

Hard Signs

Very serious, need surgical intervention.

- Pulsatile bleeding
- shock
- thrill on palpation
- bruit
- absent distal pulse / distal ischemia.
- hematoma

Hard signs	Soft signs
Active arterial (pulsatile) bleeding	Minor bleeding
Pulseless/ ischemia	Injury in proximity to major vessel
Expanding <u>pulsatile</u> hematoma	Small to moderate size hematoma
Bruit or thrill	Associated nerve injury
	ABI < 0.9
Operation Mandatory	Further W/U admission + investigations

Investigations

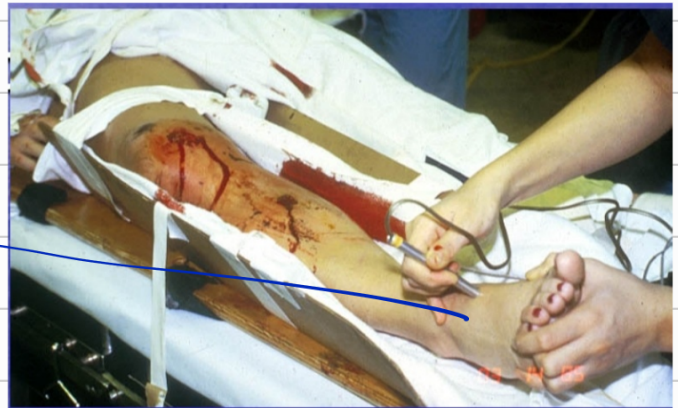
1- Doppler Ultrasound

Cheapest, simplest

ABPI < 0.9 → vascular injury.

normal : 1 / 1.1

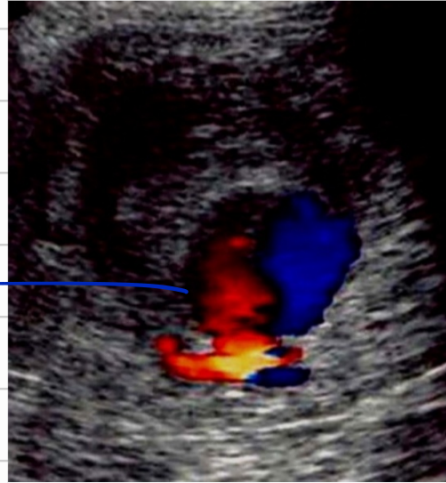
on dorsalis pedis/
Post. tibial ←



2. Duplex US

more accurate than ^{only sound} doppler , duplex: sound + photo

AV
fistula



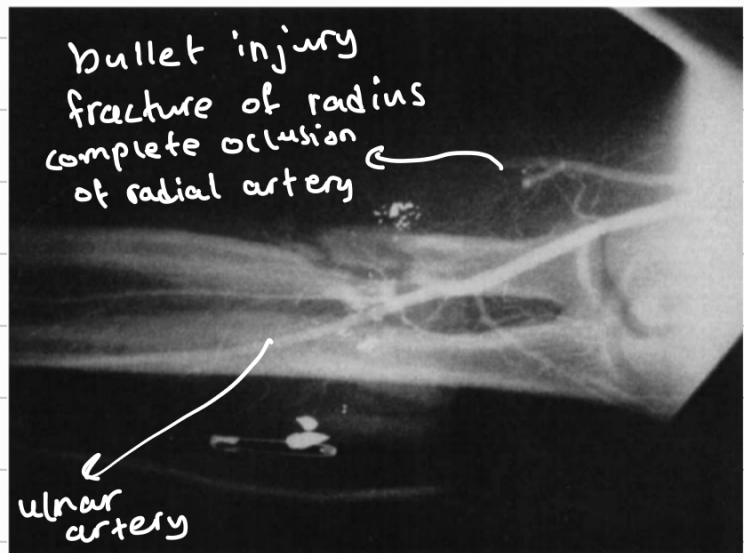
3. CT angiograph

test of choice , localizes the injury and its extent

SE: spasm , give vasodilators
diagnostic + therapeutic

indication: stable , multiple injuries , PAD.

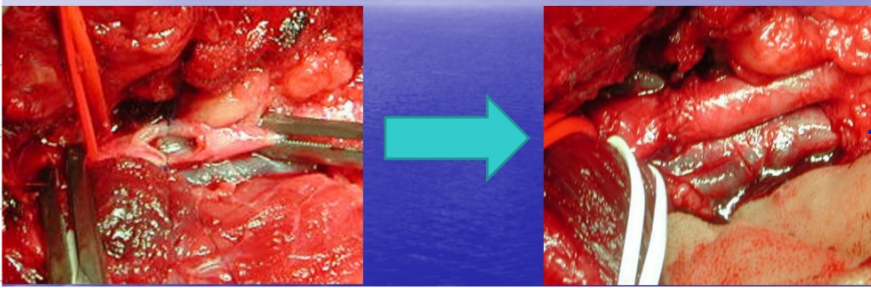
* limitation: doesn't
differentiate occlusion from
spasm.



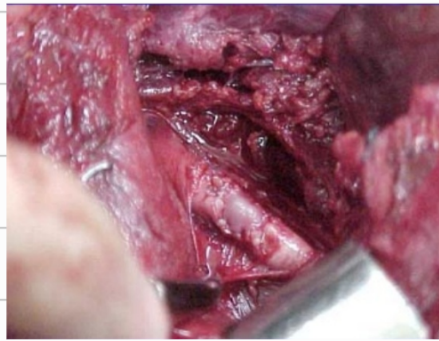
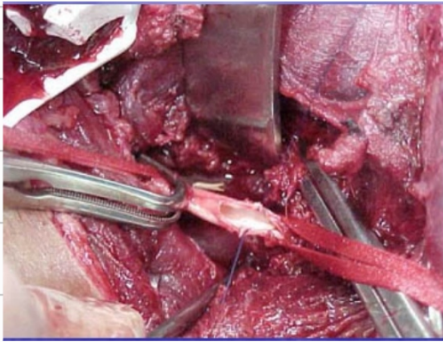
Vascular repair

- 1- direct : end to end (1 - 2 cm)
- 2- ^{angioplasty} patch (arterial or venous) : one wall patch suturing
- 3- graft  (natural : saphenous v. / synthetic)

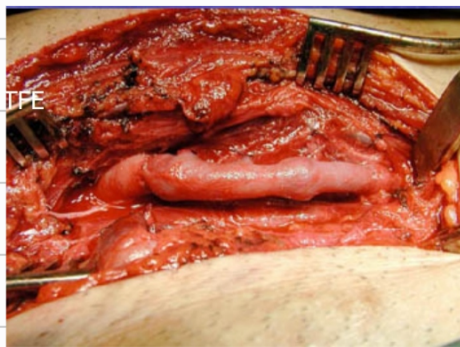
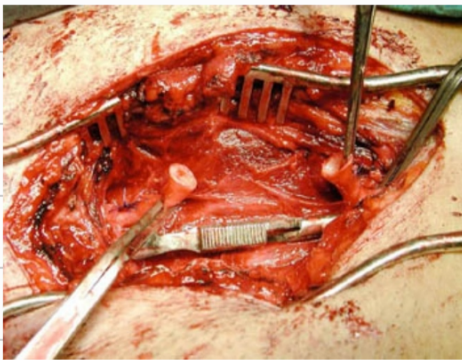
if multiple fractures and injuries → can't repair → amputation
(non-viable, non-salvageable)



→ direct repair



→ angioplasty
(patch)



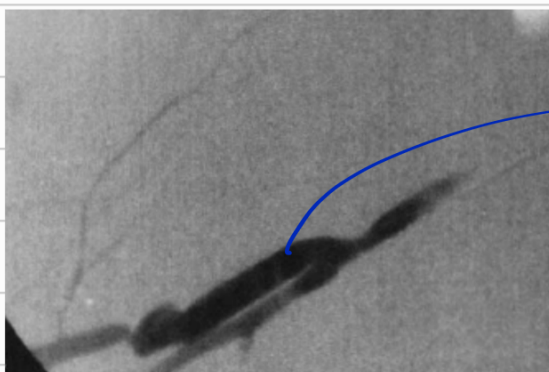
→ graft

m.c : saphenous vein.



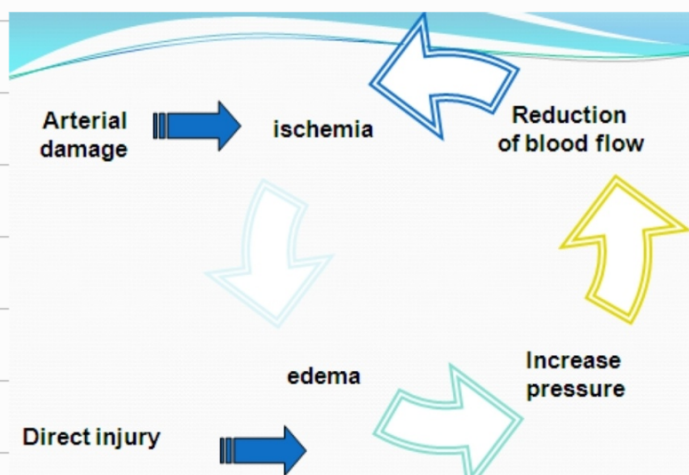
→ amputation

Complications bleeding, thrombosis, infection, stenosis, wrong diagnosis



too long graft $\rightarrow$ twisting

Compartment syndrome



early manifestations

- ✗ Pain aggravated when stretching muscle
- ✗ Parasthesia

Late

- ✗ Pt. can't move his limb
- ✗ Pulselessness

Diagnosis :

- intracompartment pressure > 40 mmHg
- Myoglobin

Most affected arteries in vascular injuries :

Femoral $>$ popliteal
trauma,
VA males

$>$ Ant. tibial + Post. tibial
- ligation / graft

- You push the muscles away no need to cut them.

treatment of choice:
interposition graft
(saphenous vein)

Popliteal a. is deep,
You need to cut muscles to reach it.