

CONTROVERSIES & UPDATES IN VASCULAR SURGERY
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Deep venous reflux repair: how to avoid bad results, how to manage complications?

OSCAR MALETI

Hesperia Hospital Modena, Italy

Dept. Cardiovascular Surgery

International Center of Deep Venous Surgery

National Reference Training Center in Phlebology (UEMS)

www.chirurgiavascolaremodena.com



Disclosure:

Speaker: Oscar MALETI

I do not have any potential conflict of interest

Rules to achieve good surgical results

1. To apply a **correct surgical choice**, based on accurate diagnosis:

- Identifying the etiology of reflux

Primary [E_P]



Secondary [E_S]

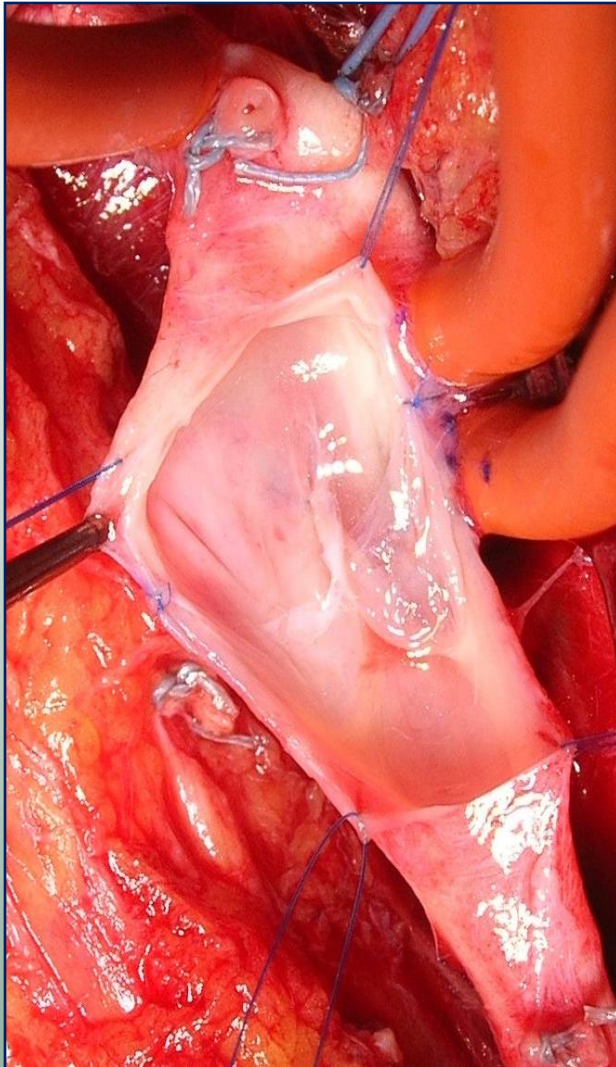


Congenital [E_C]

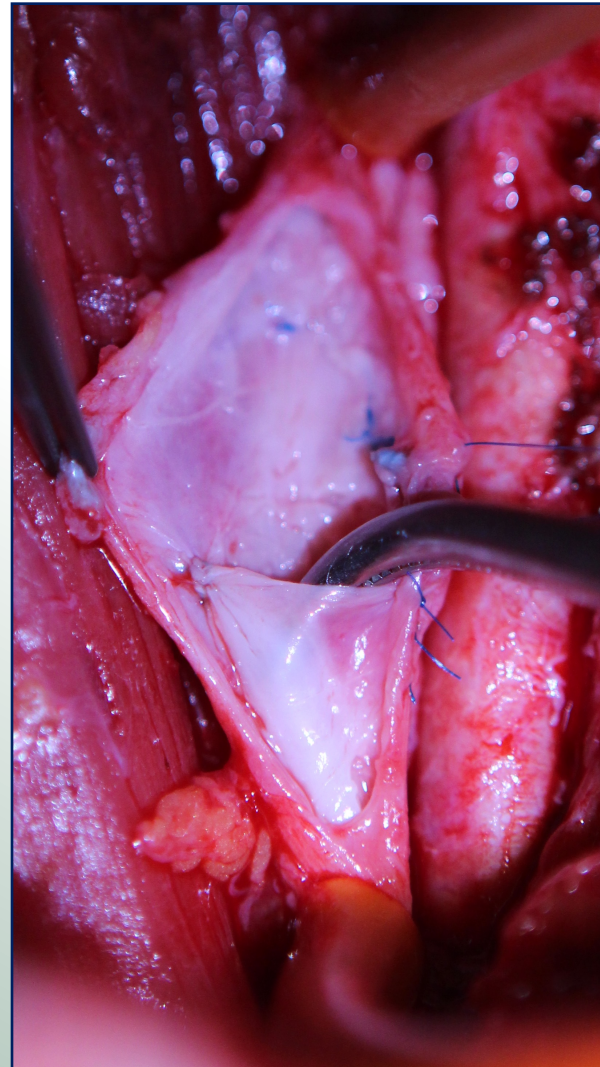


- Applying the most appropriate surgical technique

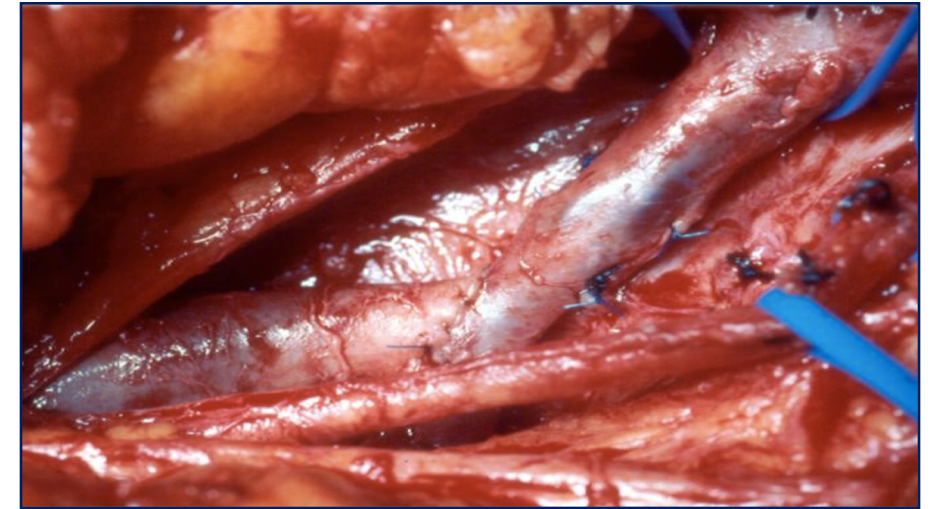
Valvuloplasty



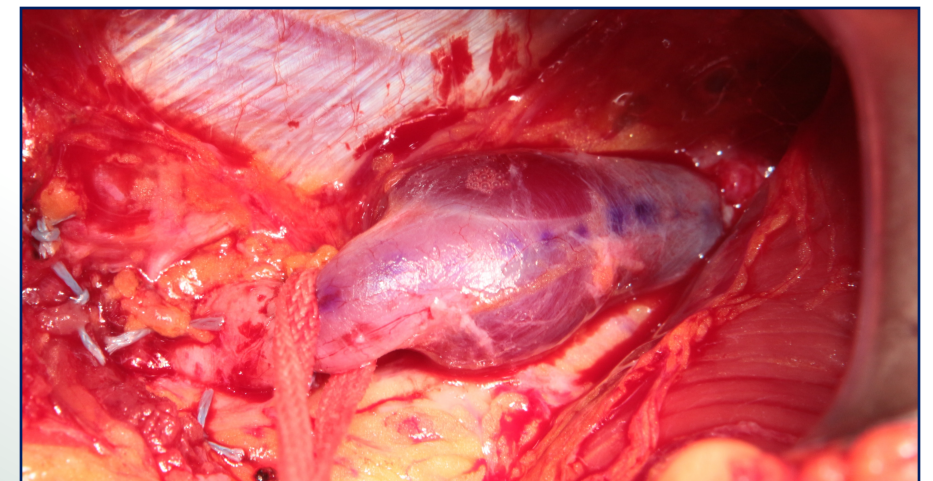
Neovalve



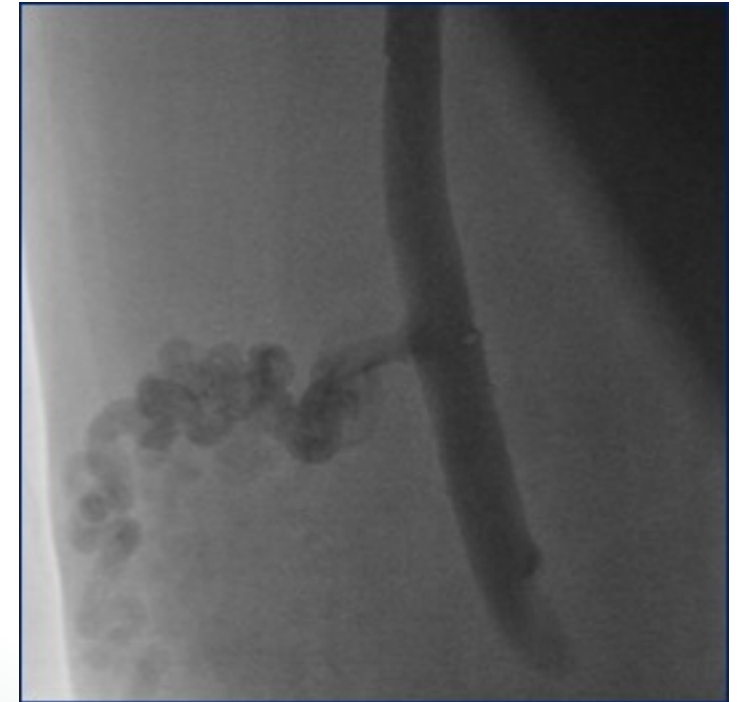
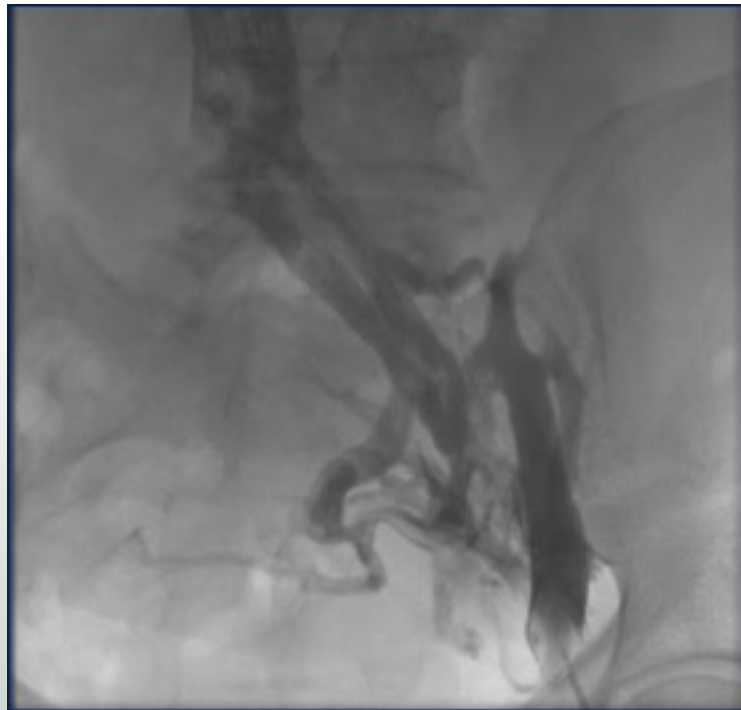
Valve Transposition



Valve Transplant



In DVRS it is mandatory to apply a strategy, given that frequently multiple hemodynamic disorders co-exist



In PTS, in most cases
**obstruction and reflux are
associated**



2.

The proximal associated obstruction should be treated first



NIVLs [E_p]



PTS obstruction [E_s]

When **reflux is isolated** we treat only this disorder

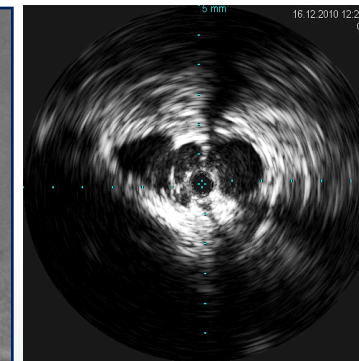
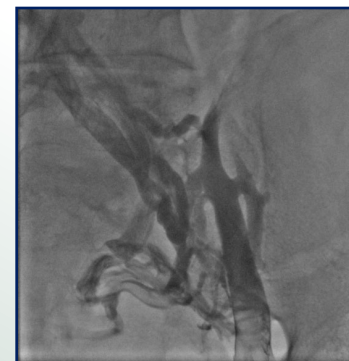
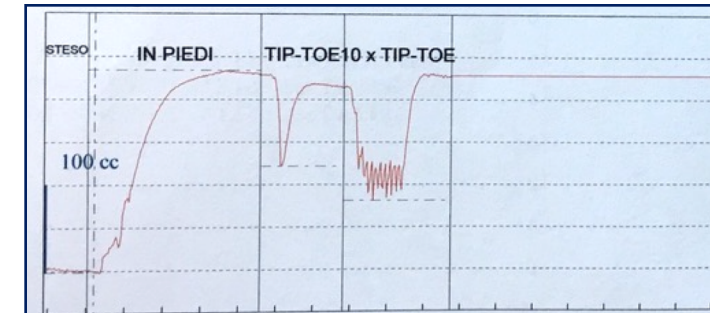
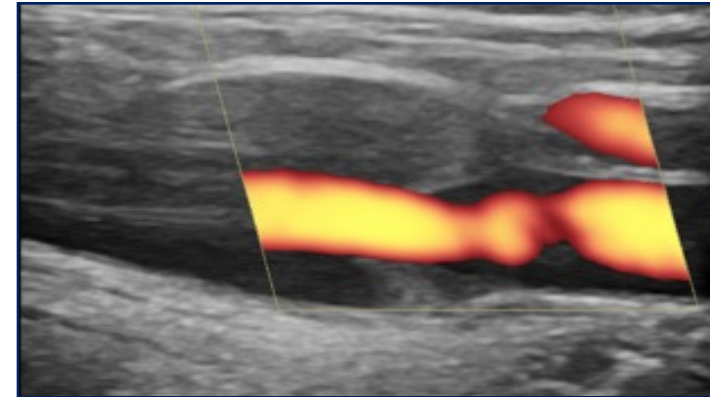
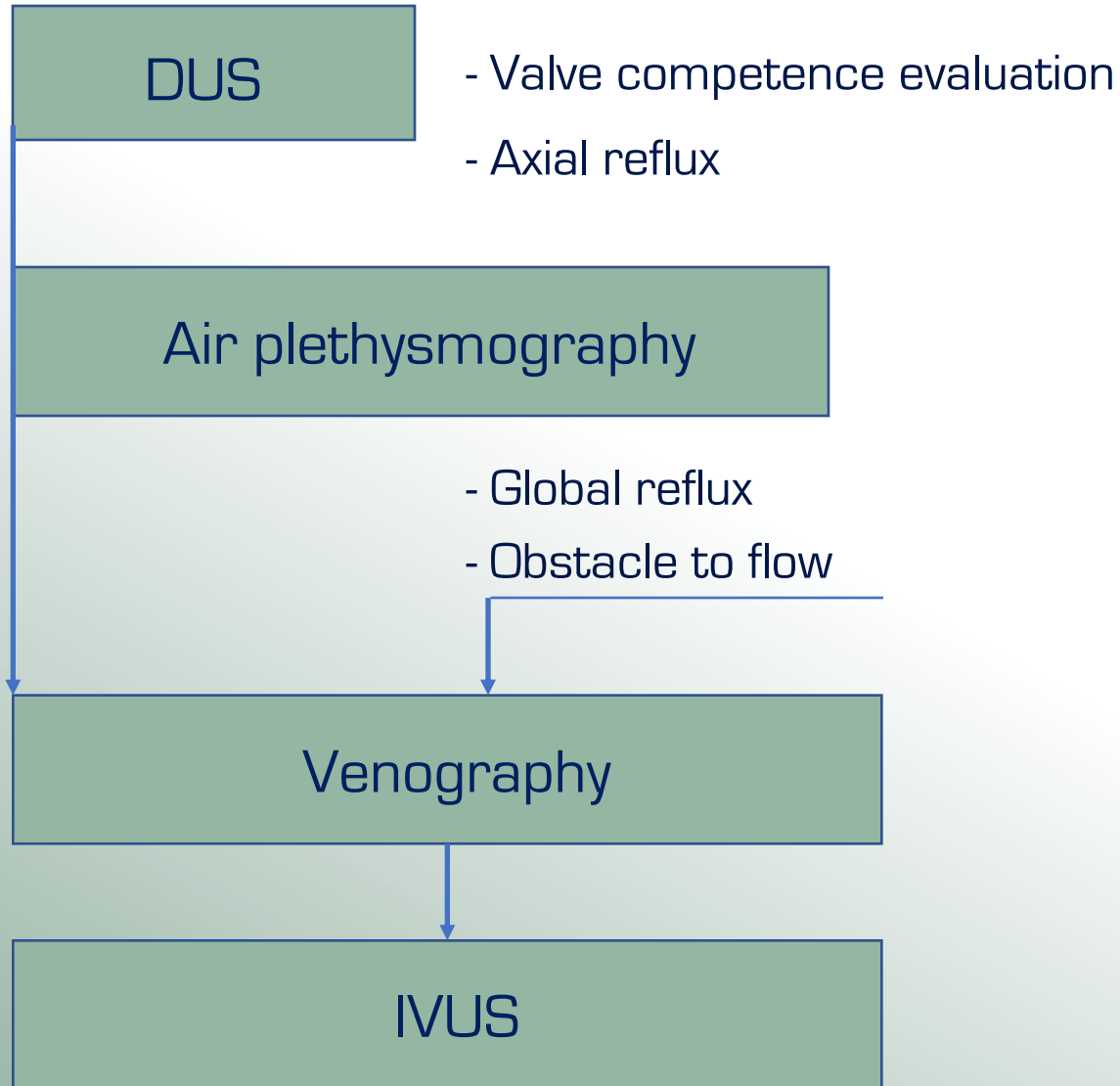


However **PTS** is an **evolutive disease**.

Obliteration can occur in the long term, also several years after surgical correction of the deep reflux



3. It is fundamental, after reflux correction, to apply a correct FU



When a new obstruction has been detected, **proximal stenting is mandatory** to avoid missing the competence at the valve reconstruction site



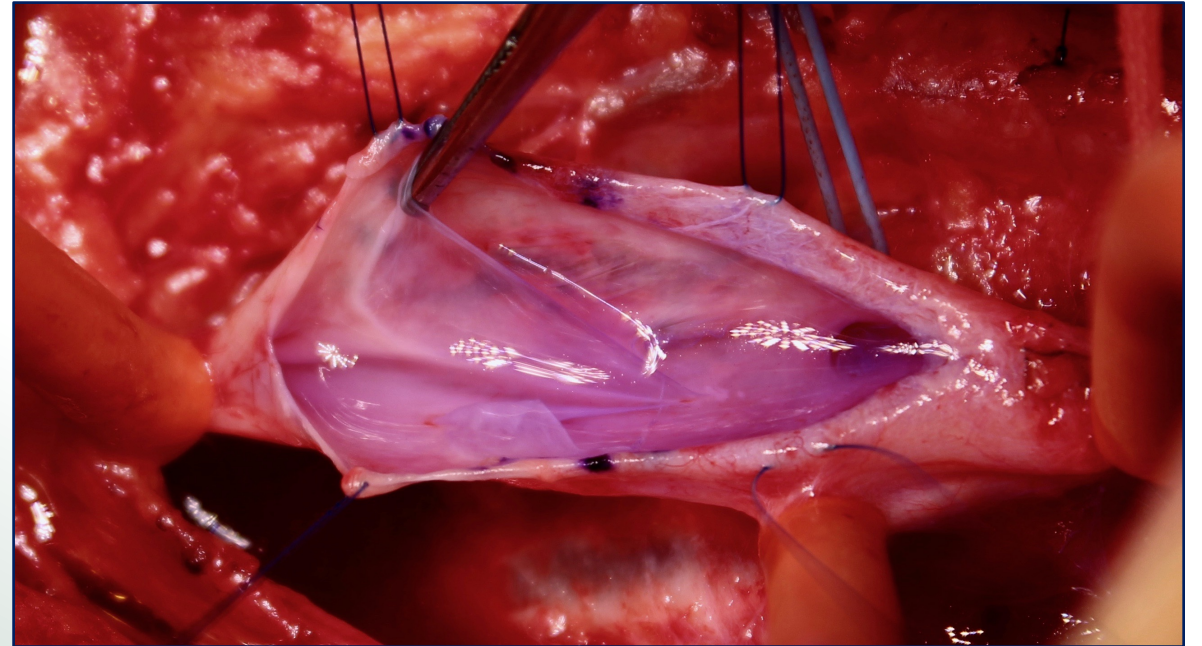
This point is **crucial**:
Preserving an adequate flow is fundamental, more
than correcting reflux

4.

Preserving an adequate flow does not concern only proximal obstruction

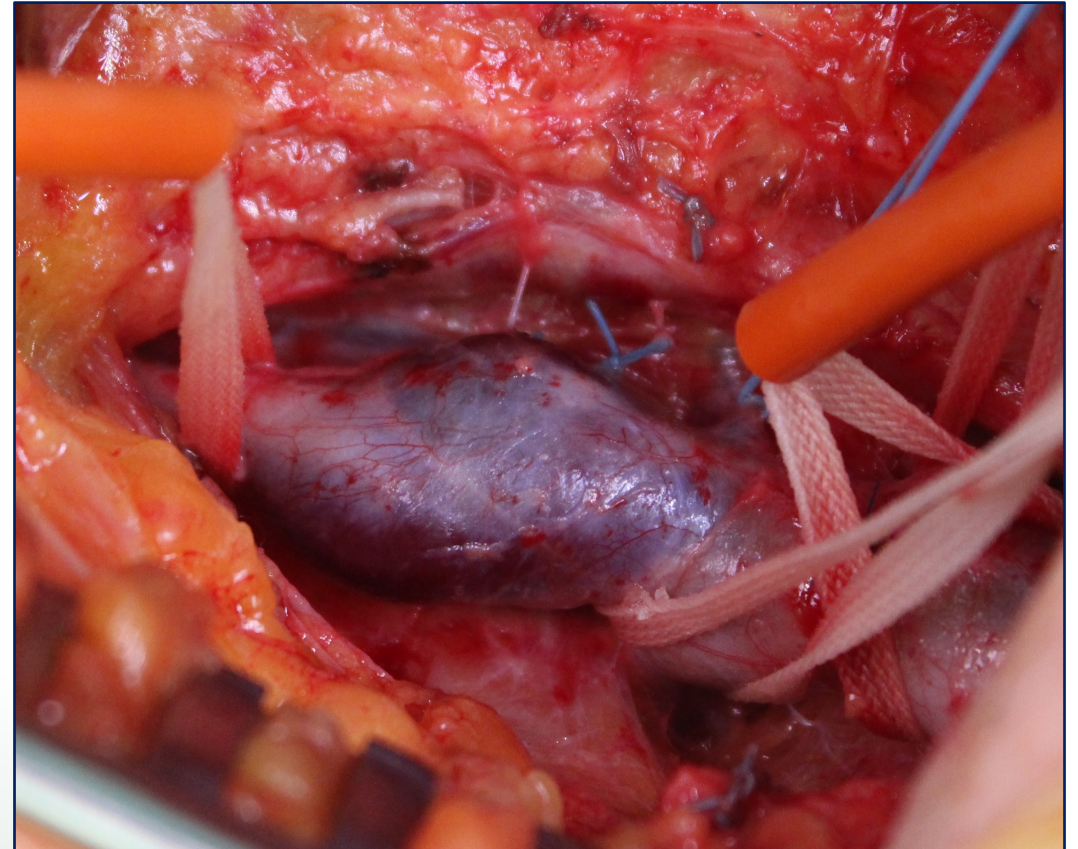
The flow **must be preserved also at the reconstruction site** when we perform a surgical reflux correction

$$R = \frac{8\eta L}{\pi \Delta P r^4}$$



The still unknown factor is **vein compliance** that is variable for each patient

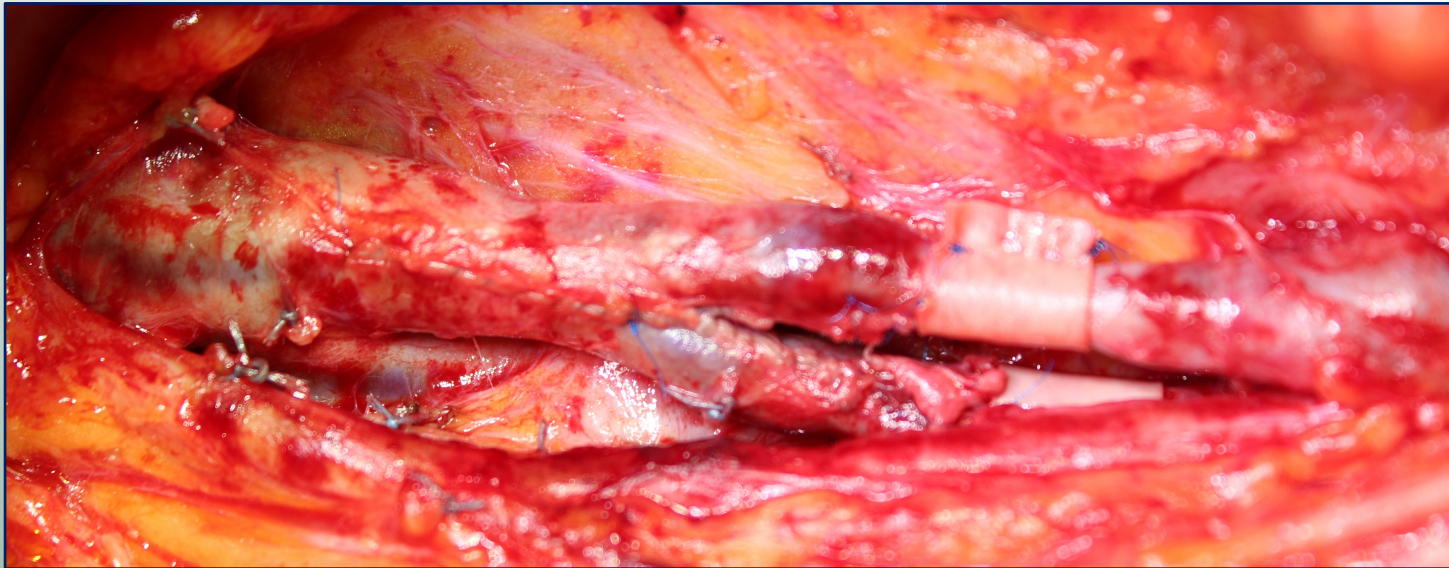
$$F = \frac{\pi \Delta P r^4}{8\eta L}$$



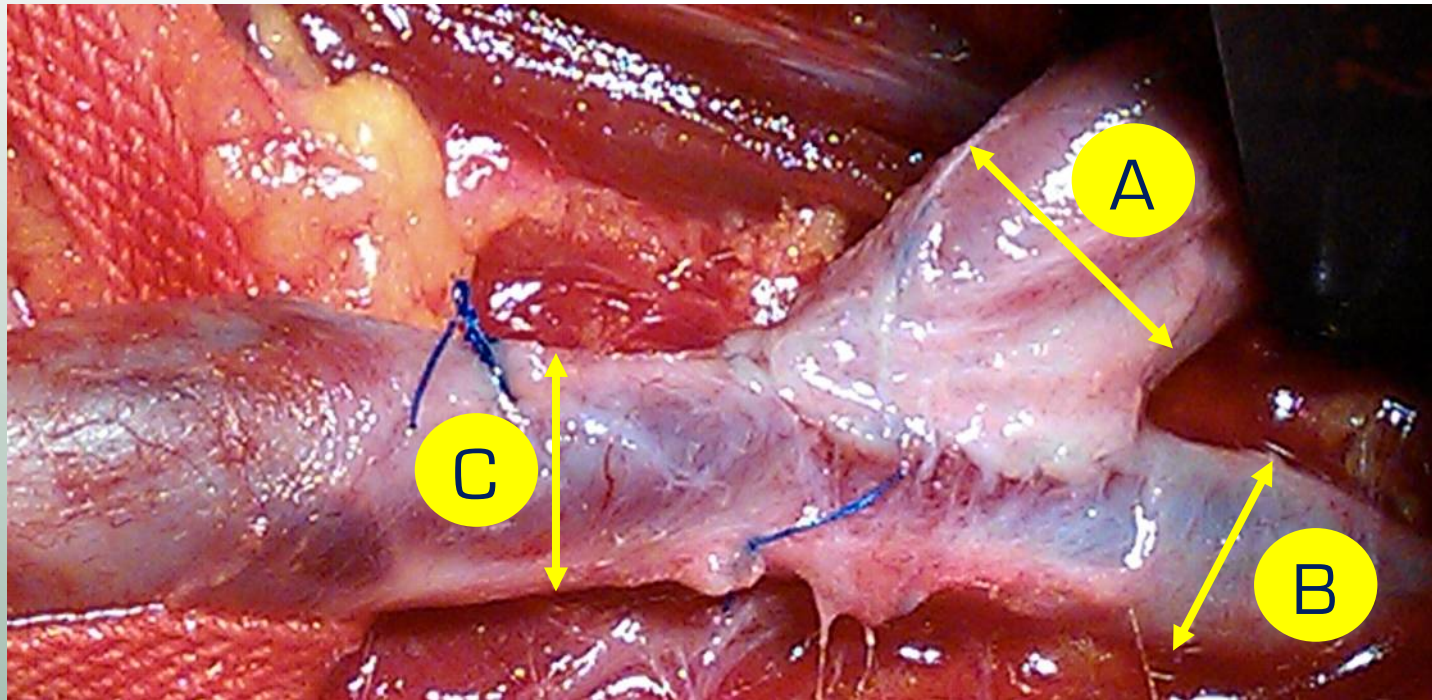
The direct consequence is that it is difficult to establish the best caliber of the vein in order to

avoid post surgical dilatation

avoid caliber reduction



In femoral-profunda transposition, as classically described, we could obtain an **early incompetence for dilatation after the procedure**, due to the fact that **two flows converge in a vein with inadequate caliber**



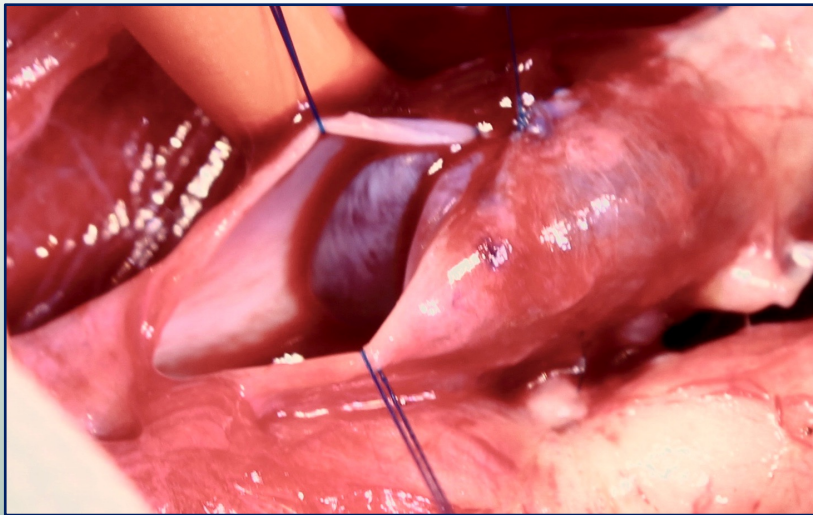
$$C = B$$

$$C \ll A + B$$

$$F C = F B + F A$$

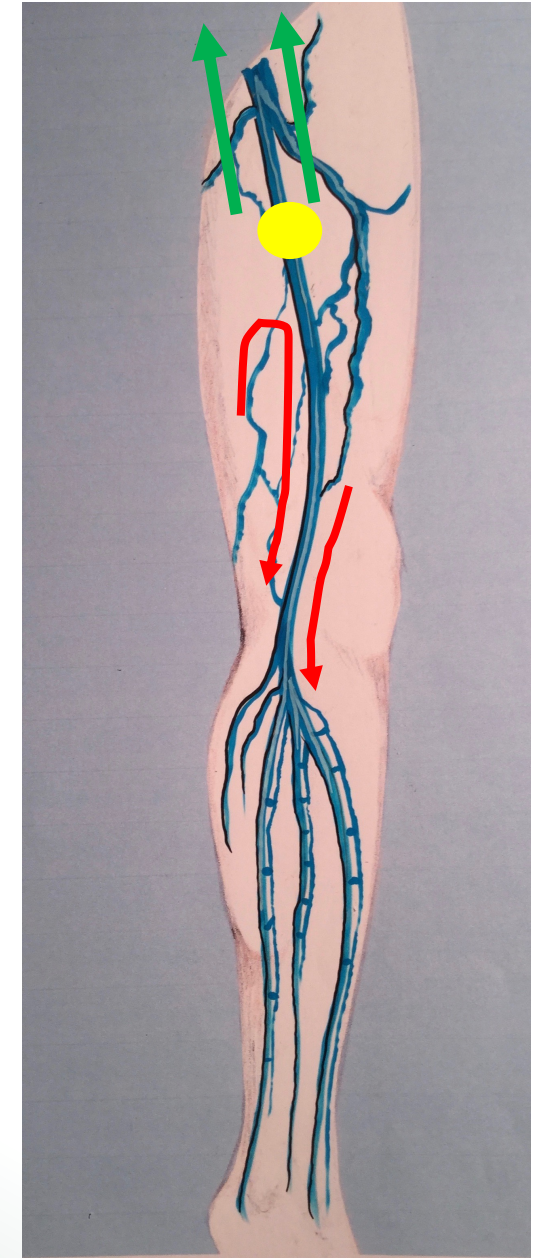
5.

The correction of deep reflux is usually based on **the creation of one non-refluxing point**, usually performed at femoral level.

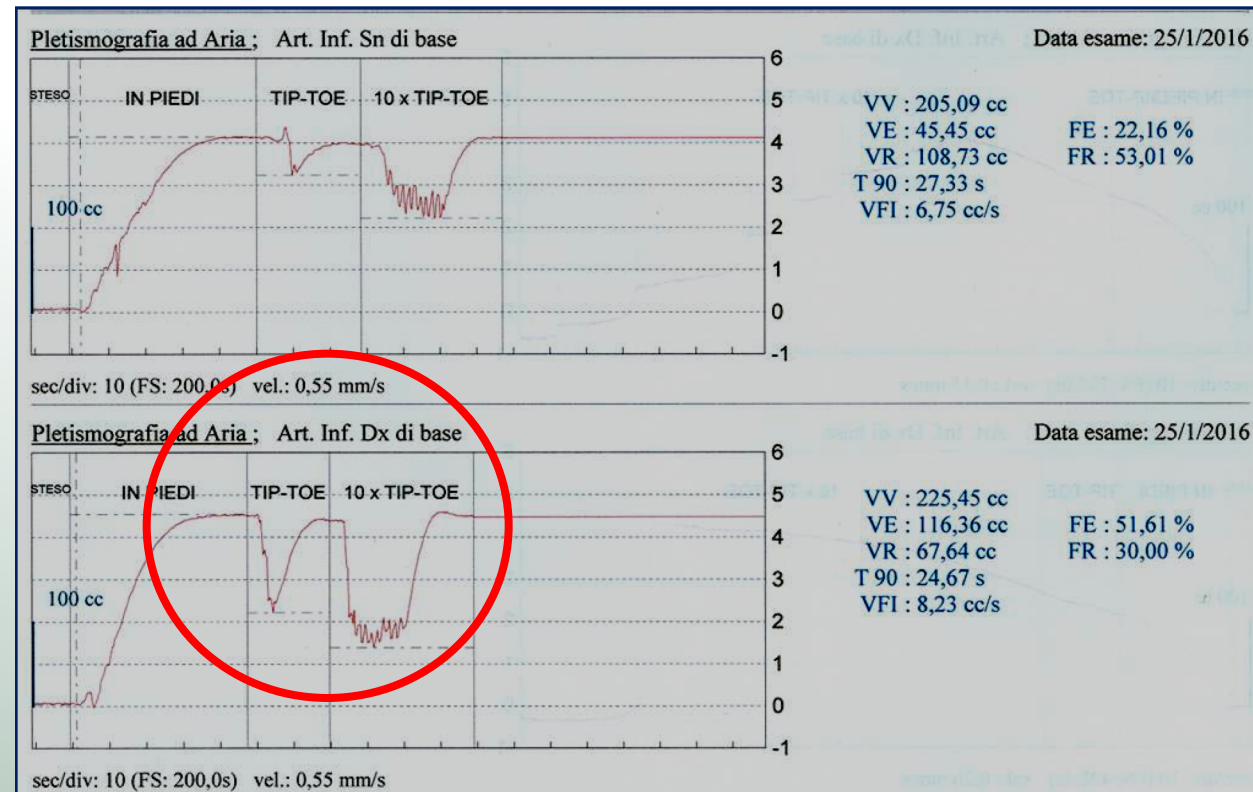


From this point to the ankle we still have an axial reflux

We need an additional factor



The efficacy of calf pump is fundamental and correlated with results.
Without this, the role of the new valve is negligible

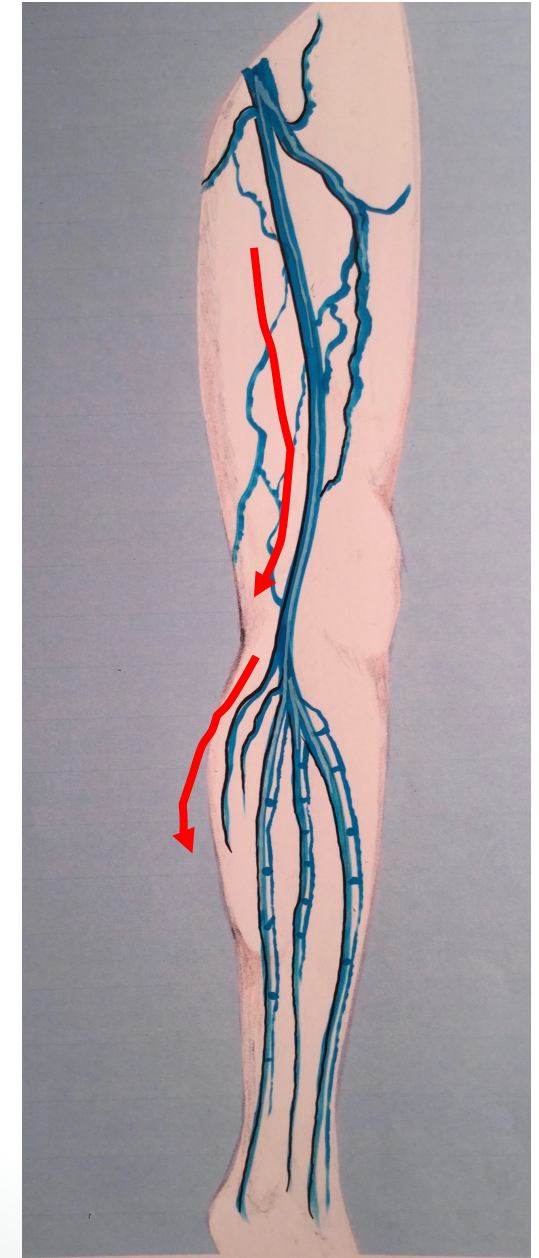
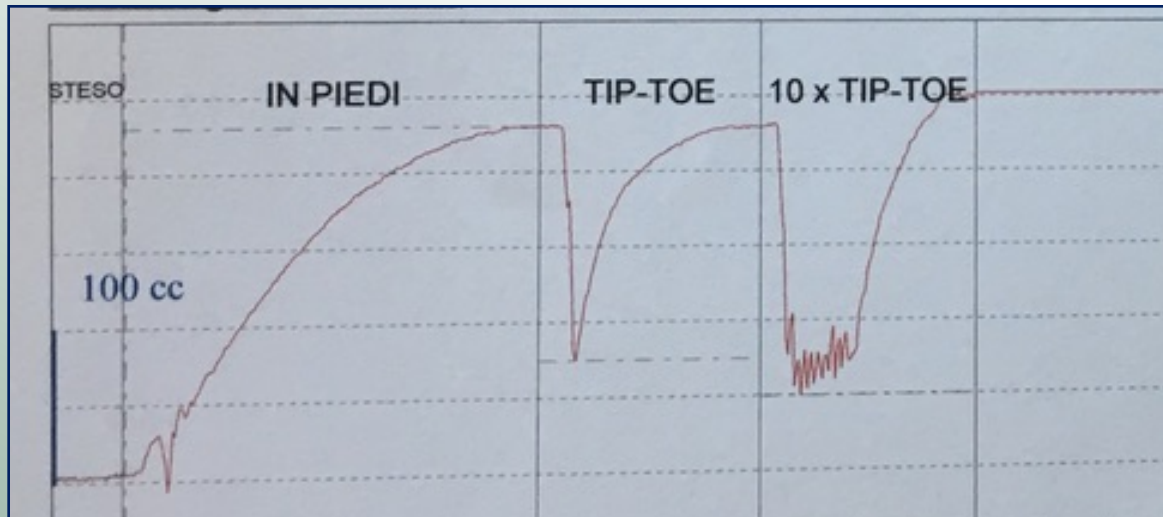


6.

The calf pump is associated with multiple varieties of reflux, but principally we can distinguish two events

a.) The muscle, through the gastrocnimius veins, can absorb the reflux increasing the venous volume and the ejection volume.

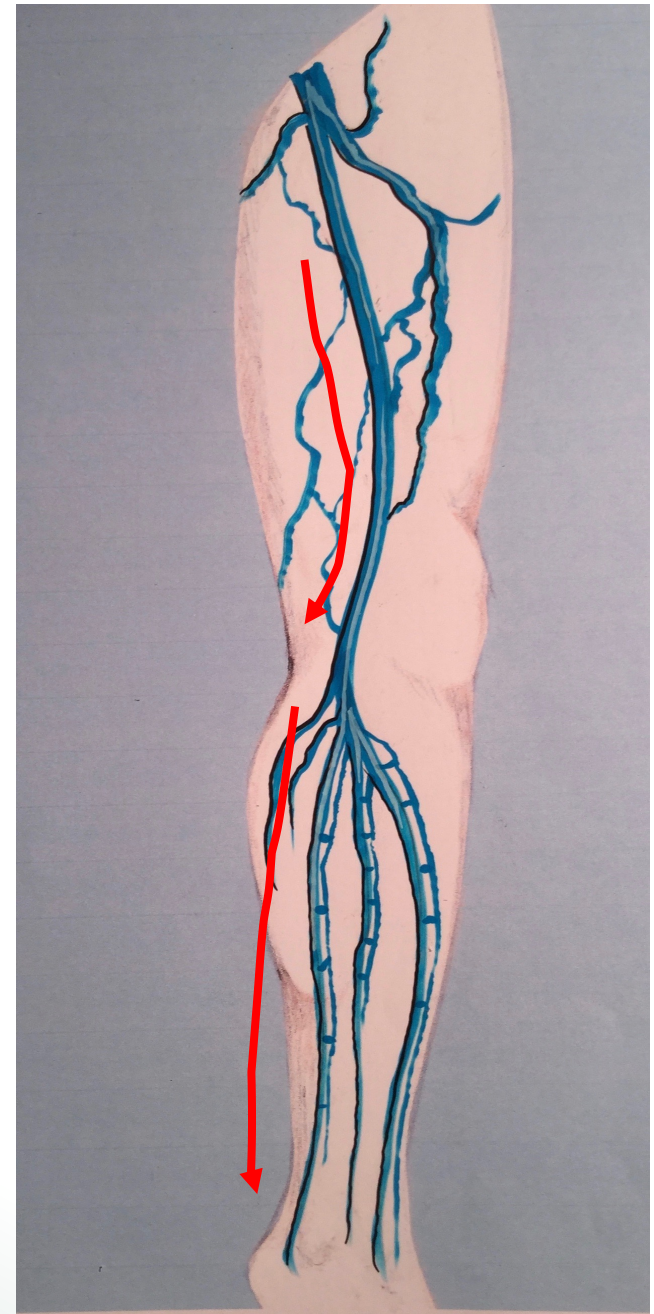
(Buffering effect)



b. When the reflux is extended to posterior tibial vein, the buffering effect is at foot level and the muscle pump is inefficient

This event is correlated with high rate of ulcer recurrence also in young patients

An action directed to superficial sponge at foot level is mandatory



7.

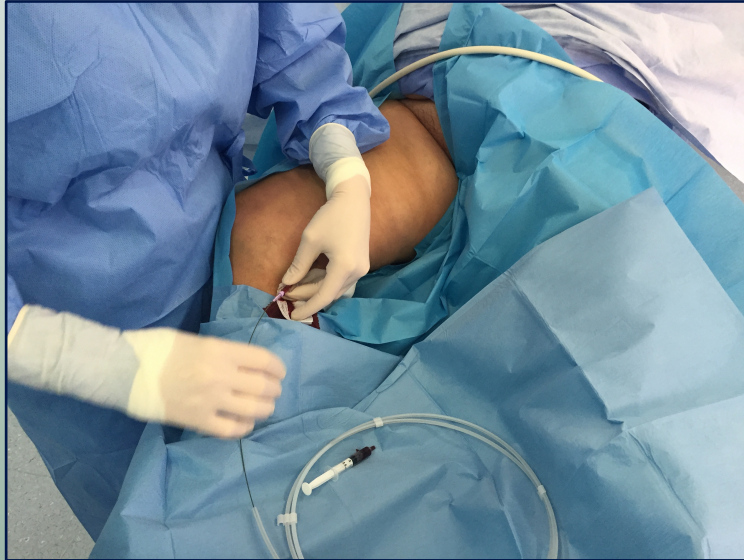
The presence of associated superficial reflux can nullify a correct deep reflux treatment.

The abolition of superficial reflux is needed in order to reduce the total venous volume.

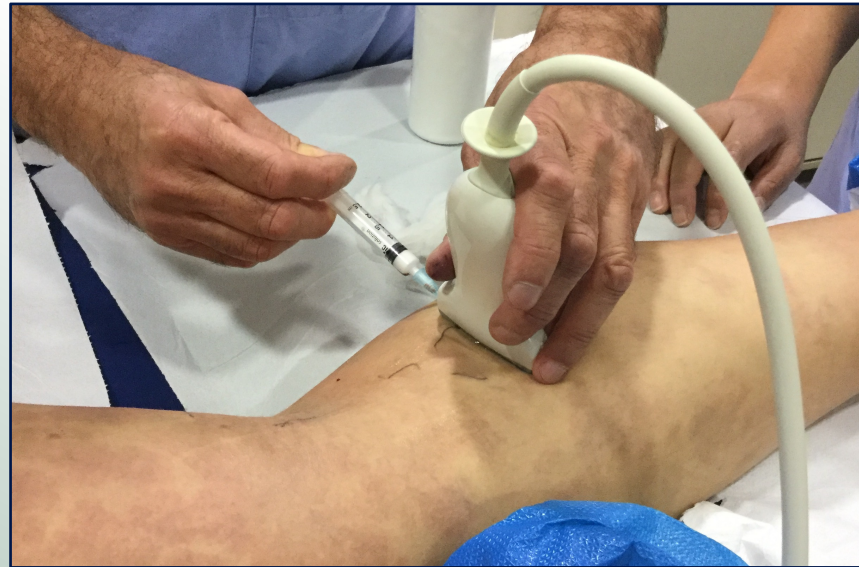


The **treatment of superficial system** can be performed preliminary to deep venous reflux correction or after.

It depends on the features of superficial reflux, principally if it is above or below the knee.



Thermal ablation



Chemical ablation



Surgical ablation

Complications of deep venous reconstruction are:

- Non specific (i.e. lymphocele, hematoma, wound infection, etc)

- Specific:
 - **Thrombotic**
 - **Non thrombotic:**
 - Failure of competence
 - Increased resistance at the reconstruction valve site

Thrombotic complications

- **Acute thrombosis in the surgical site (< 1%)**

Can be associated with a paradoxical early improvement due to reflux abolition, with subsequent worsening due to segment recanalization and collateral pathways reflux

- the treatment is thrombolysis or redo



Non-thrombotic complications

- Failure of competence

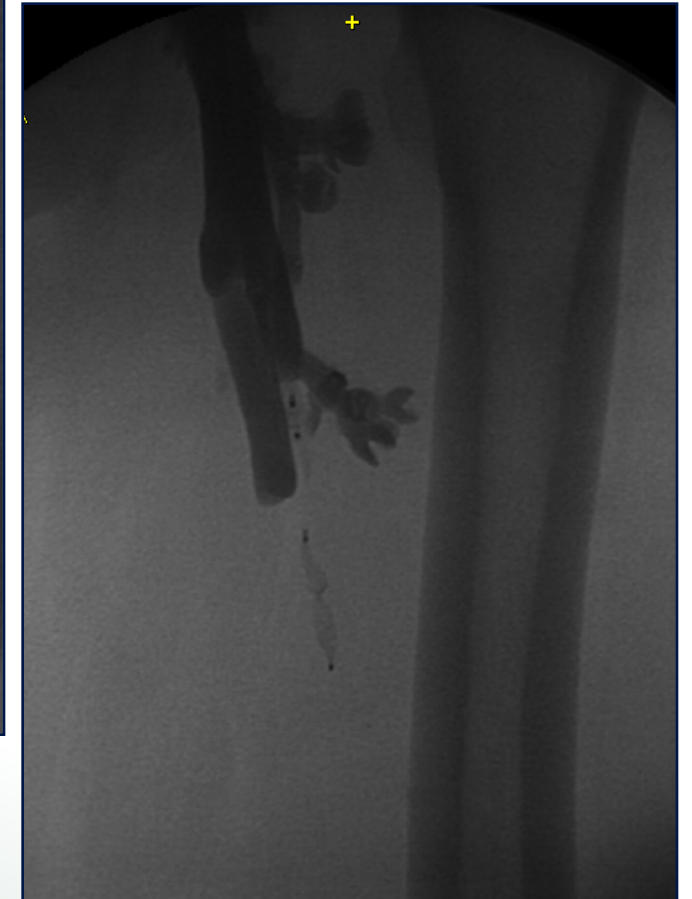
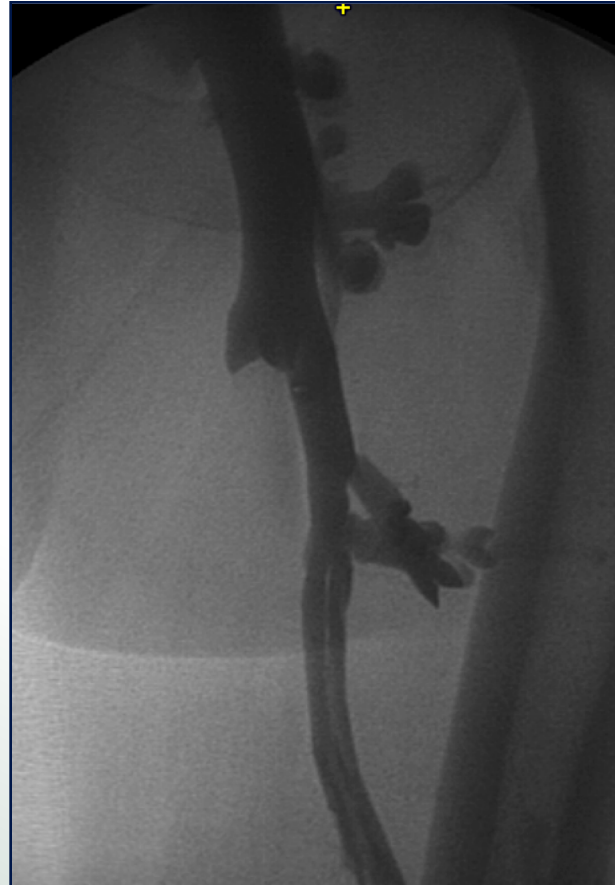
- Dilation of the surgical site

- Fracture of the valve

 - ▶ surgical treatment

- Parallel refluxes

 - ▶ endoluminal occlusion

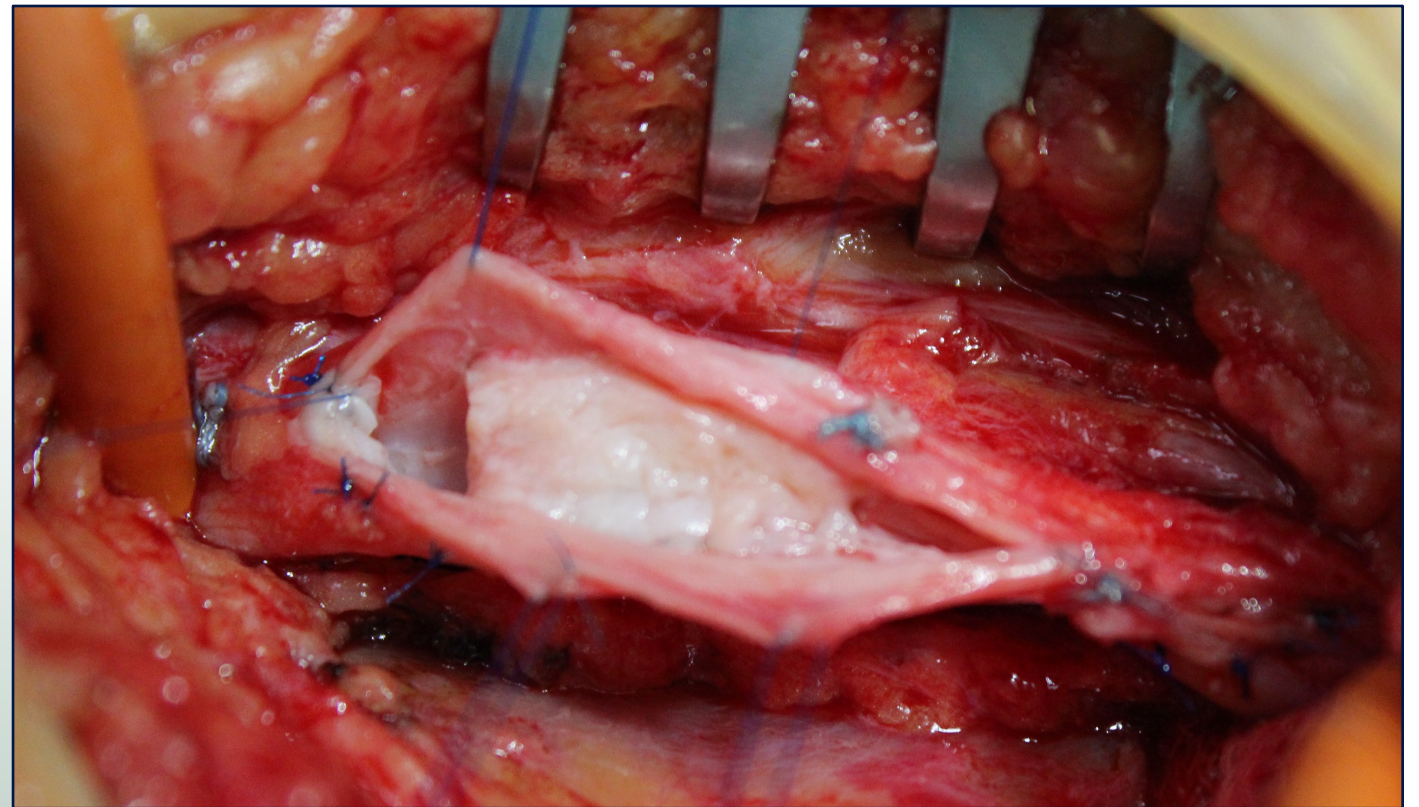


Non-thrombotic complications

- Increased resistance at the reconstruction valve site

→ Edema, heaviness, venous claudication

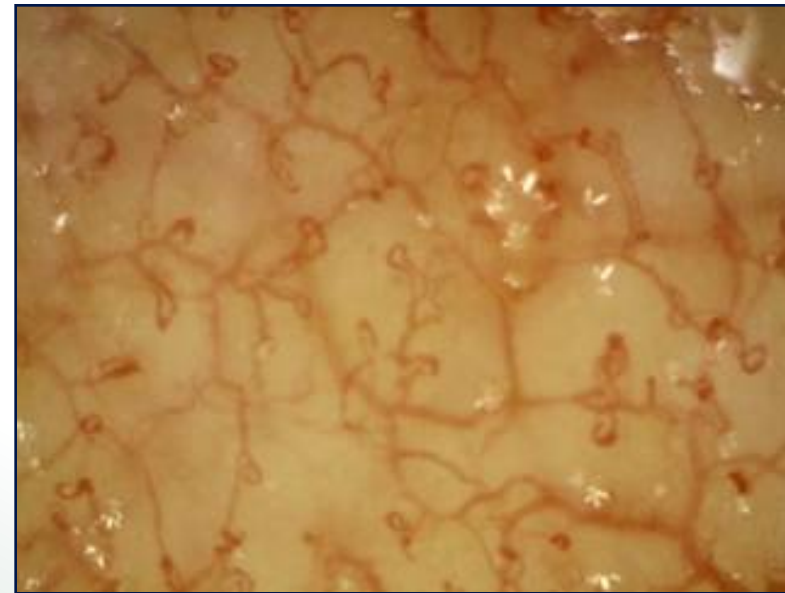
▶ stenting and new intervention



8.

DVRS addresses CVI patients

Outcomes are correlated with the reversibility of lesions at microcirculatory system level



Results could be improved treating earlier the patients
not only in C6 class



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Thank you