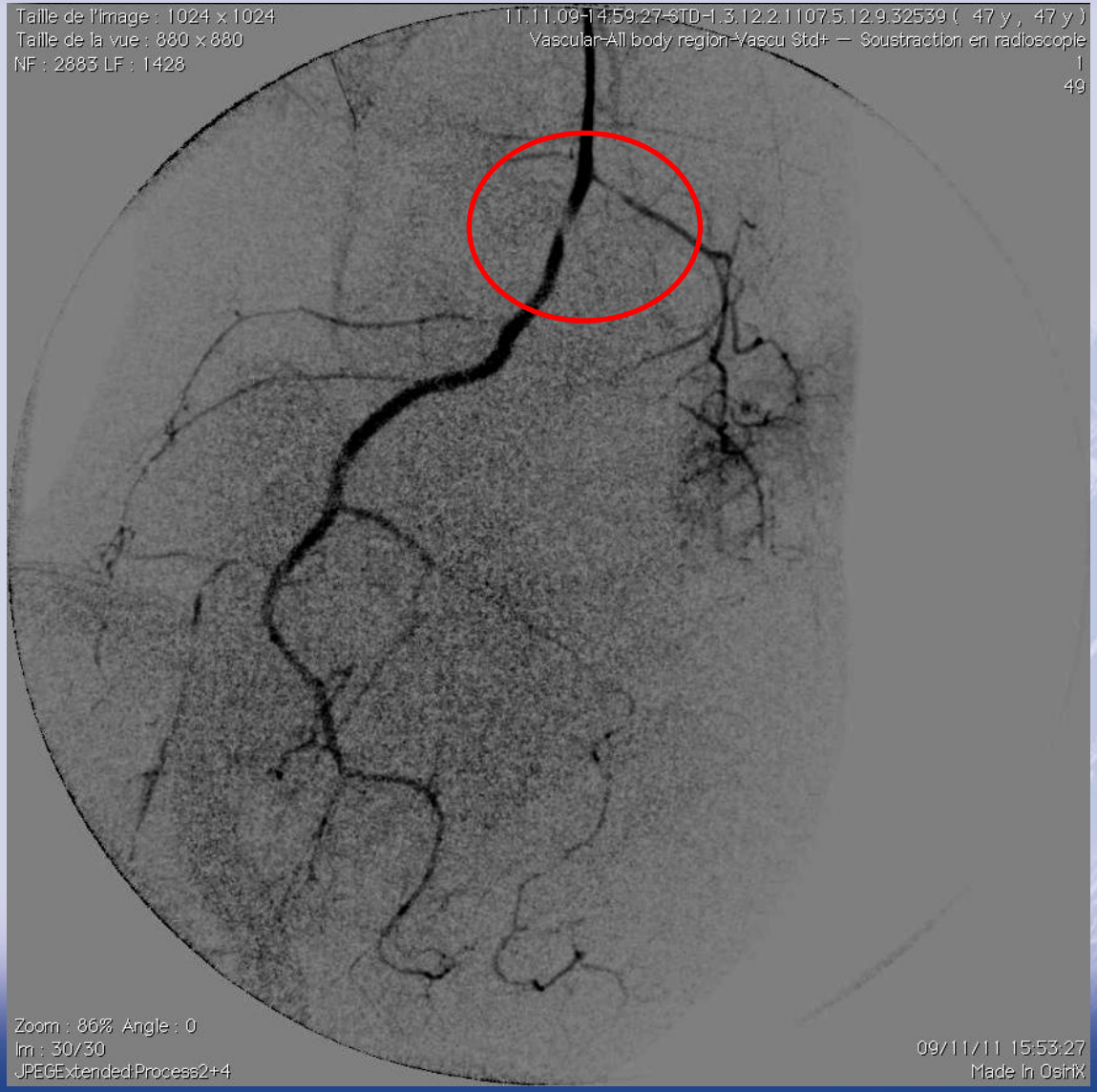
Procedure

- Initially described by Fusaro et al. In 2007
- The ipsilateral antegrade approach, provides excellent guidewire and catheter support and allows maximal mobility around the lower limb
- Dedicated devices are 0.014’’ wire and support catheter
- Standard anteroposterior and lateral oblique projections should be obtained in all cases to allow visualization of the complex vascular anatomy of the foot

Indications ?

- 1 - To go very deep into the foot to treat lesions between BTK arteries and in-foot arteries
- 2 - To treat in-foot lesions
- 3 - To practise retrograde recanalisation of BTK arteries througth the arch

1 – to fix the wire into the foot



Loop into the arcuate arteries

0.014’ wire

Treatment

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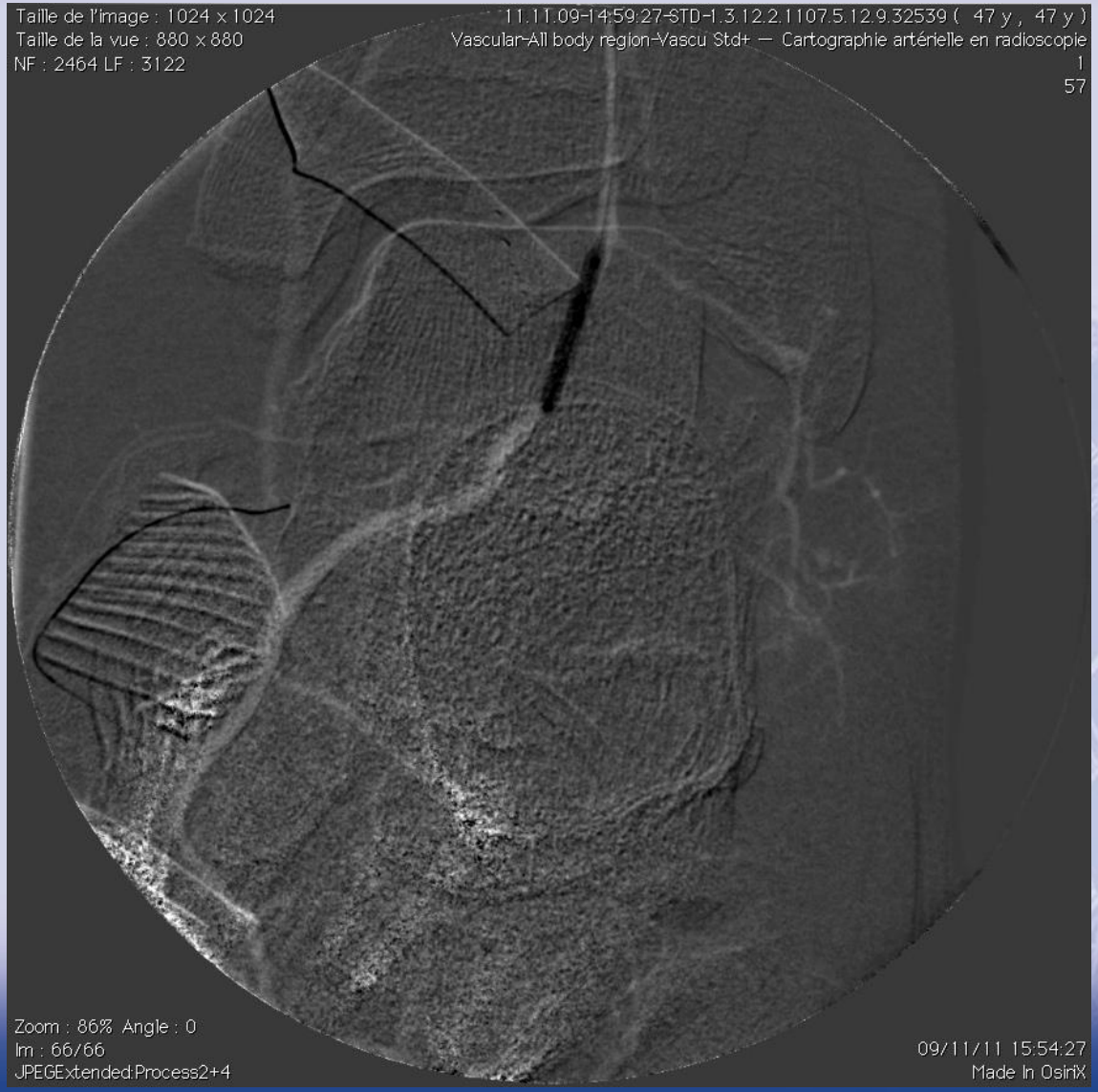
Balloon 2x20mm



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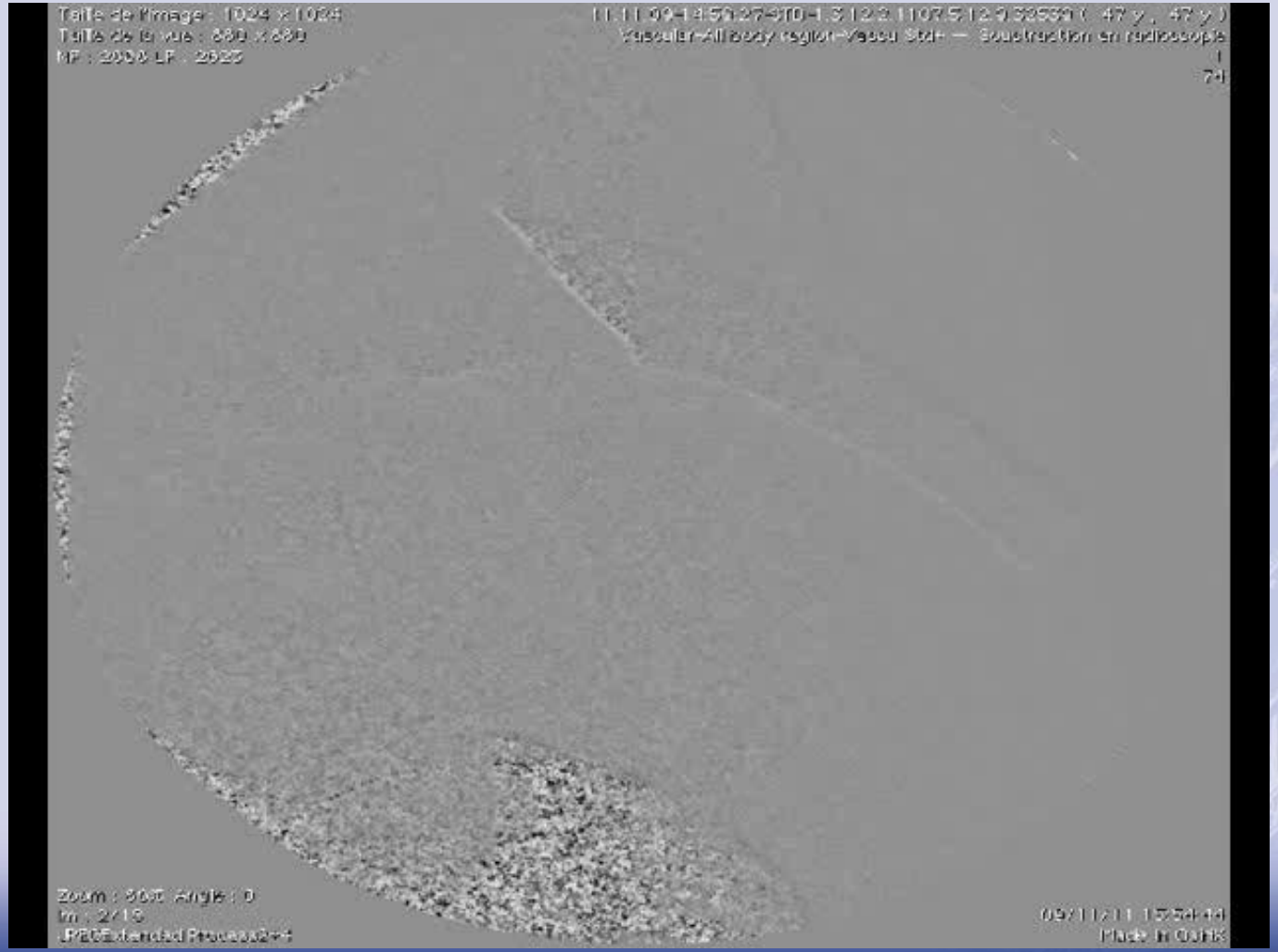
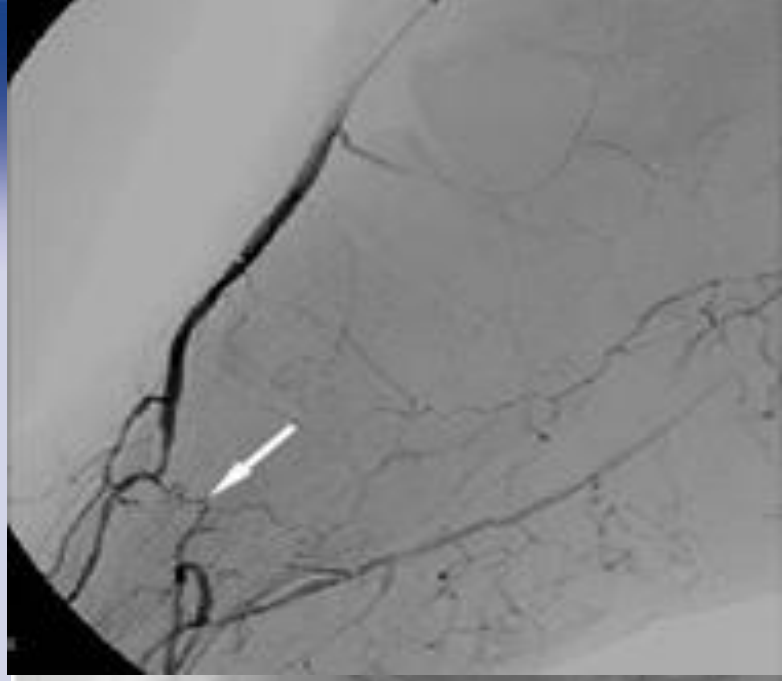
FINAL RESULT

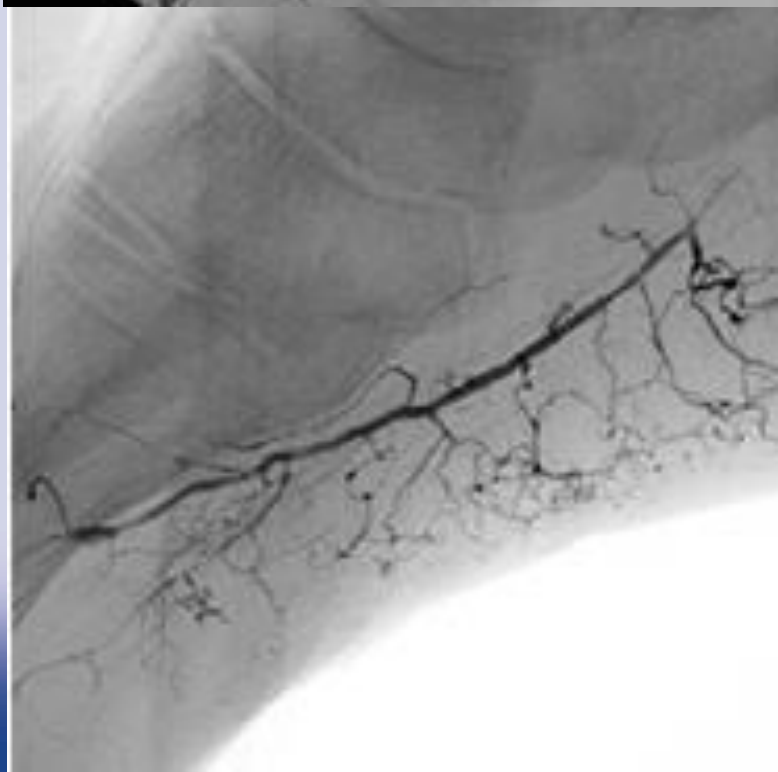


2 – In foot Treatment

PTA occluded , ATA and PA patent

Poor supply to the back foot by lack of collaterals formation and **interruption of the plantar loop**



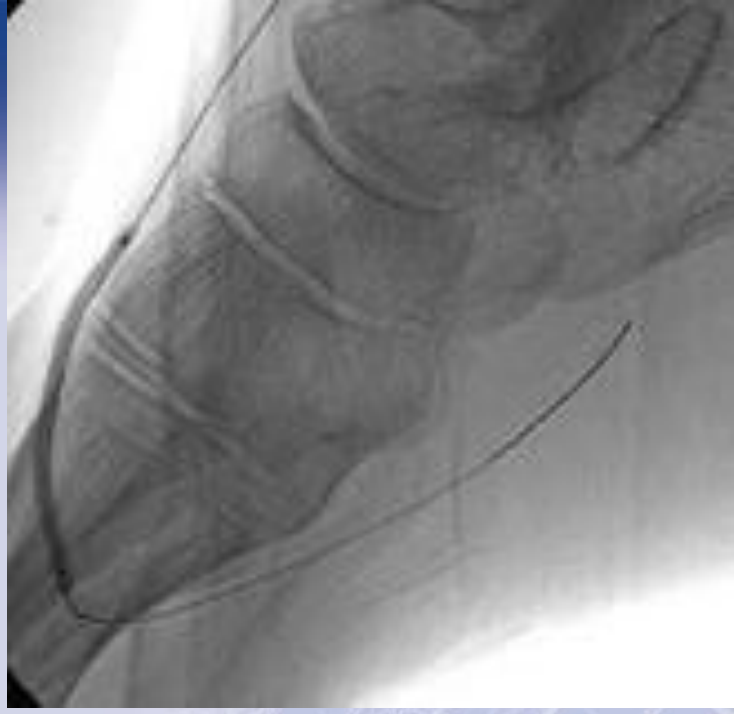


ISSUE N°17 2006 – Clinical Vision
Graziani L, Silvestra A.

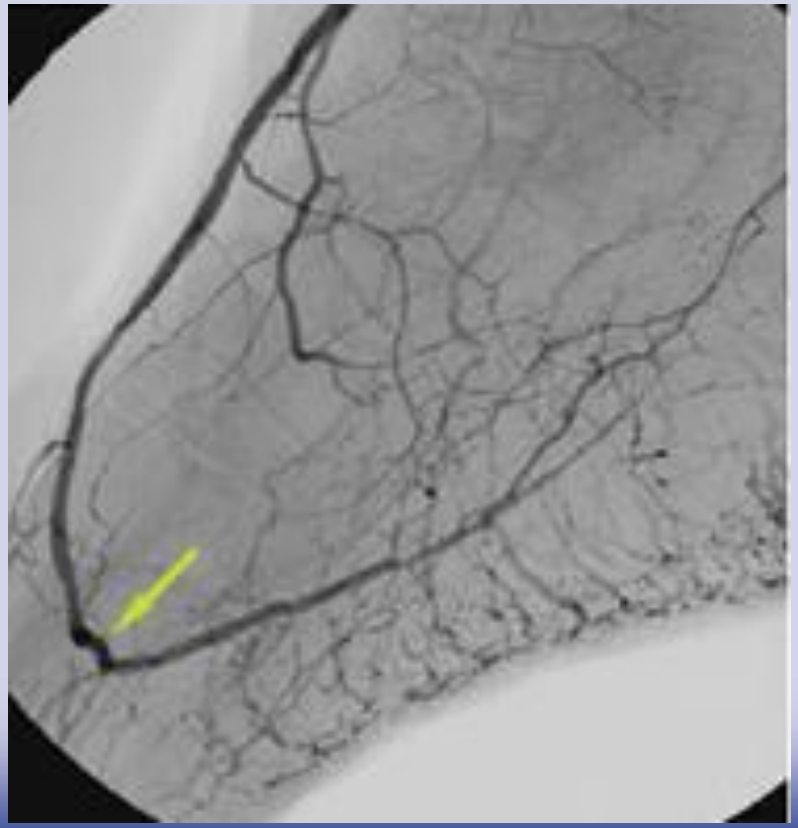
- Hydrophilic 0.014" guidewire

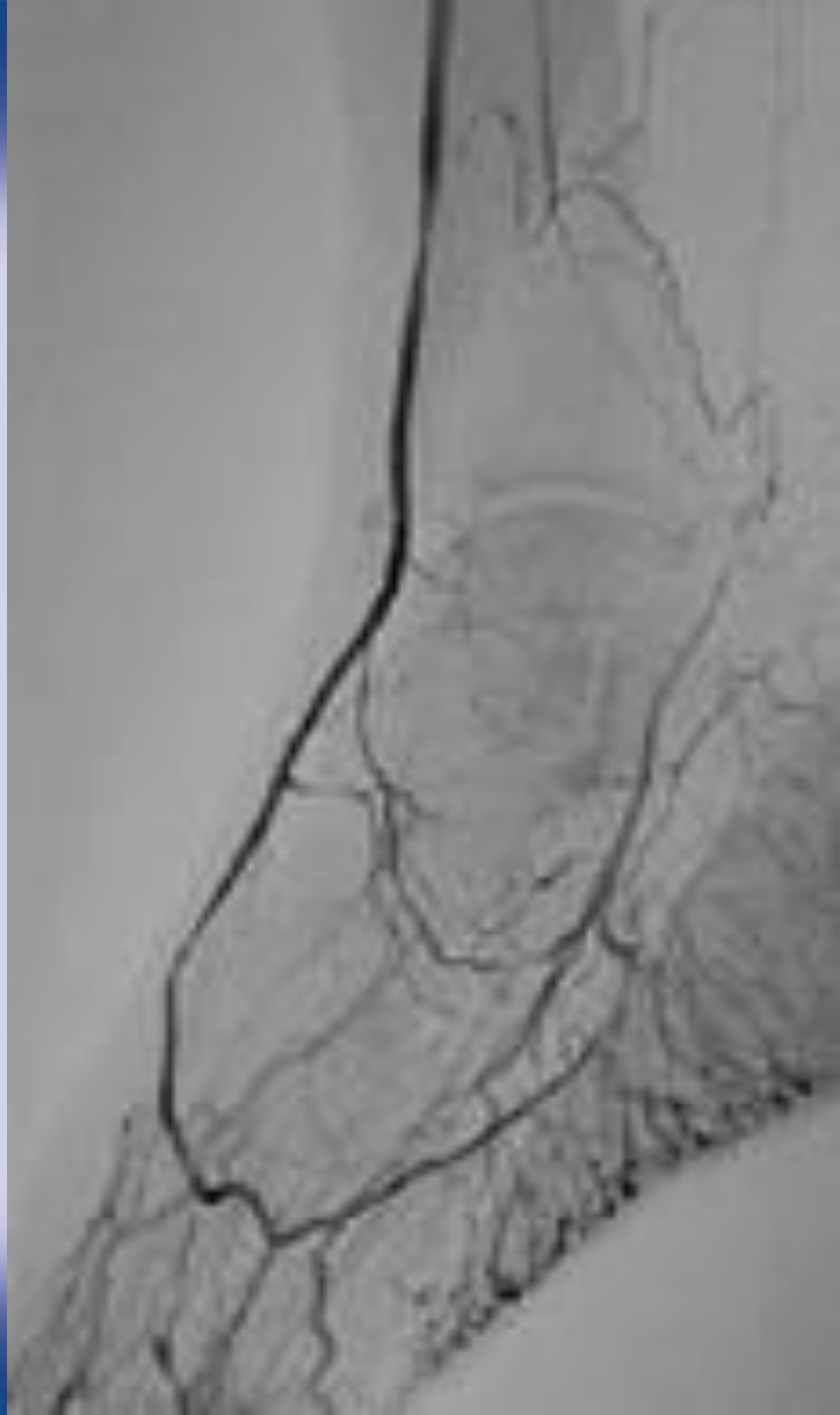
- OTW support catheter to the plantar arch

- 2 x 40mm balloon is inflated in two steps at 12 atm



Final result : The perfusion increased significantly to the back foot





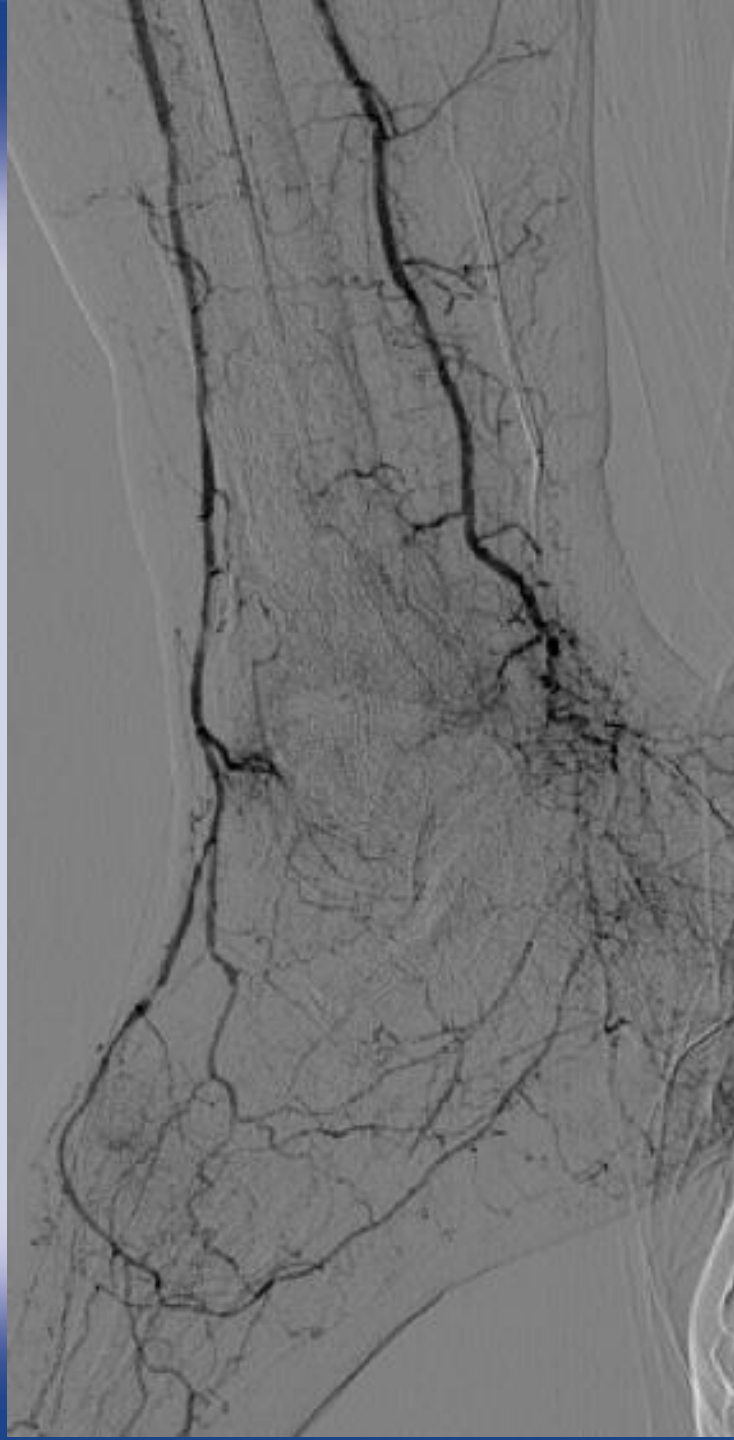
2 – In foot Treatment

Arterial status on a diabetic patient

Rutherford 5

with ineffective antegrade recanalisation of the distal part of the PTA

Werner M et al.
Liepzig group - LINC



Angioplasty with low profile balloon

The inflation should last between 60 and 180 seconds

The balloon size for foot vessels and plantar arch is usually 1.5 - 2 mm

The inflation pressure ranges between 7 and 10 atm

- Reverse recanalisation of the PTA with the 0.014’’ wire supported by the inflated balloon into the loop.
- 2nd Balloon on the wire for an antegrade angioplasty

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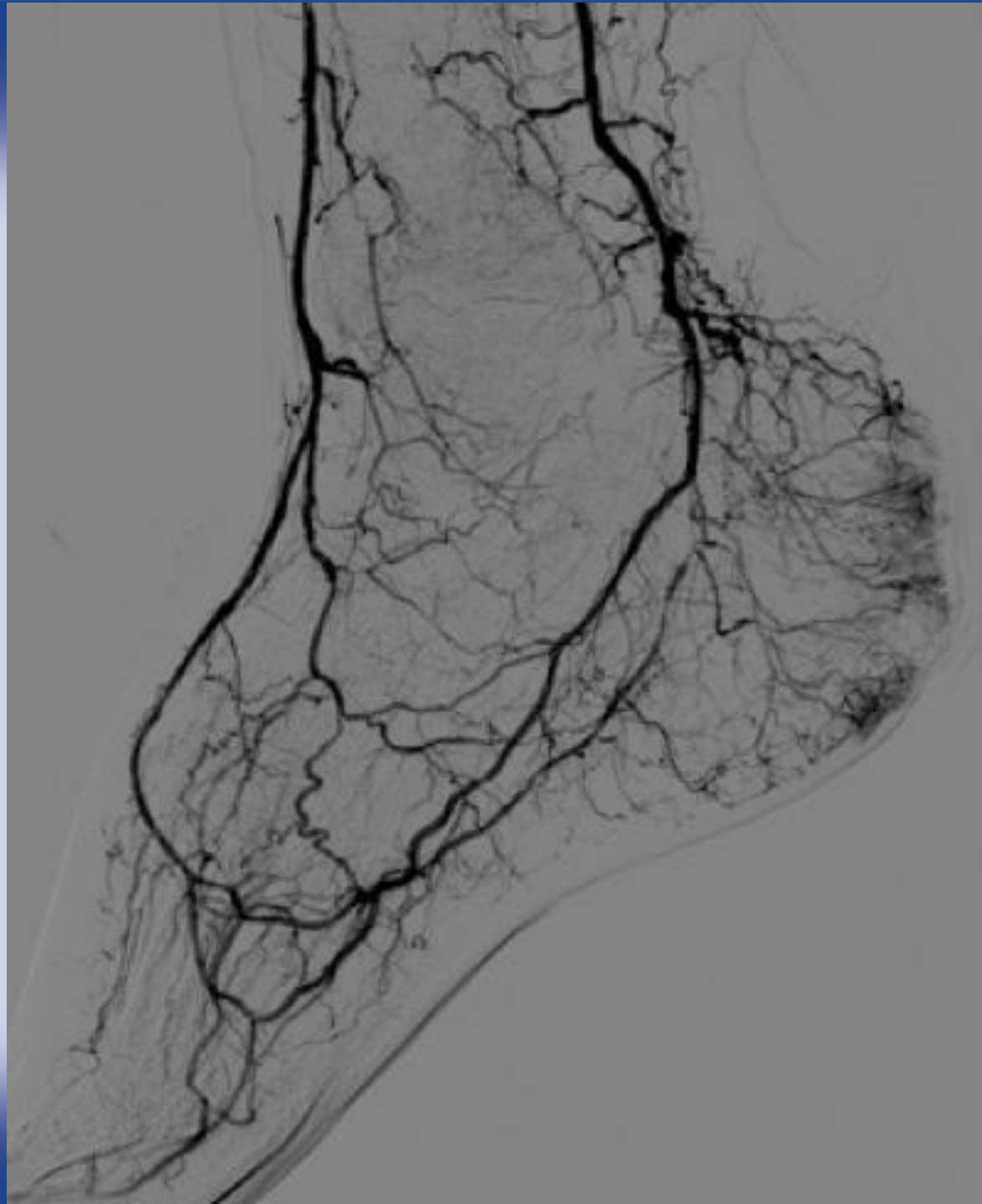
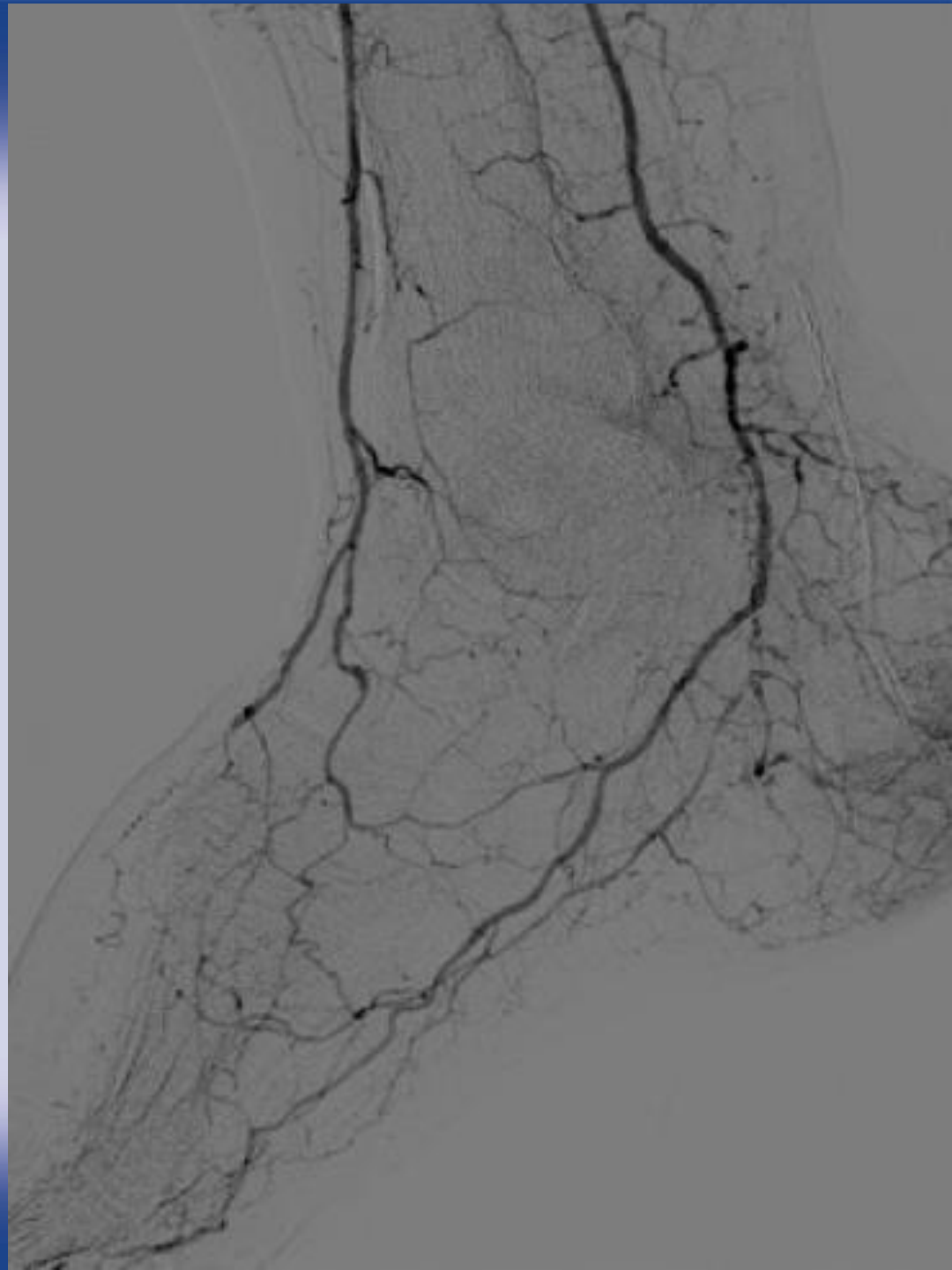
Final control



Six Months follow up !!!!!

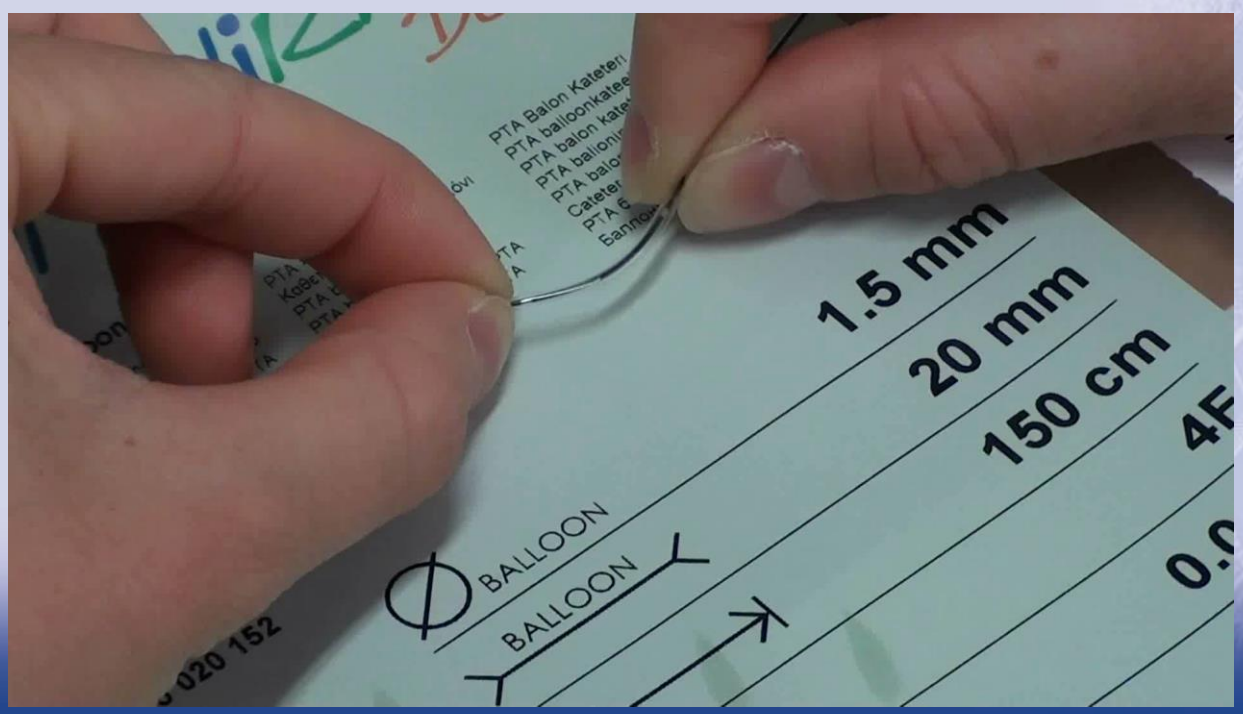


Manzi, et al. Clinical results of below-the knee intervention using pedal-plantar loop technique for the revascularization of foot arteries. J Cardiovasc Surg (Torino) 2009;50:331-7

- Reported excellent results in clinical study with :
  - 85% of acute success rate
  - 86% of limb salvage rate
  - and 7.5 to 8% of repeated target vessel percutaneous transluminal angioplasty
- Our experience
  - 81.3% of technical success
  - 84% of limb salvage
  - Angiogram at 6 months: **77% were re-occluded !!**

In-foot inflation

- However flexibility of the balloon is all the more relative and the arterial stress must be very important explaining the reserved results in the mid and long term patency rates



1.5x20mm
0.014" Rx

In-foot inflation

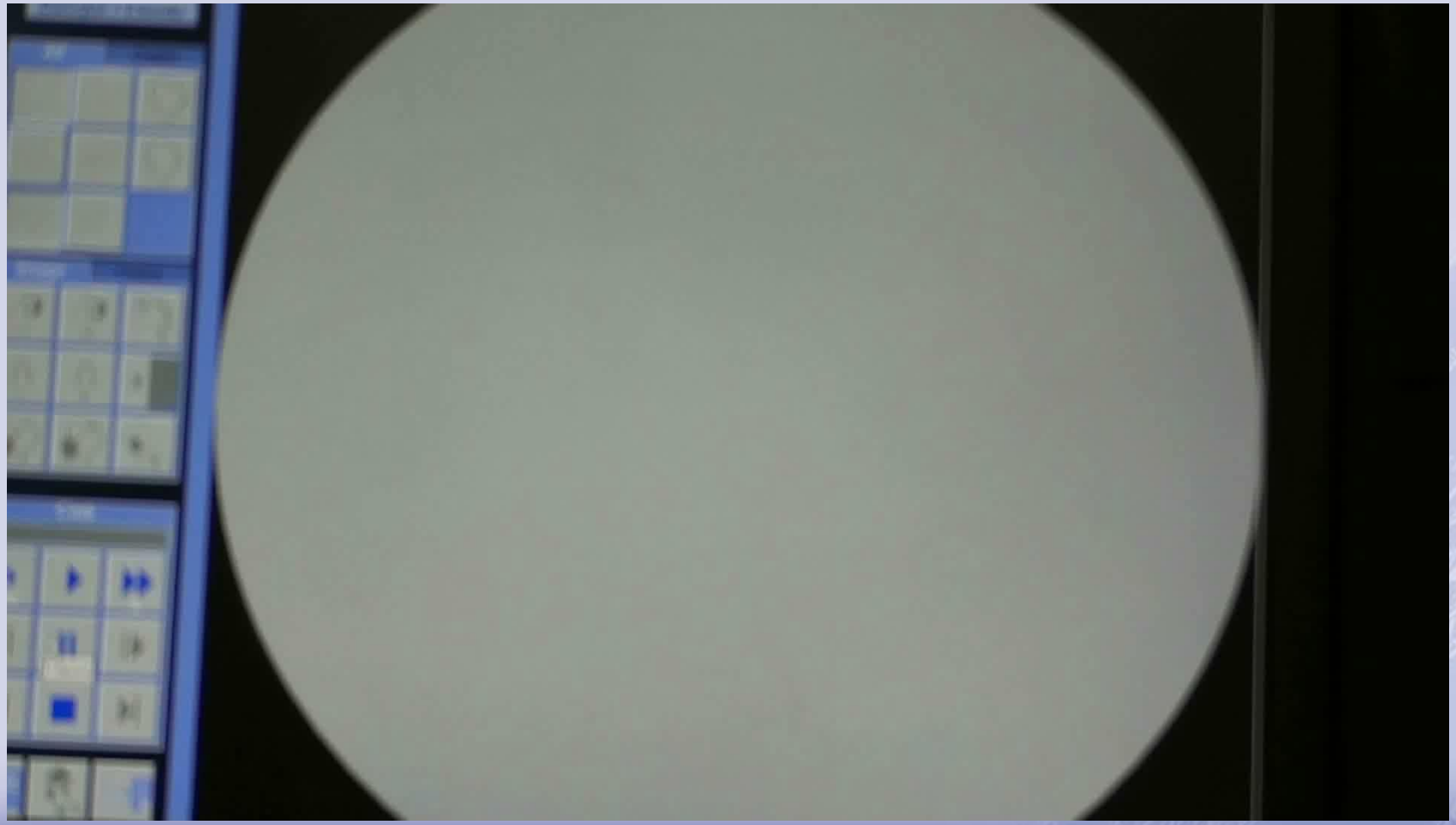
- 1.5X20 mm maximum length for focal inflation
- 1.25 mm more flexible for long lesions
- 0.014’’ wire + support catheter usually sufficiant for lumen re-opening

3 - Retrograde recanalisation

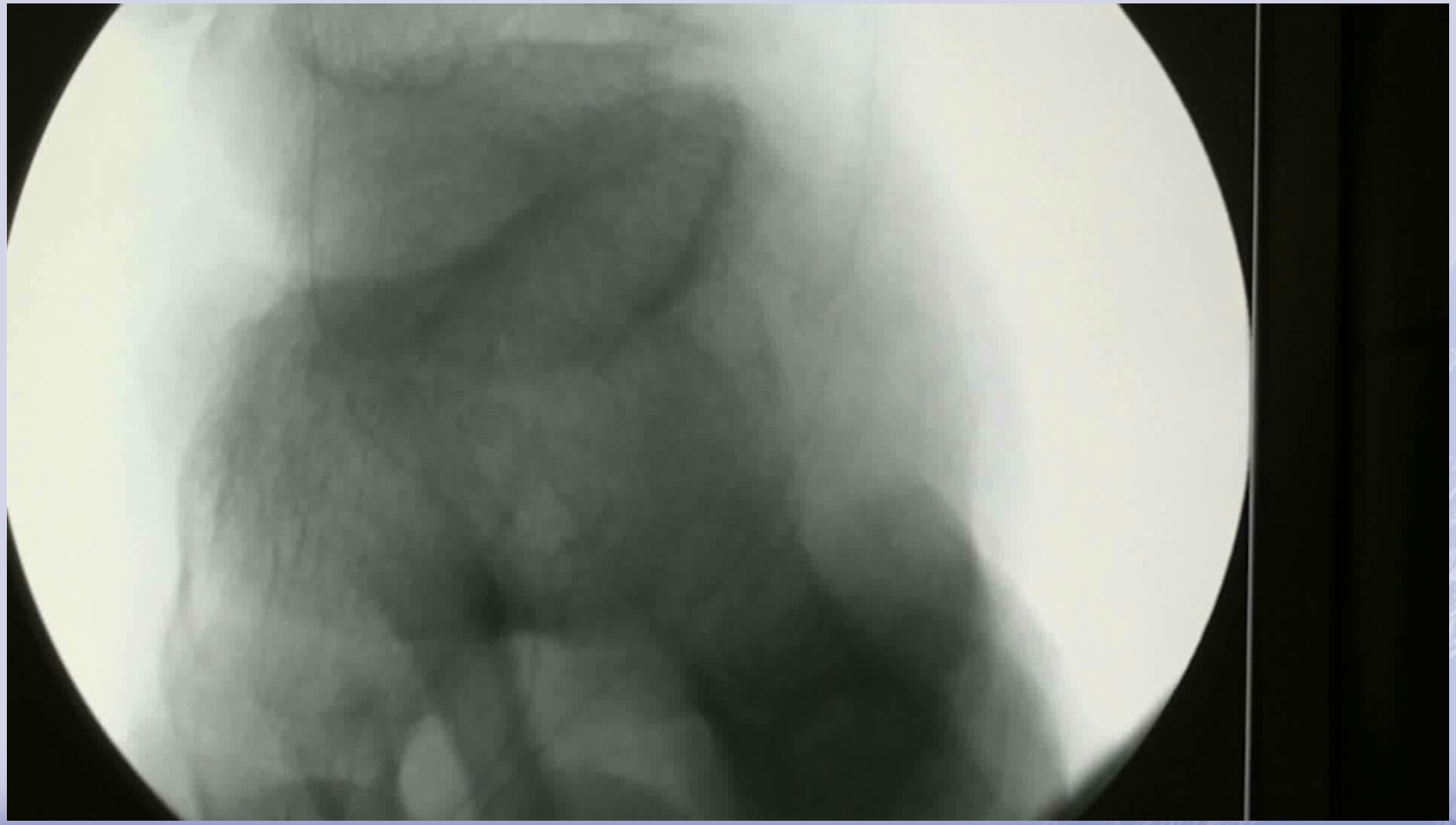
- Arterial status for BTK disorder

3 - Retrograde recanalisation

3 - Retrograde recanalisation



3 - Retrograde recanalisation



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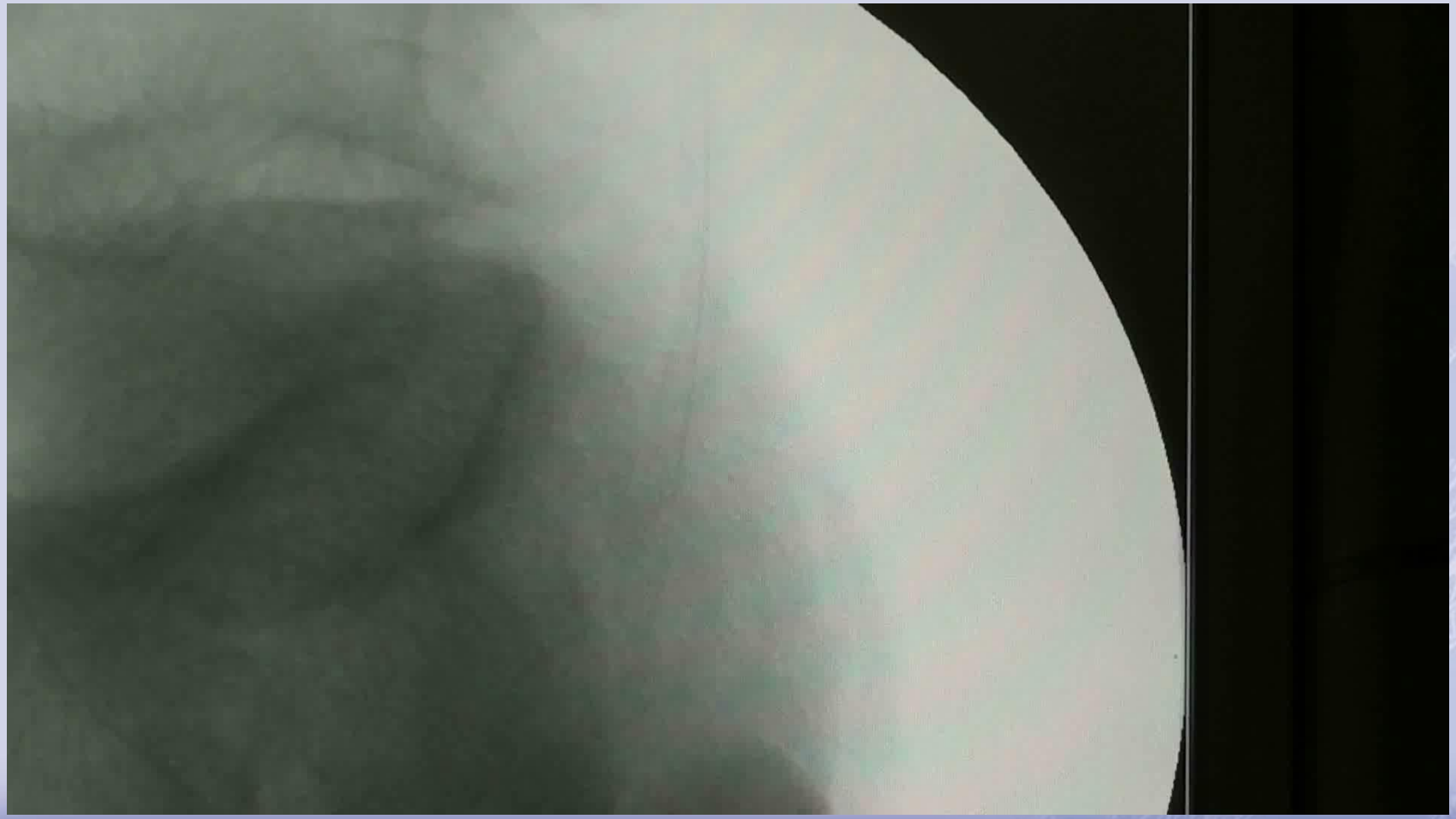

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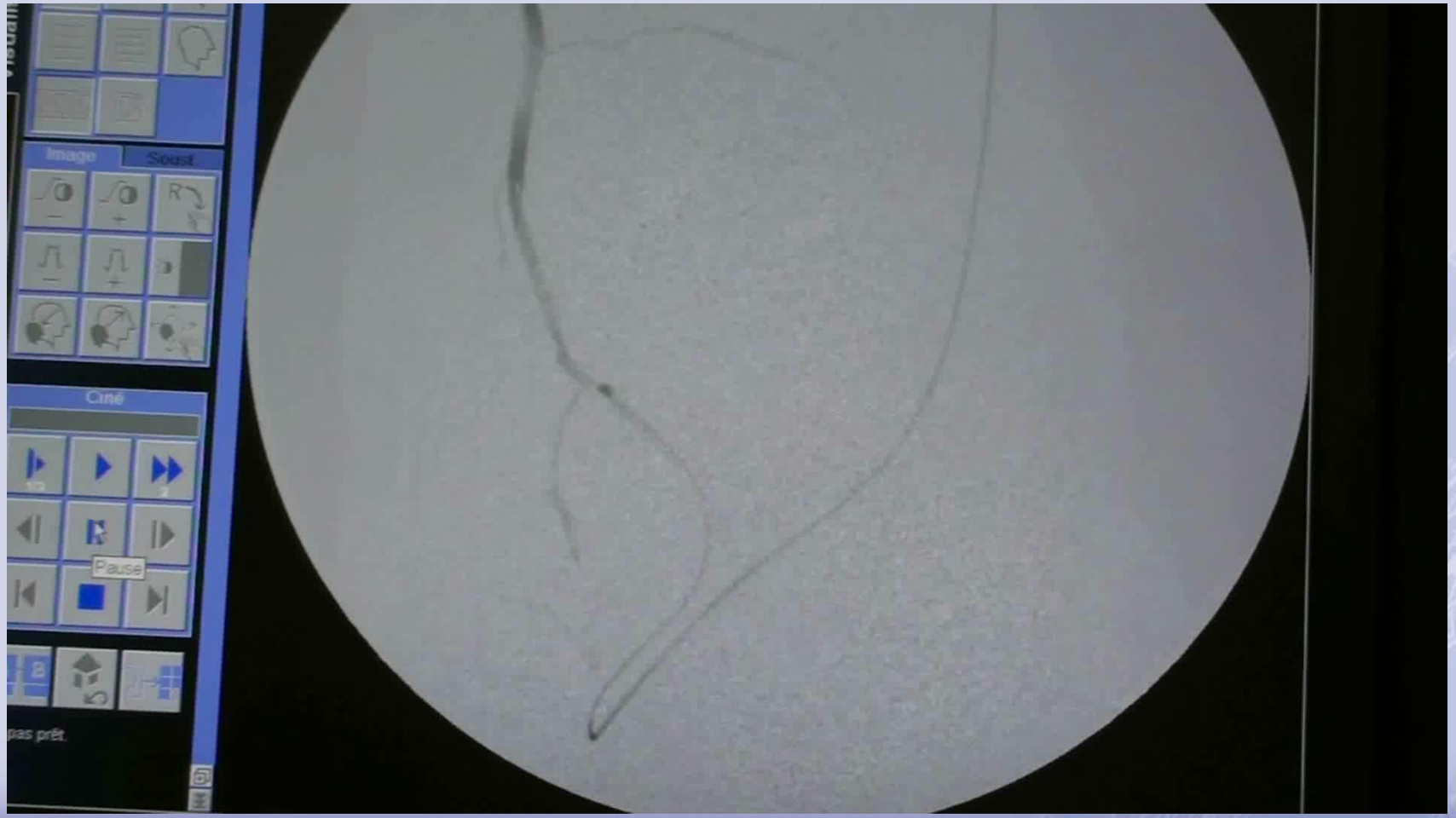

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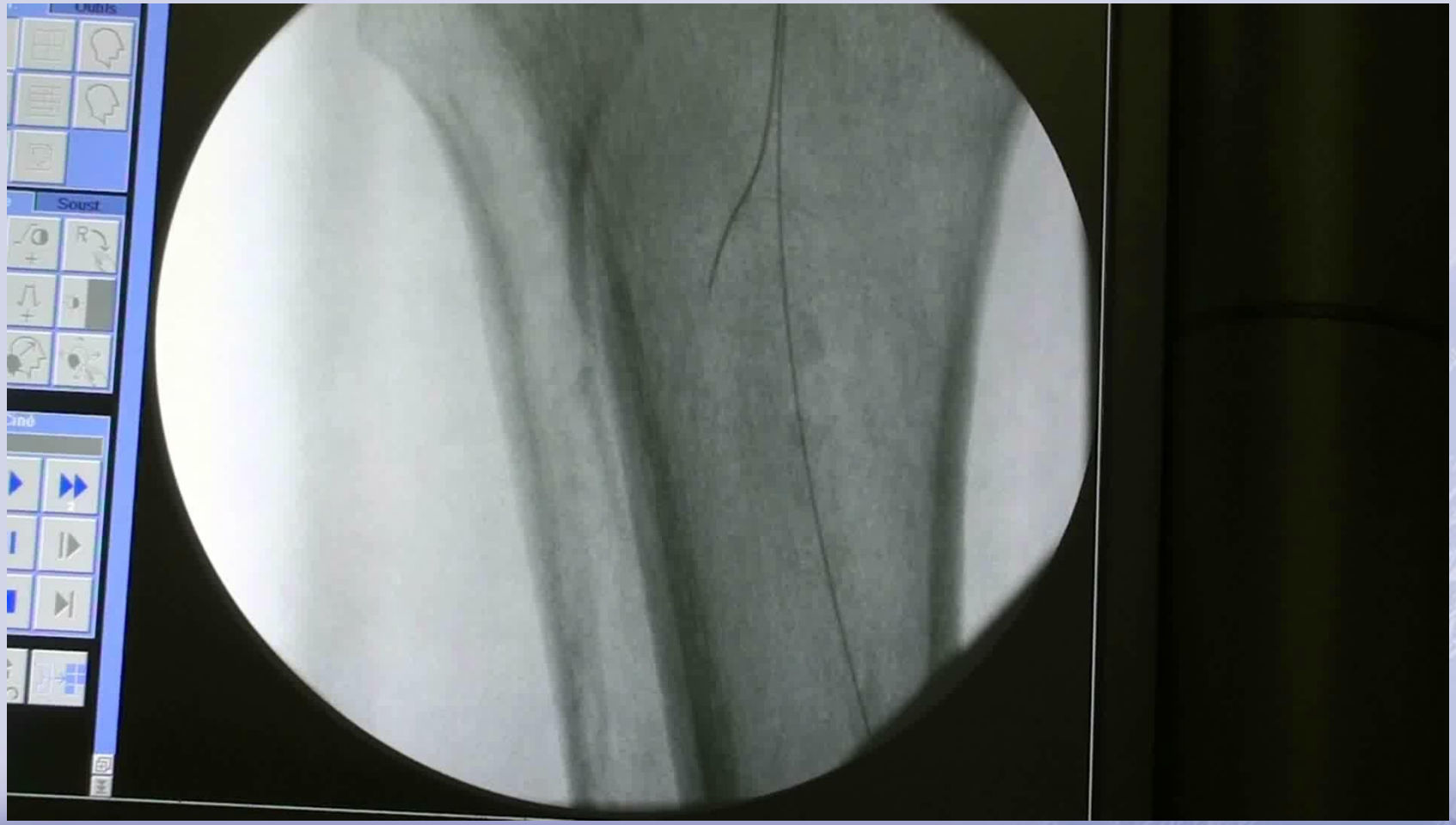

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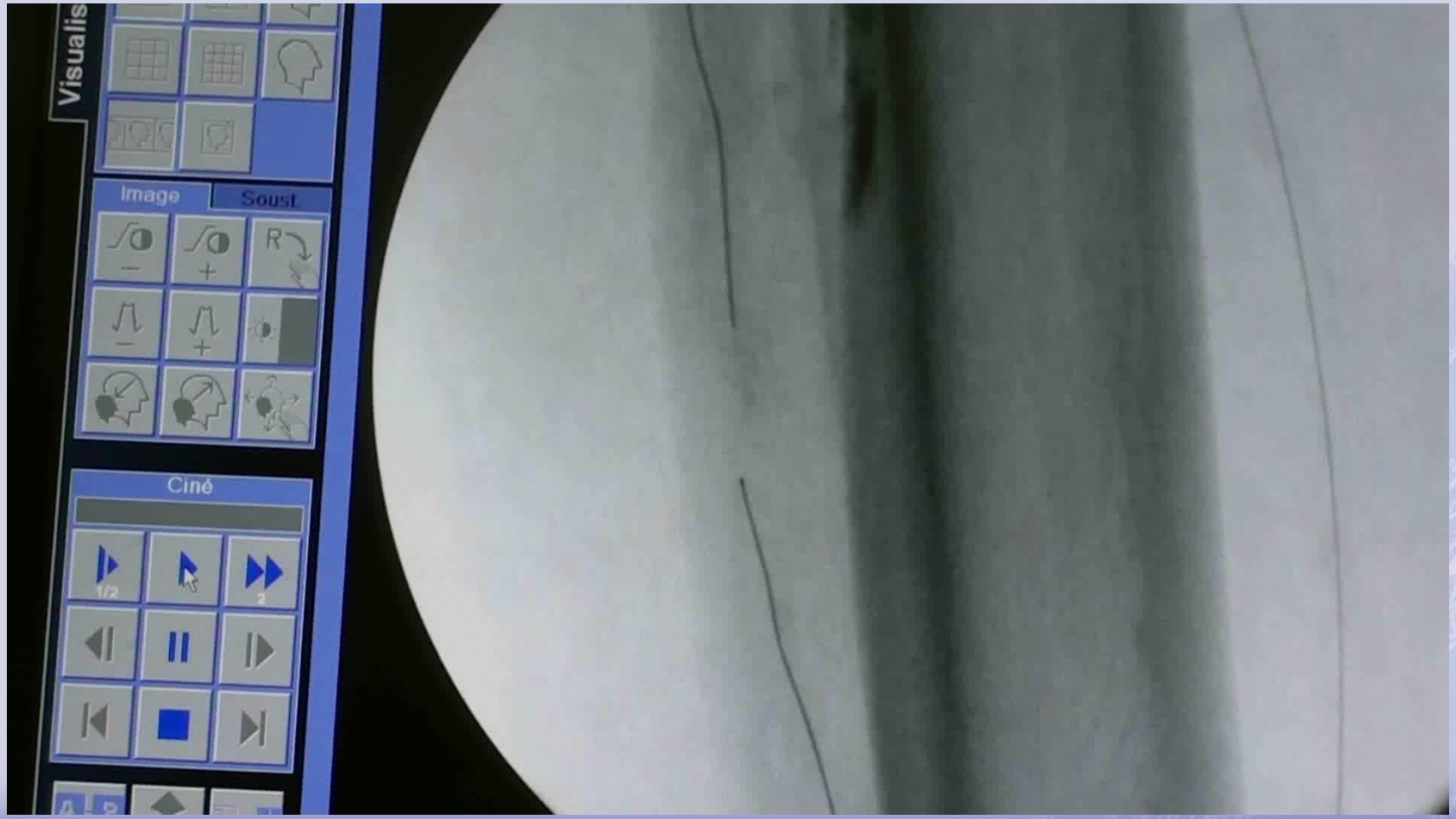

Conclusion

- Loop technique is efficient for
  - Distal wire stability
  - In foot lesions treatment
  - Moreover for retrograde recanalisation
- The knowledge of the anatomy, technique and use of specific devices is crucial

CONCLUSION

- Most advanced endovascular treatment for BTK and in-foot lesions are efficient

Thank you