

Controversies & updates in Vascular Surgery

Paris - january 24 2018

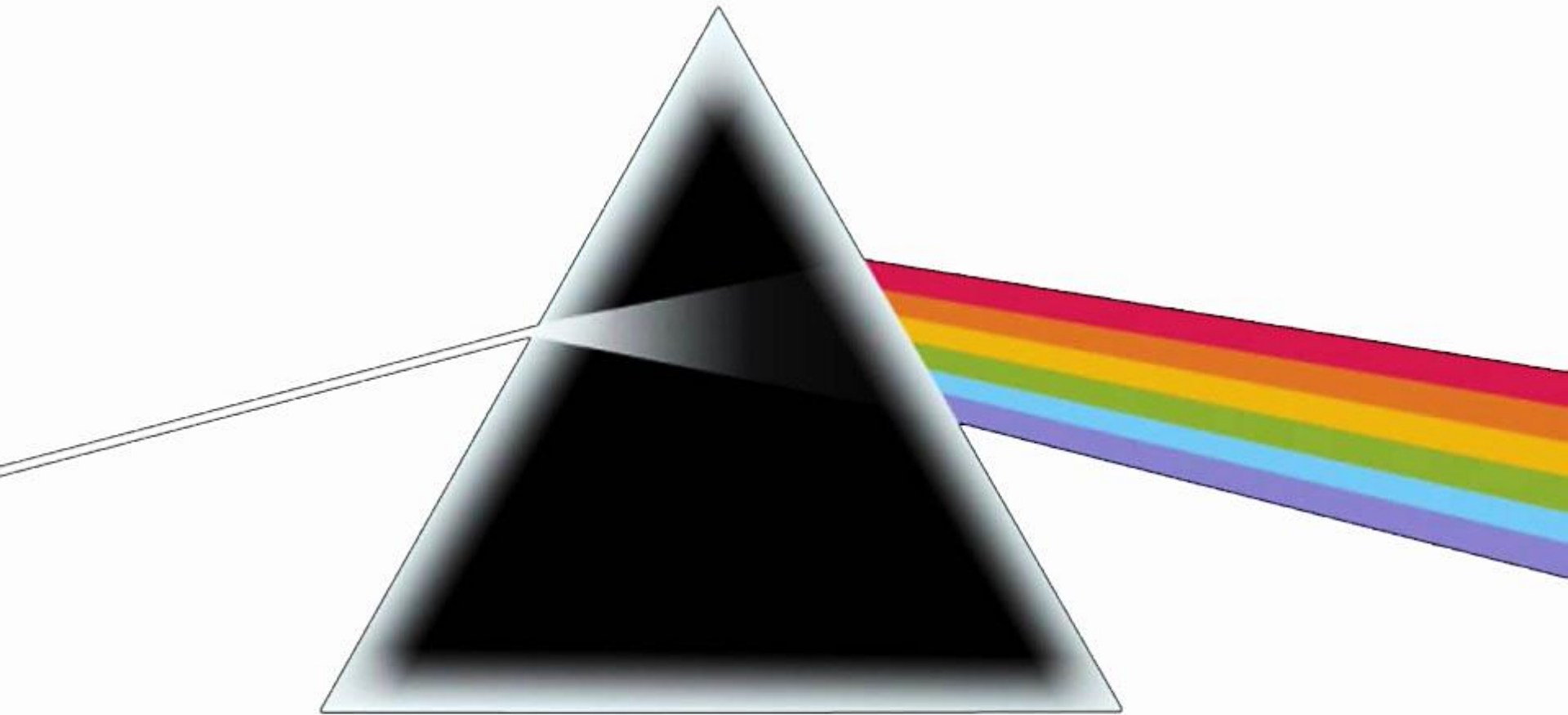
Venous session

VENOUS ODDITIES

DUPLEX IMAGE

Philippe LEMASLE

Le Chesnay - France



I have no financial relationship to disclose

Case n° 1

- Female patient - 71 years old
- **Right calf claudication** for several months, walking perimeter \approx 150 m
- **Clinically**
 - right femoral artery murmur
 - posterior tibial artery D ↓

>> 01 04 2015 - **vascular duplex scan of lower limbs**

vascular duplex scan lower limbs

- right distal femoral artery

>> confirmation tight stenosis of right

- diameter reduction $\approx 75\%$
- peak systolic speeds ≈ 350 cm/sec
- systolic pressure index - SPI = 0,85

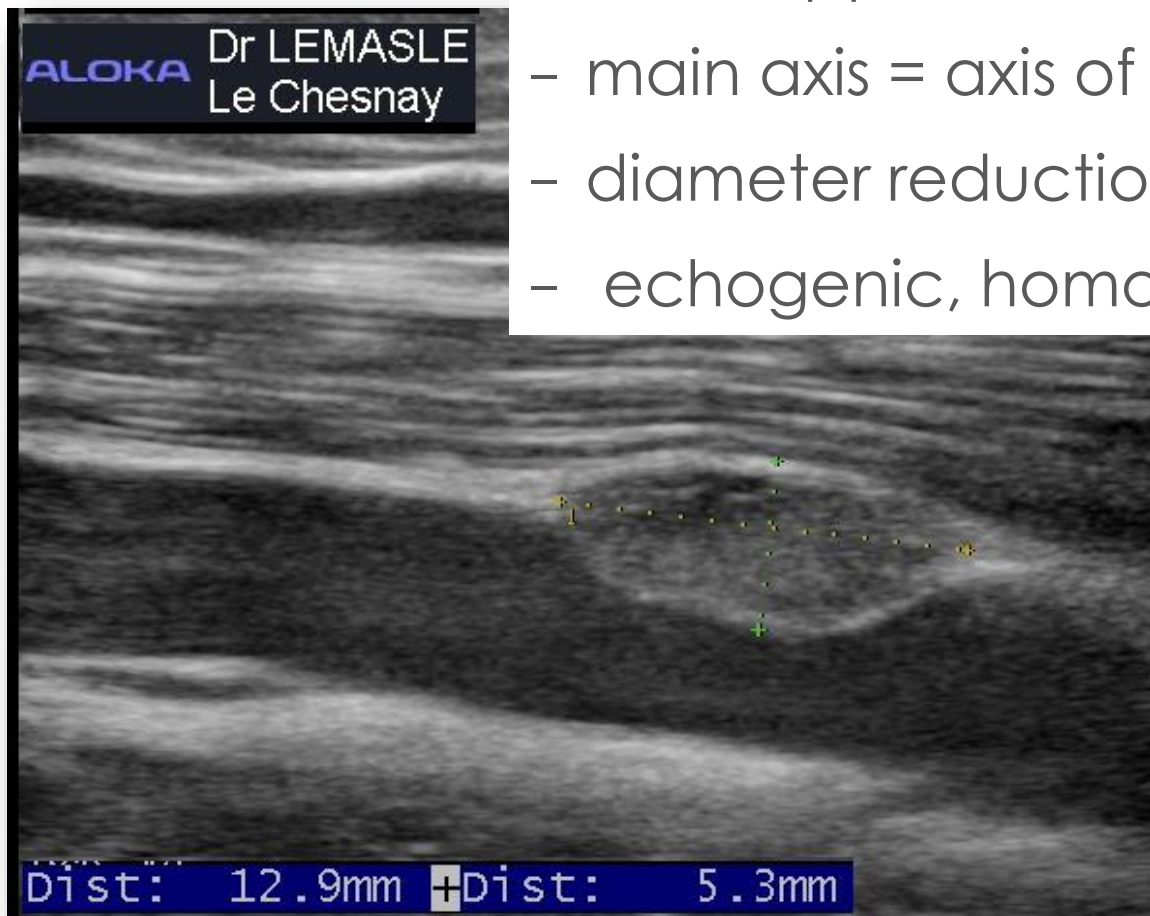
vascular duplex scan lower limbs

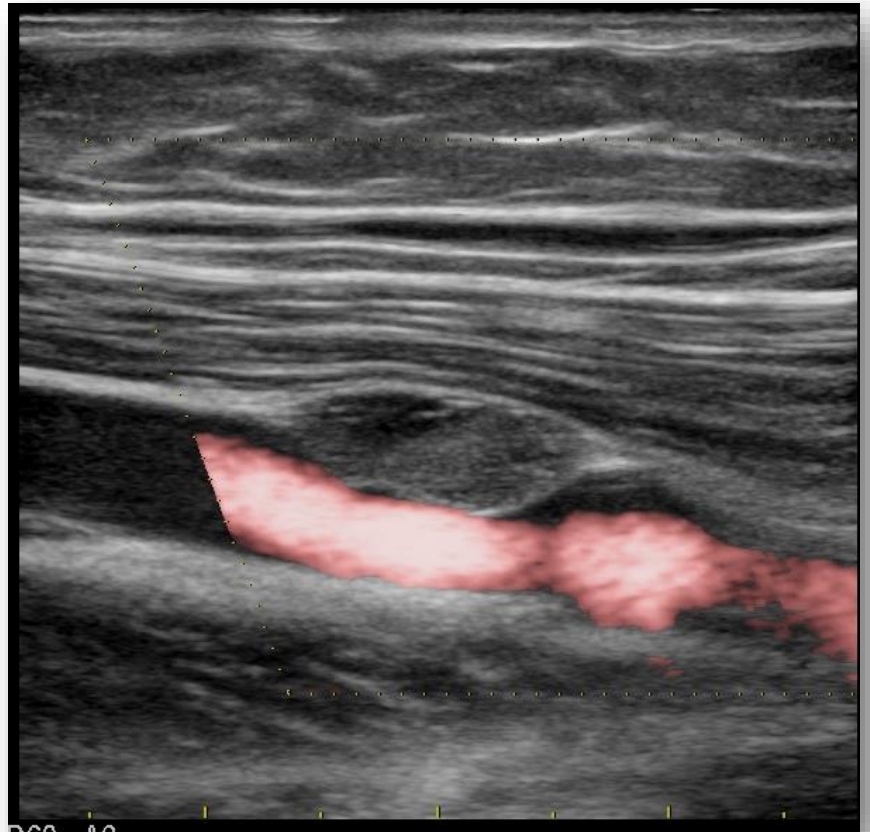
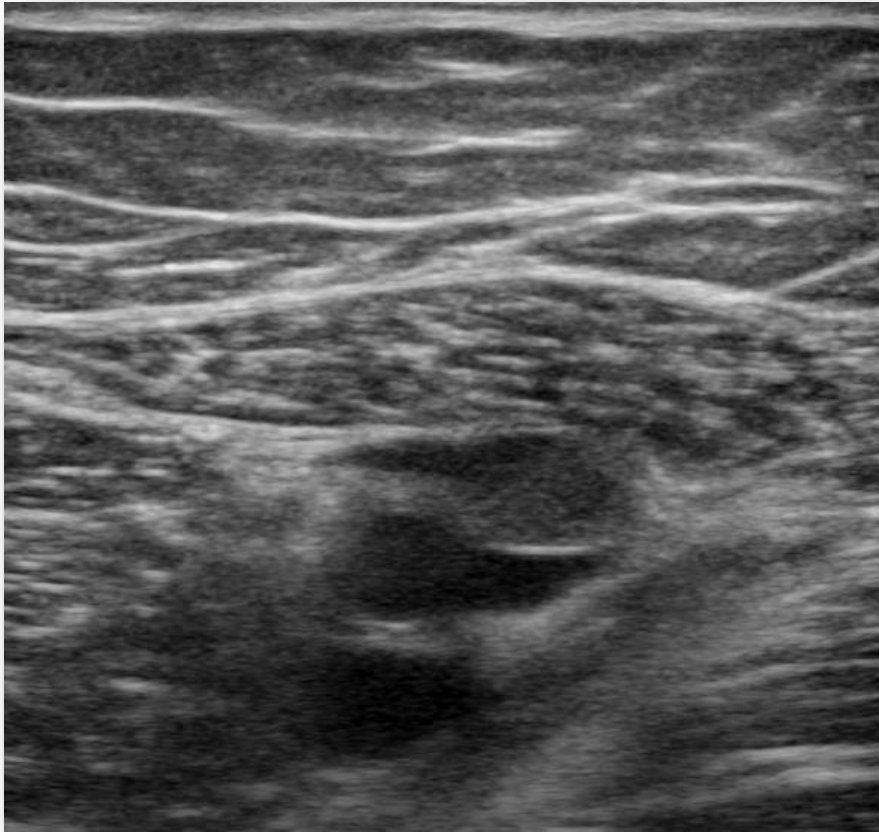
- LEFT middle femoral VEIN

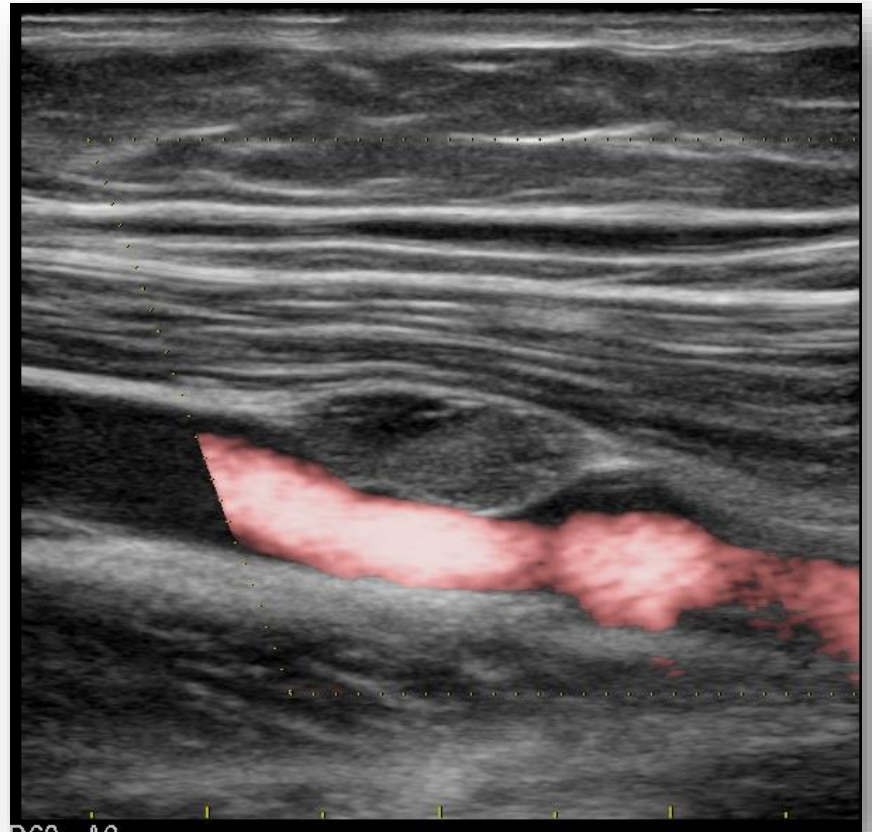
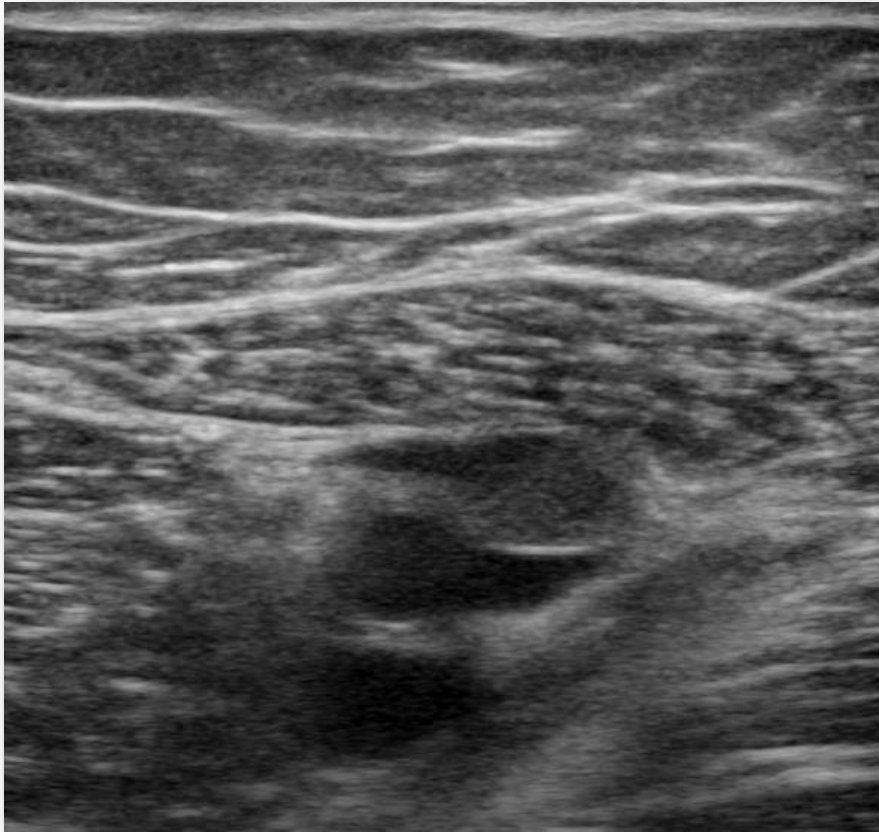


vascular duplex scan lower limbs

- tissue tumefaction
- developed in the venous wall
- main axis = axis of the vessel
- diameter reduction $\approx 40\%$
- echogenic, homogeneous, well limited







what is it ... ???

07 05 2015 - **MRI of the thigh**

Conclusion

= vascularised lesion of the left femoral vein wall to the 1/3 middle of the thigh,
the nature of which cannot be determined with certainty ...

>> specialized surgical advice

29 01 2016 - **venous surgery**

= removal of the lesion and restoration of venous continuity

>> **histologic study ...**

histologic study

MASSON's tumor

- intravascular papillary endothelial hyperplasia

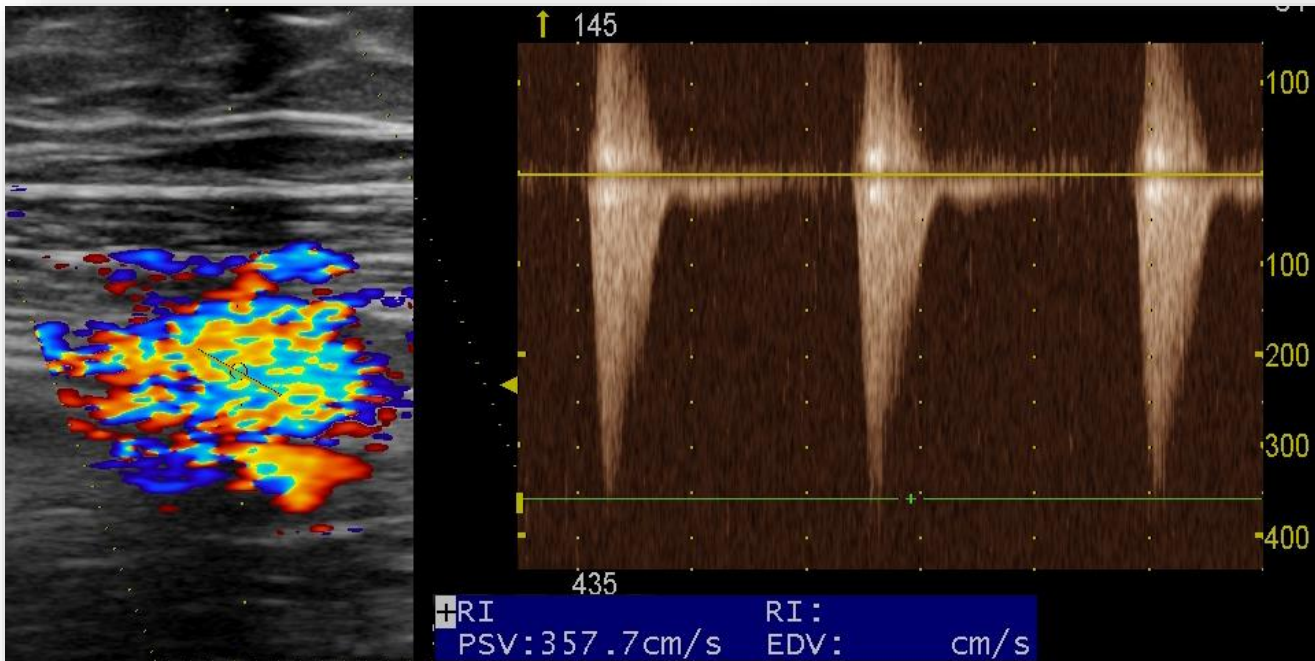
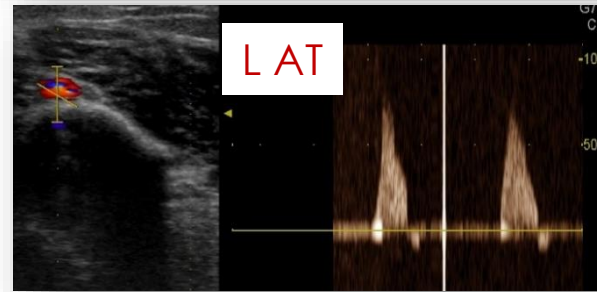
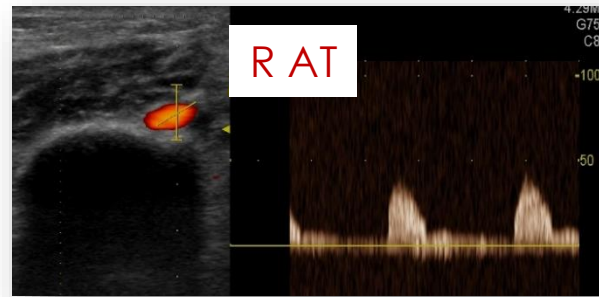
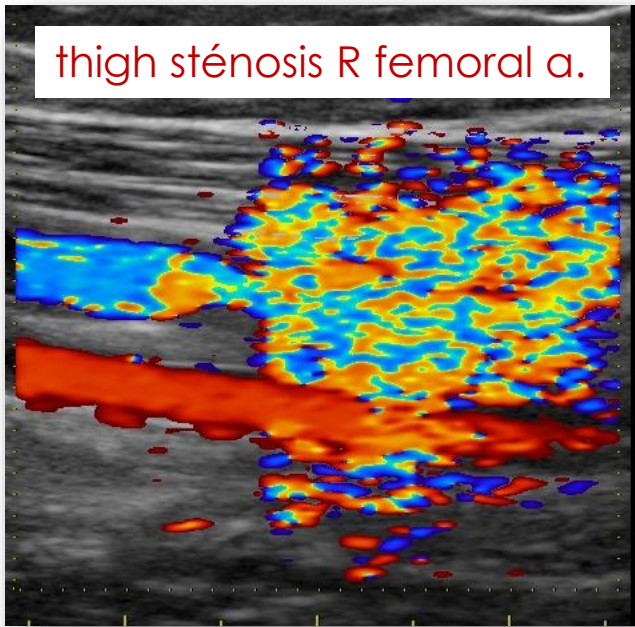
= benign pseudotumor lesion – excellent prognosis

- lesion well limited by a fibrous pseudocapsule
- containing smooth muscle or elastic tissue that is indicative of the pre-existing vascular wall
- lesion consisting of numerous small papillae, projecting into the light of the vessel

and right arterial sténosis ...

- 14 06 15 : right femoral artery angioplasty + stent 5/15
- since the beginning of 2017,
reappearance of right calf pain at walking
walking perimeter \approx 100 m
- 22 06 17 : **vascular duplex scan**
 - >> tight stenosis at the upper extremity of the stent
 - diameter reduction $>$ 75%
 - SSV \approx 360 cm/sec - negative turbulences
 - single-phase flow at the ankle
 - SPI = 0,85

thigh sténosis R femoral a.



yeah, but who cares ???

It's a venous session !!



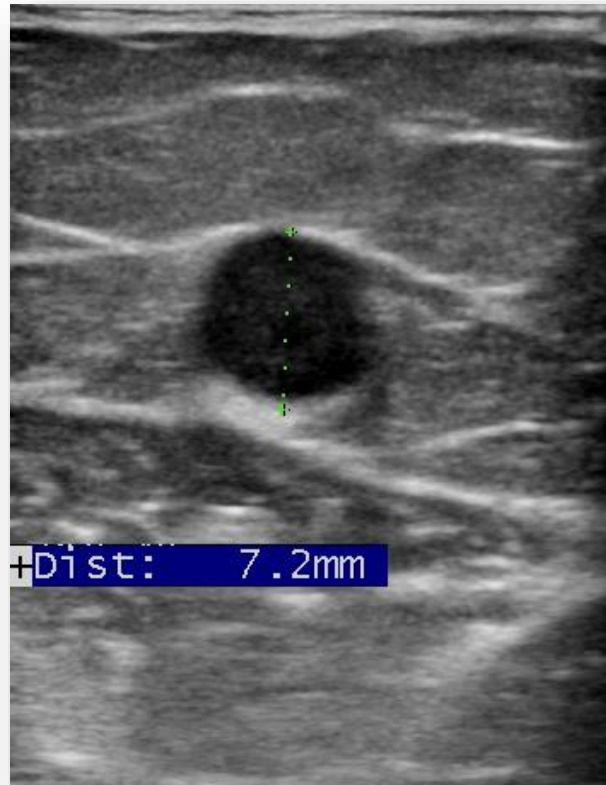
Case n° 2

- Young 17-year-old female patient
- Around the age of 6, venous dilatations in right leg
+ length asymmetry of lower limbs \approx 20 mm / right

>> diagnosis of de **Klippel Trenaunay syndrome**

- 21 01 10 (6 years) : **DUS** =
 - no deep venous insufficiency
 - reflux of the right great saphenous vein
 - no reflux at other saphenous veins
- Since summer 2017, leg pain, R > L and right venous dilatations

18 10 17 - **duplex scan**



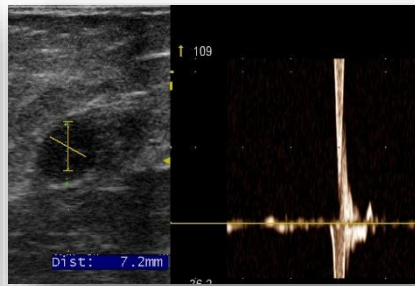
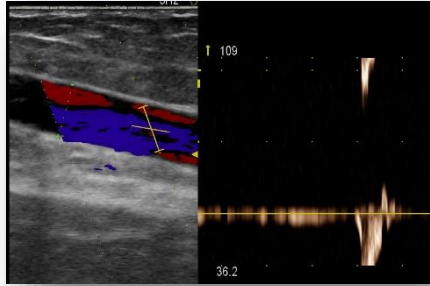
R GVS

orthostatism



L GVS

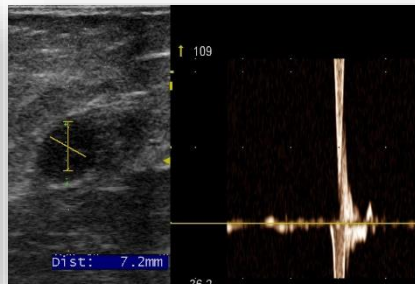
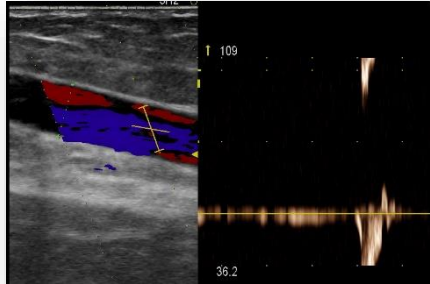
18 10 17 - duplex scan



right great saphenous vein

- no reflux in orthostatism

18 10 17 - duplex scan

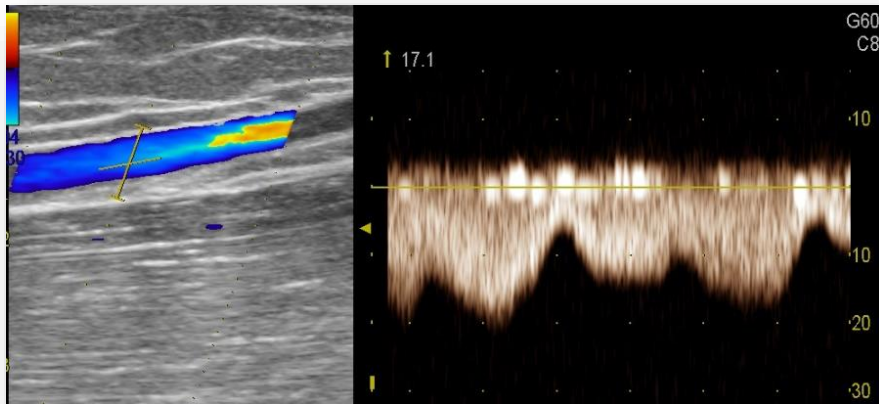


right great saphenous vein

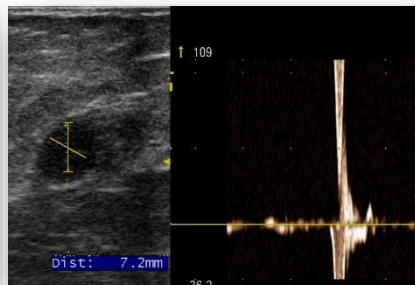
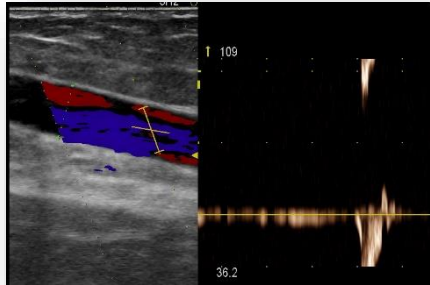
- no reflux in orthostatism

- no spontaneous flux in orthostatisme

- spontaneous flux in decubitus, modulated by breathing



18 10 17 - duplex scan

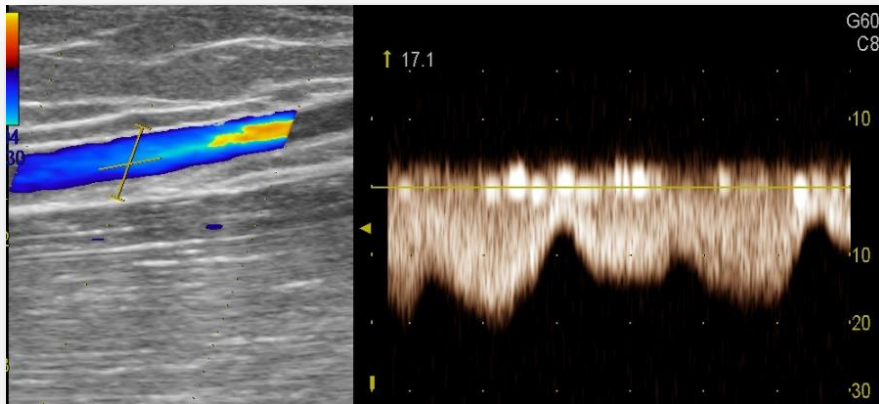


right great saphenous vein

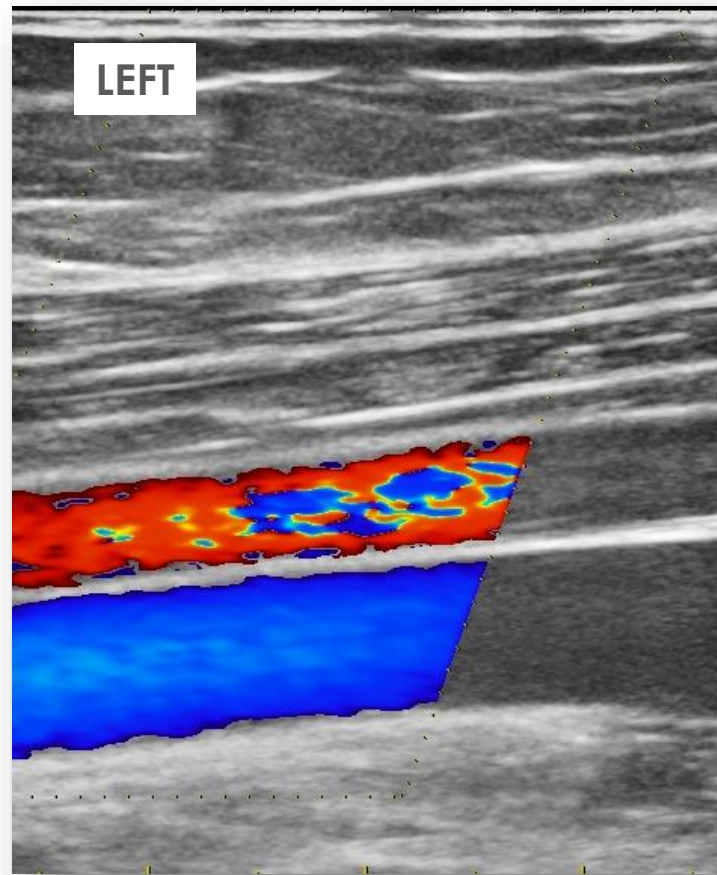
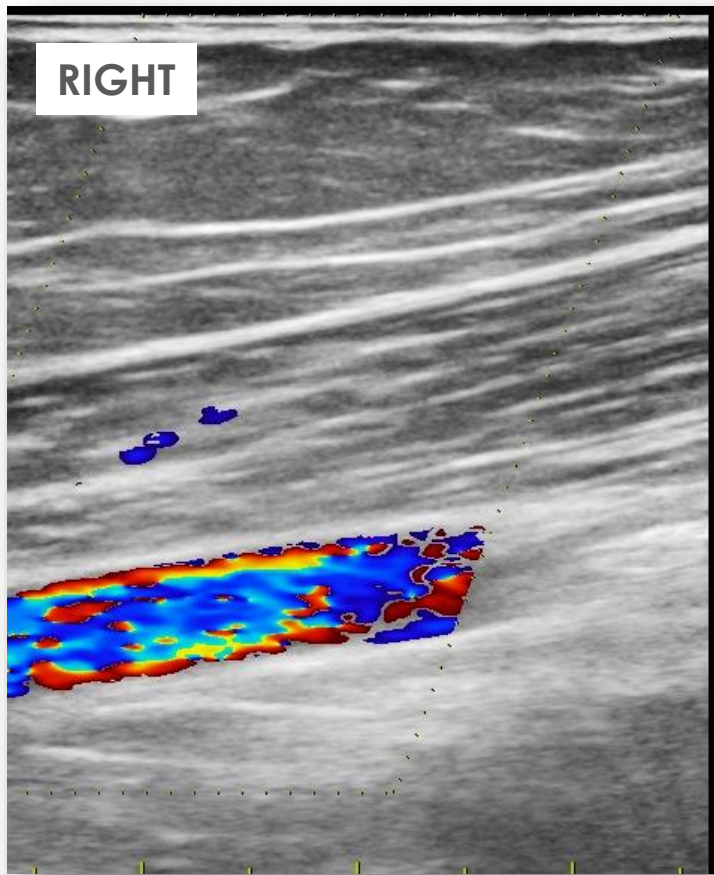
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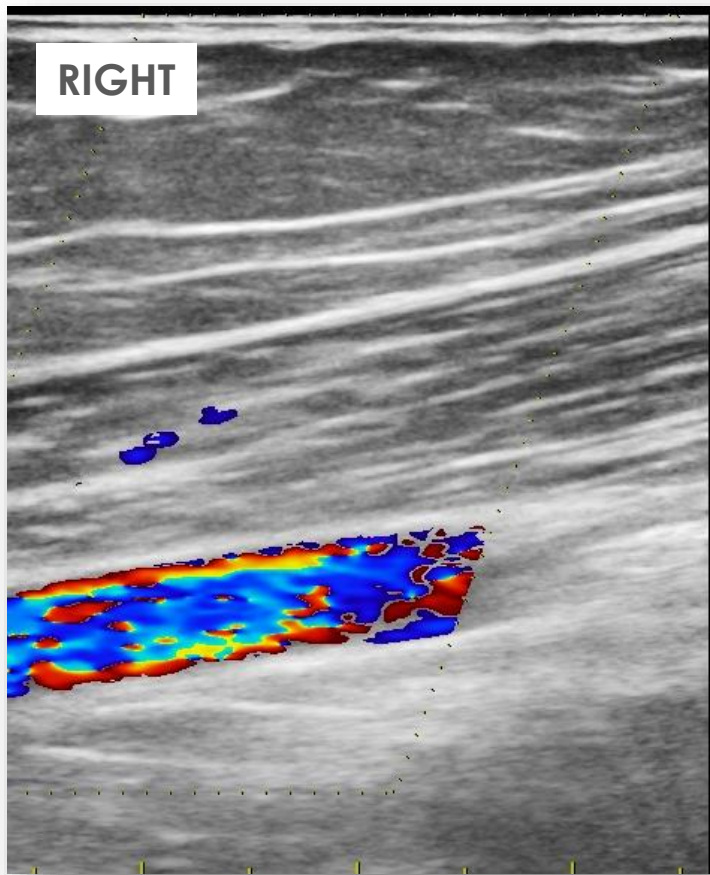
- no spontaneous flux in orthostatisme

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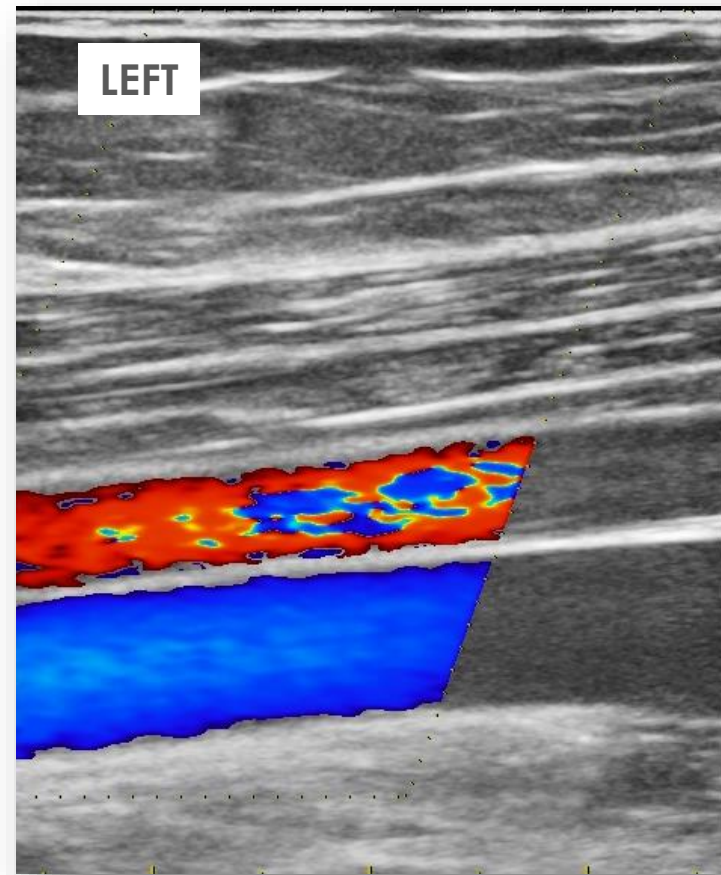


- other saphenous veins are competent
- no deep venous reflux
- no ilio-cava obstructive syndrome





- permeable femoral artery
- missing femoral vein



- permeable femoral artery and vein

Klippel Trenaunay syndrome ?

Klippel Trenaunay syndrome ?

Diagnostic triad missing

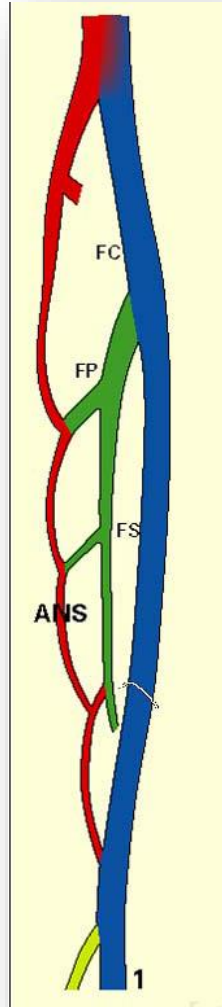
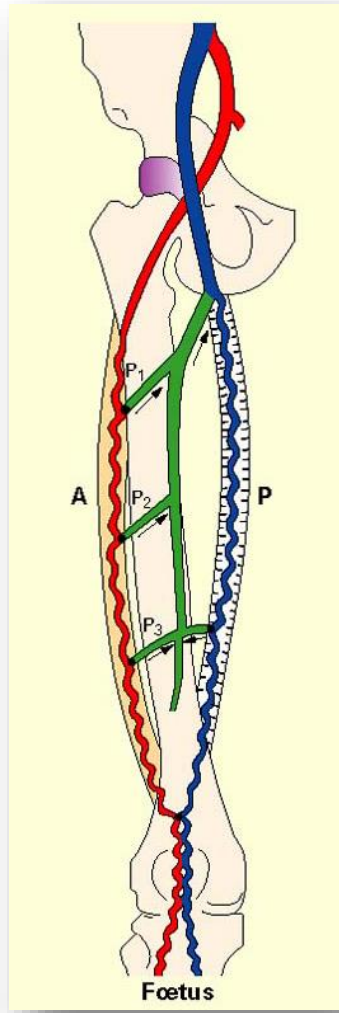
- no capillary dilatation
- no lymphatic malformation
- no superficial venous insufficiency

Persistent embryonic vein ...

- no persistent sciatic vein
- no persistent lateral marginal vein

Venous embryogenesis

Pr. C. Gillot



normal anatomical disposition

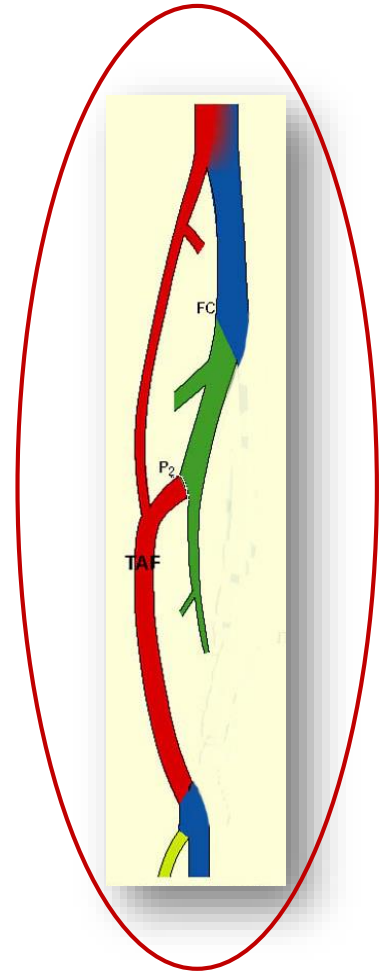
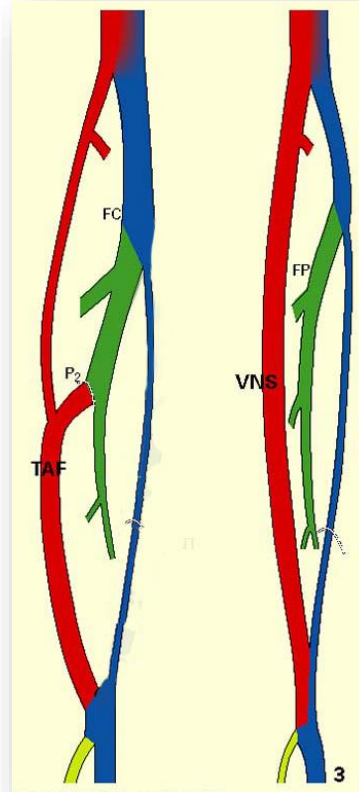
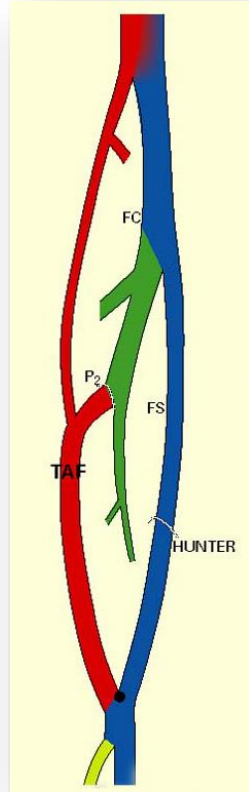
- involution of the axial system
- development of the pre-axial system

fetal venous disposition

adult venous anatomy

Abnormalities of venous embryogenesis

Pr. C. Gillot



- no involution of the axial system >>

- axio-femoral trunk
- persistent sciatic vein

- no involution of the axial system

- no development of the axial system

>> fémoral vein hypogenesis

fémoral vein agenesis

and the great saphenous vein ...

and the great saphenous vein ...

- **Persistence of a vicariant flow in the GVS**
 - diameter increase
 - speed increase

and the great saphenous vein ...

- **Persistence of a vicariant flow in the GVS**
 - diameter increase
 - speed increase

>> **persistence of obstructive femoral syndrome**

and the great saphenous vein ...

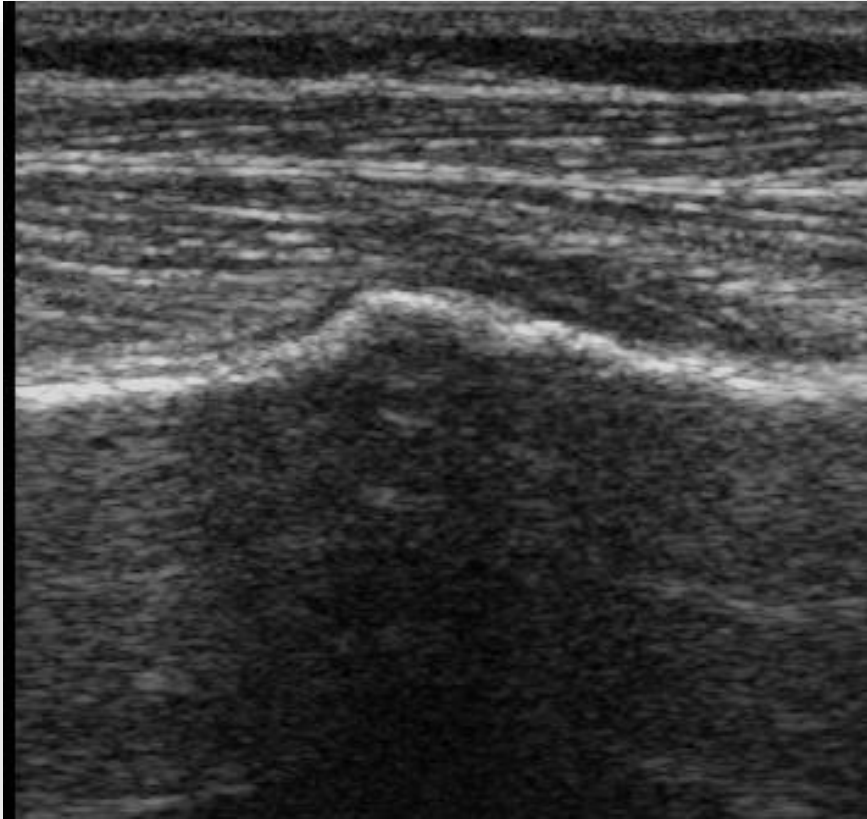
- **Persistence of a vicariant flow in the GVS**
 - diameter increase
 - speed increase

>> **persistence of obstructive femoral syndrome**

>> let'save it ... !

Case n° 3

- Female patient – 45 years old
- Sore swelling to the anterolateral side of the middle leg
- No notion of trauma
- No varicose veins
- No history of venous thromboembolism

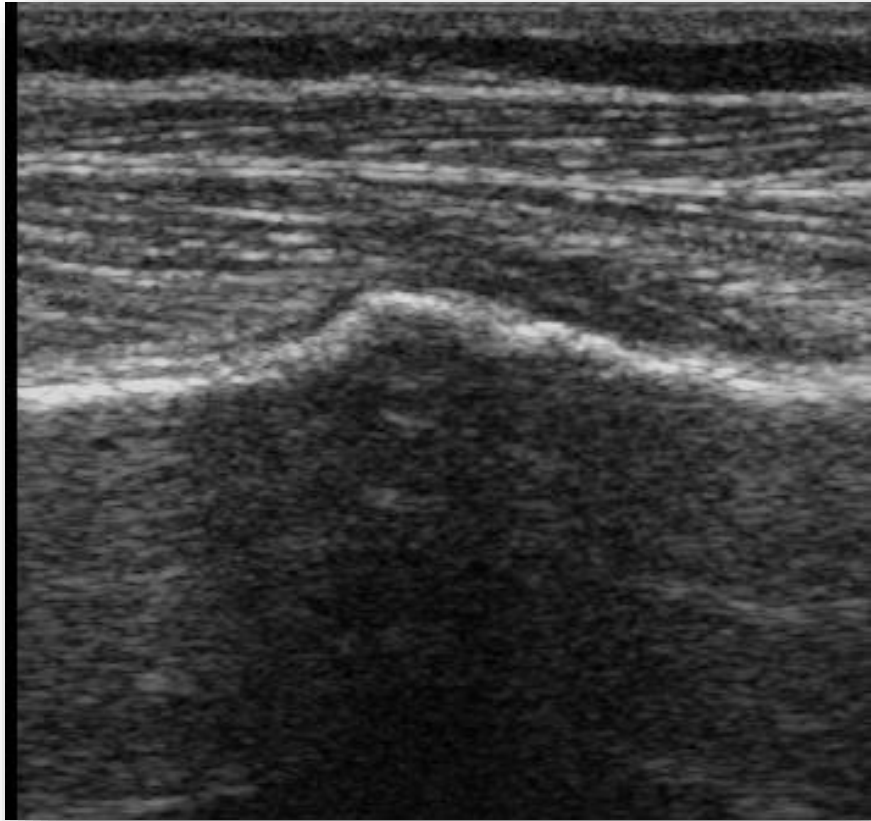


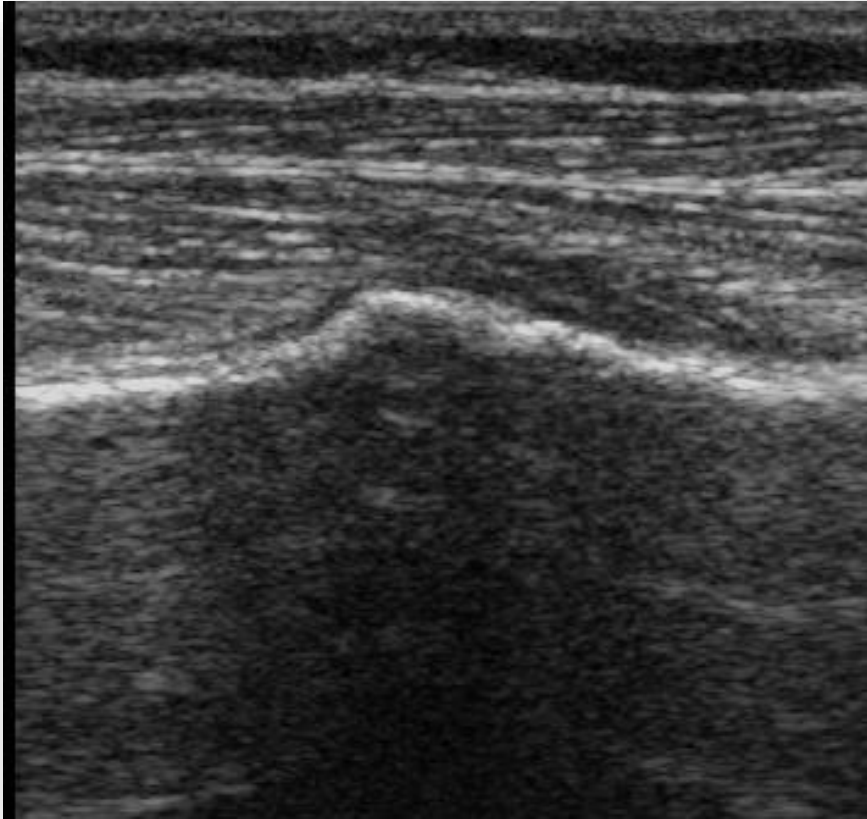
cortical bone :

- deformation
- non thickening
- decrease echogenicity behind

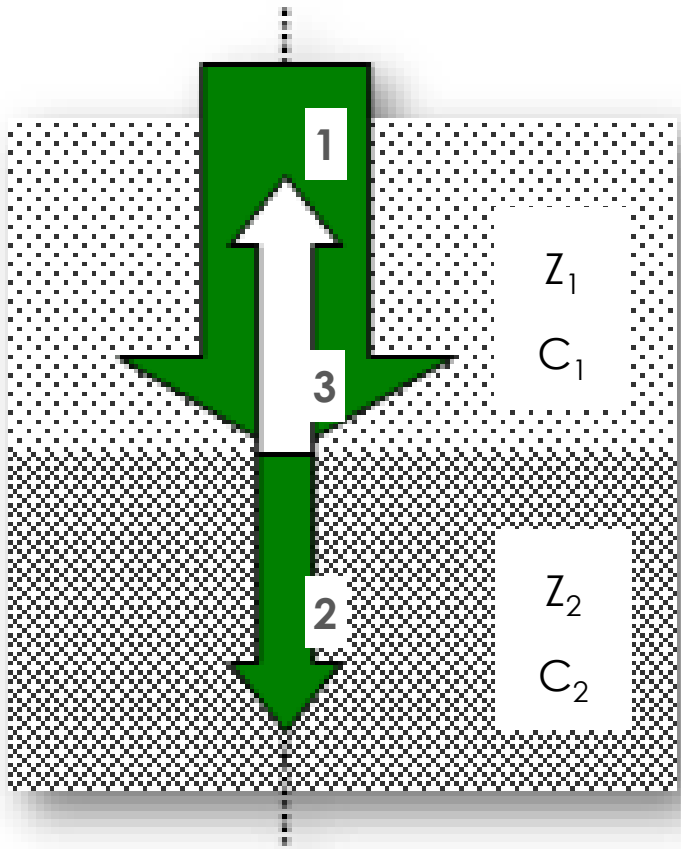
>> energy loss by diffusion phenomenon

>> heterogeneity of the process





radiological aspect in favor of a chondroma



- 1 - incident wave
- 2 - transmitted wave
- 3 - reflected wave

- **ultrasound image** = reflected wave that reaches the probe

- **reflection coefficient**

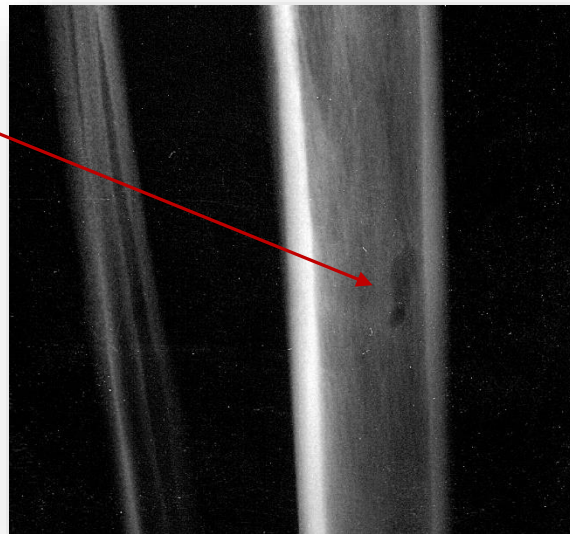
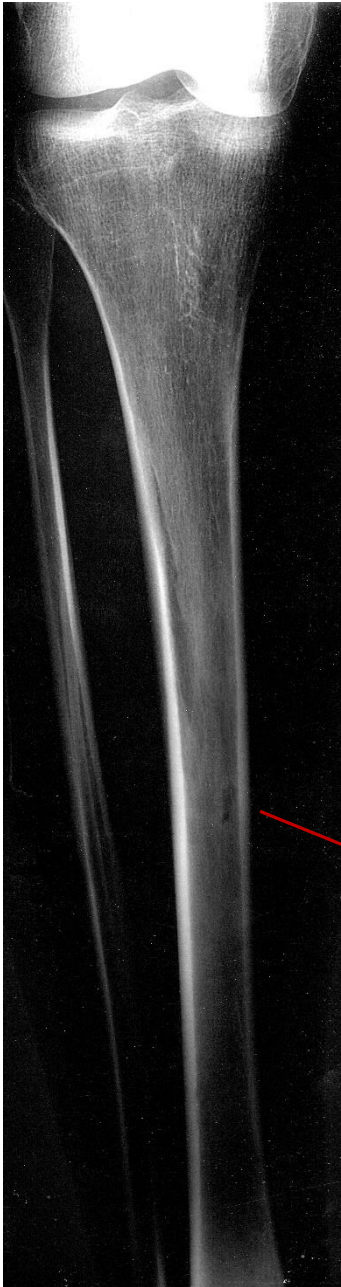
$$R = ((Z_2 - Z_1) / (Z_2 + Z_1))^2$$

- **transmission coefficient**

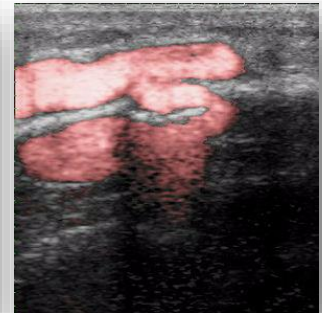
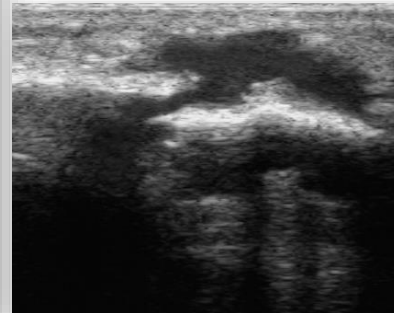
$$T = 1 - R$$

Z (Rayles ou $\text{kg.m}^{-2}.\text{s}^{-1}$)

soft tissue	$\approx 1,50 - 1,70 \cdot 10^6$		
bone	$\approx 3,50 - 7,40 \cdot 10^6$	$R \approx 15 \text{ à } 40 \%$	$\gg T \approx 60 \text{ à } 85 \%$
air	$\approx 4 \cdot 10^2$	$R > 99 \%$	$\gg T \approx 0$



« bone perforator »



>> do not be afraid of the bone in duplex scan

