

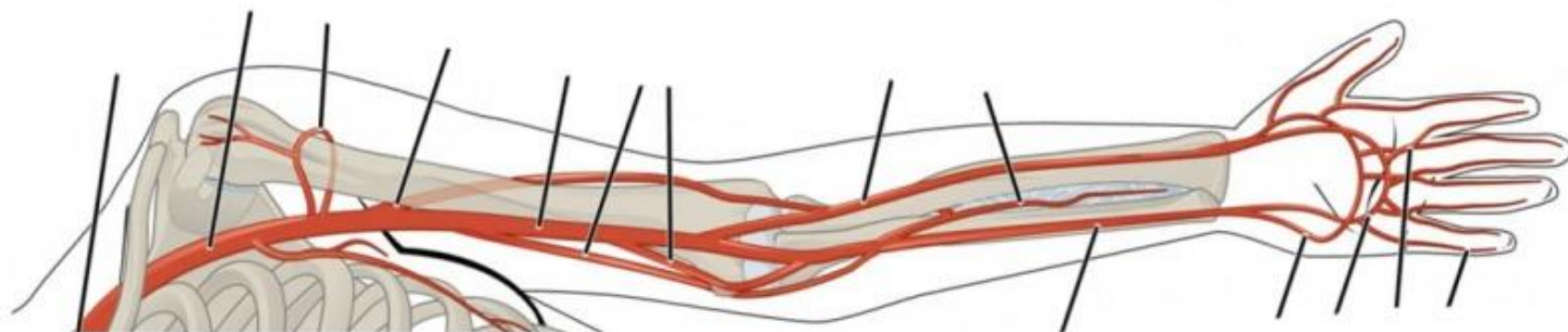


Algorithm in management of steal syndrome

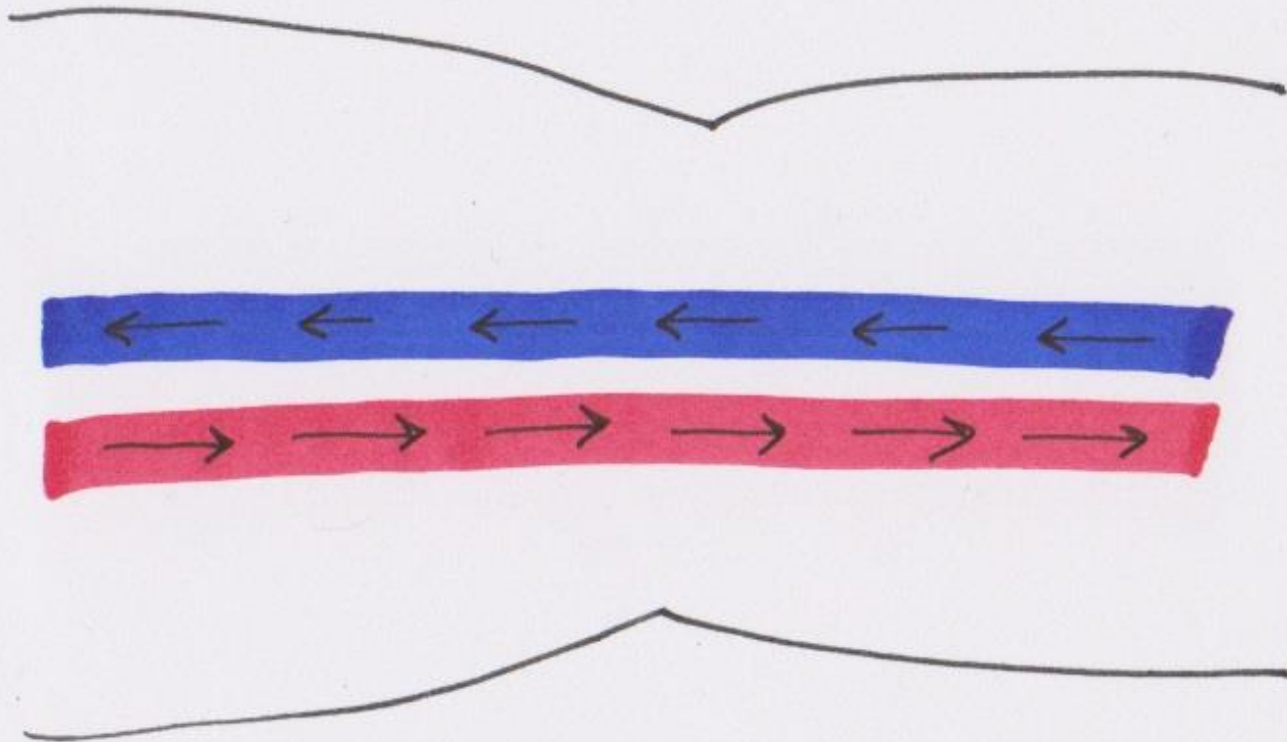
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Department of Surgery, Faculty of Medicine
Chiang Mai University

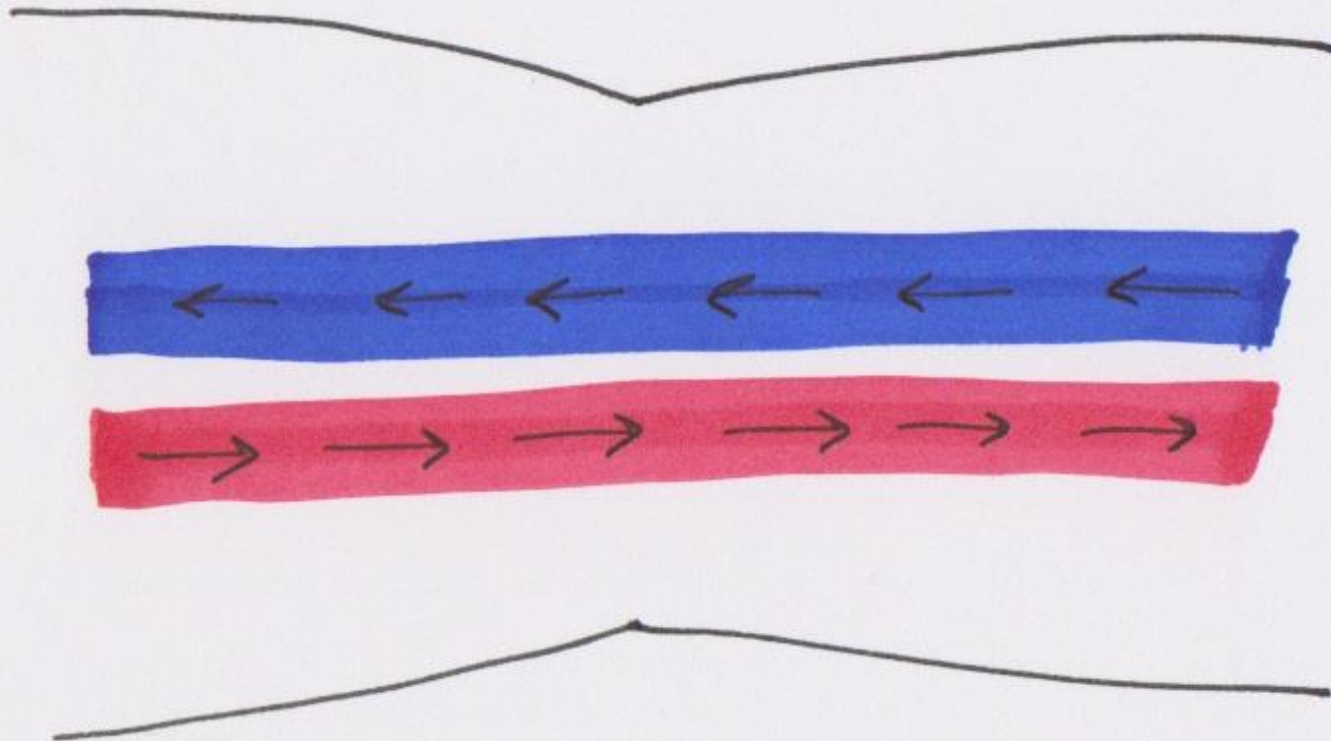




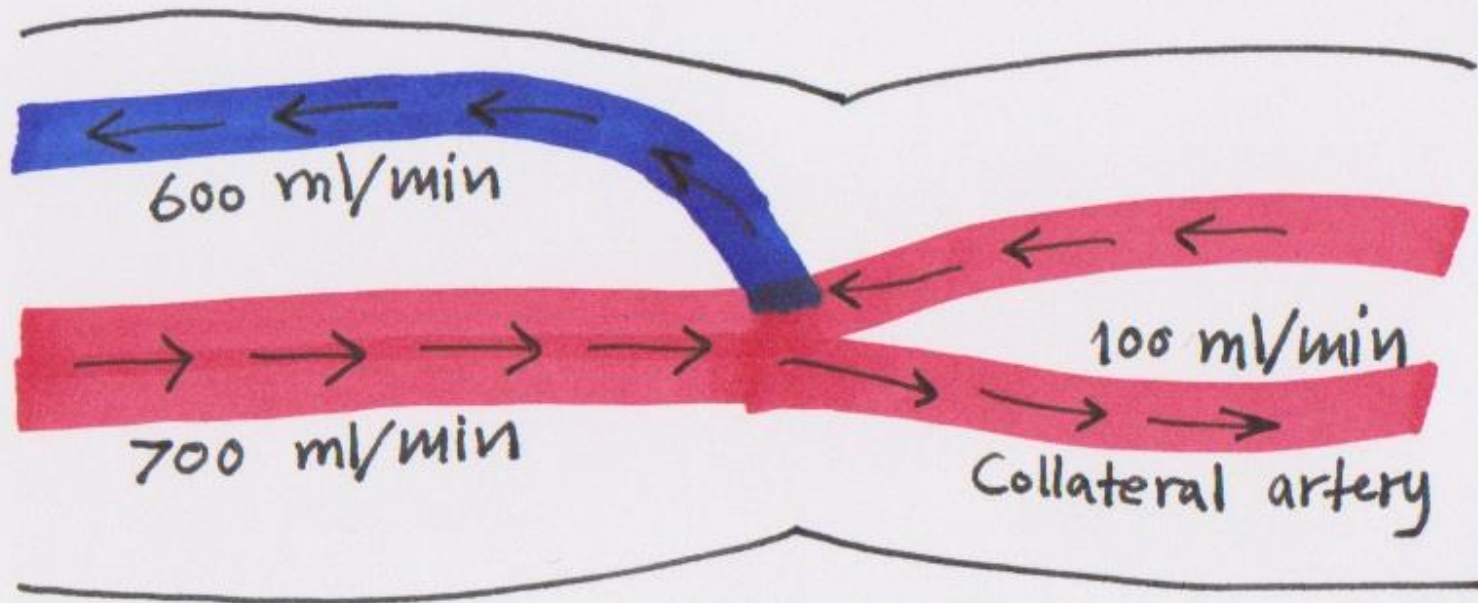
Rest



Exercise



Good AVF



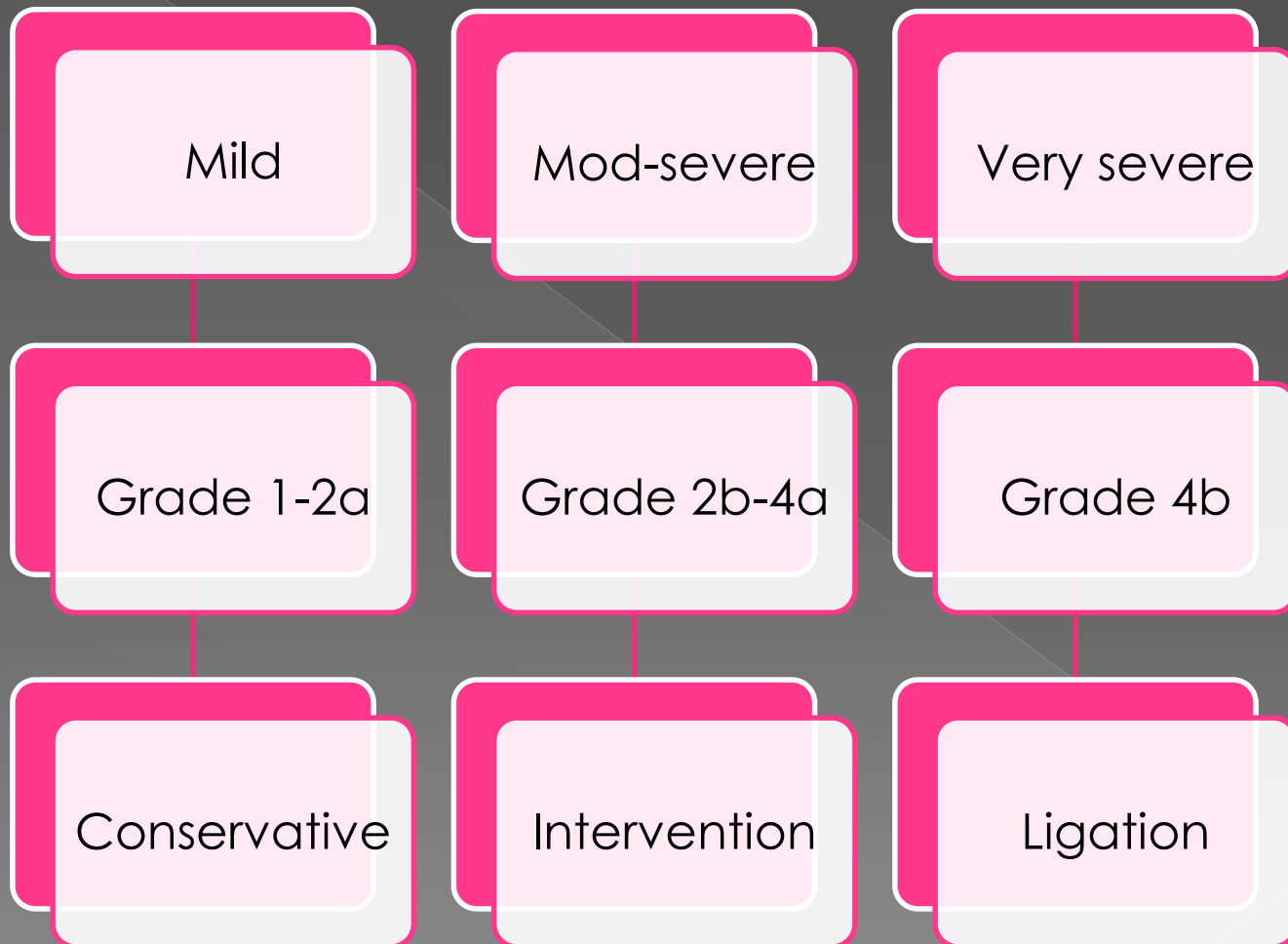
Severity of steal syndrome

- Grade 1 : Retrograde flow/No symptoms
- Grade 2 :
 - > 2a: Tolerable pain during HD/exercise
 - > 2b: Intolerable pain during HD/exercise
- Grade 3 : Rest pain
- Grade 4:
 - > 4a: Limited tissue loss
 - > 4b: Irreversible tissue loss

Treatment options

- ◉ Conservative
- ◉ Ligation
- ◉ PTA
- ◉ Banding
- ◉ PAI
- ◉ DRIL
- ◉ RUDI
- ◉ DRAL
- ◉ PRAL

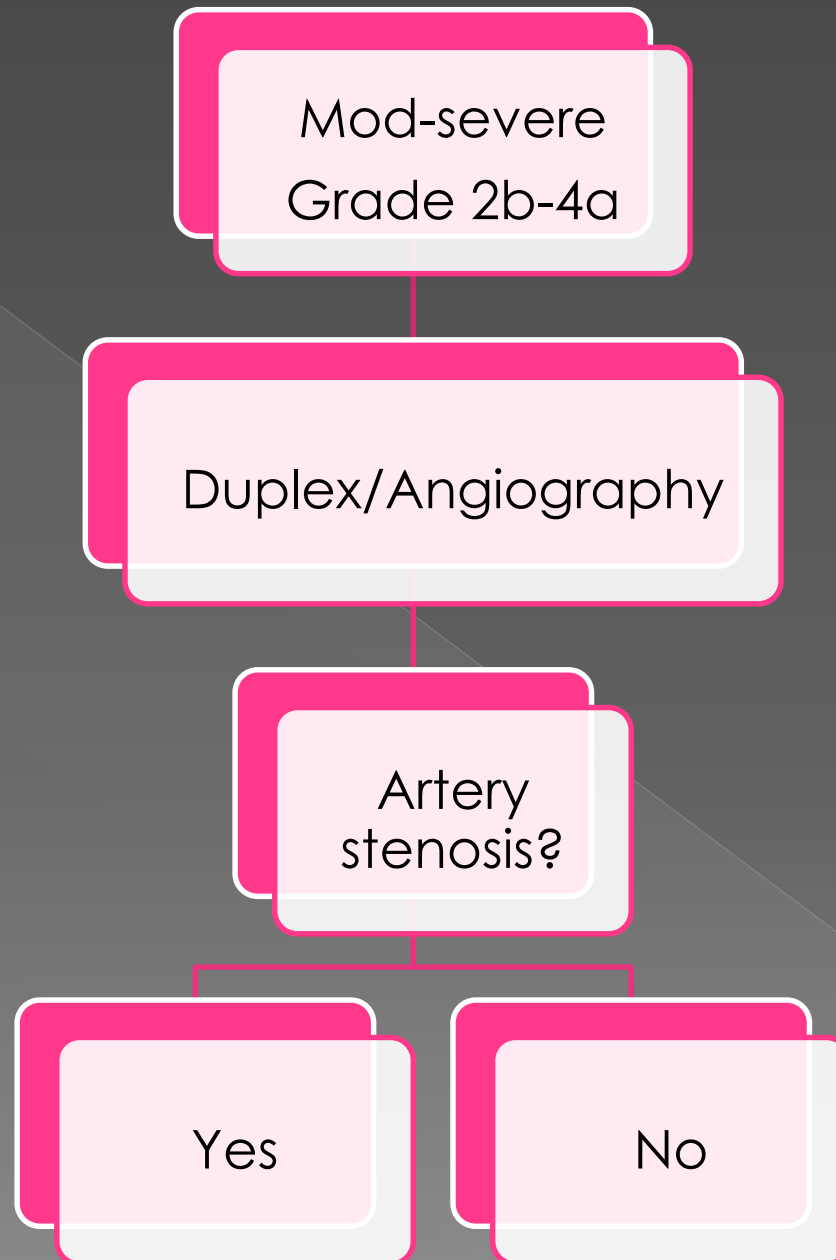
Treatment options



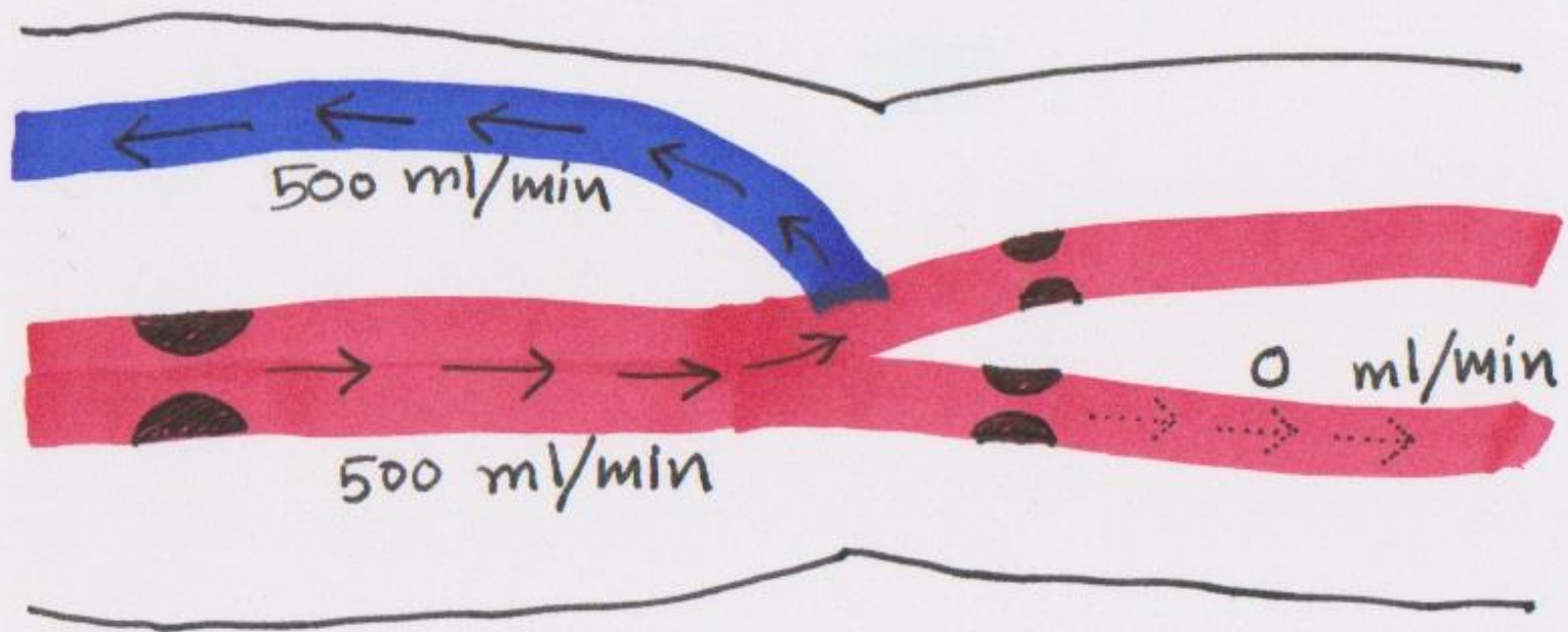
Grade 4b

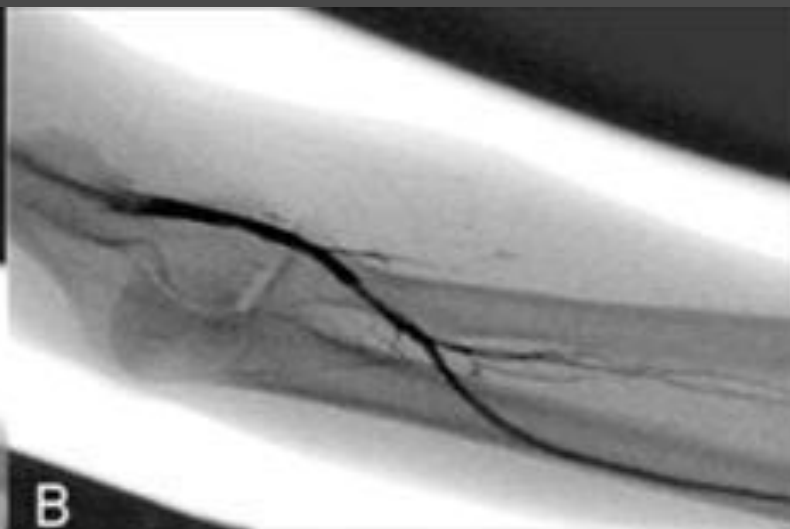


● 1st step



Artery stenosis





Grade 2b-4a

No Artery stenosis

Access
blood flow?

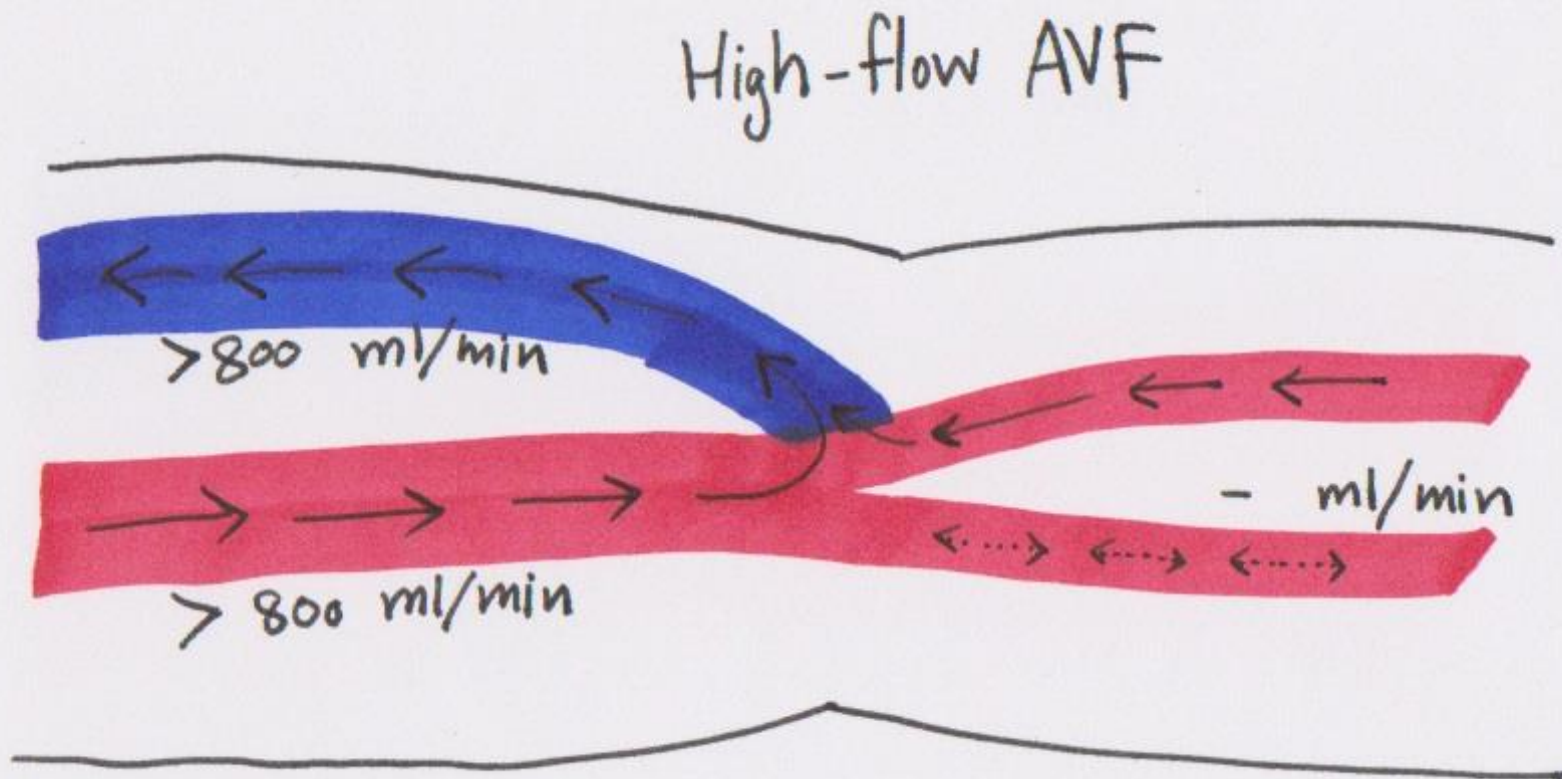
>800
ml/min

400-800
ml/min

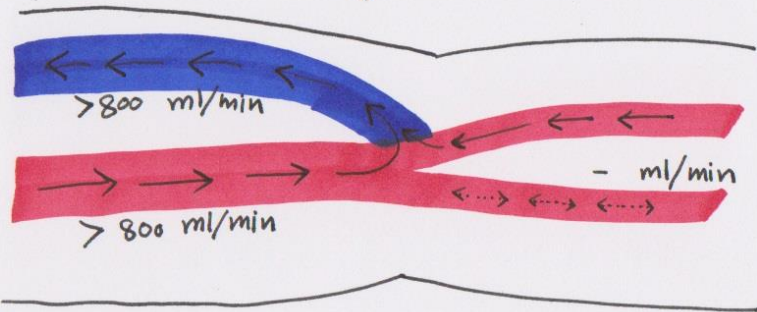
<400 ml/min

○ 2nd step

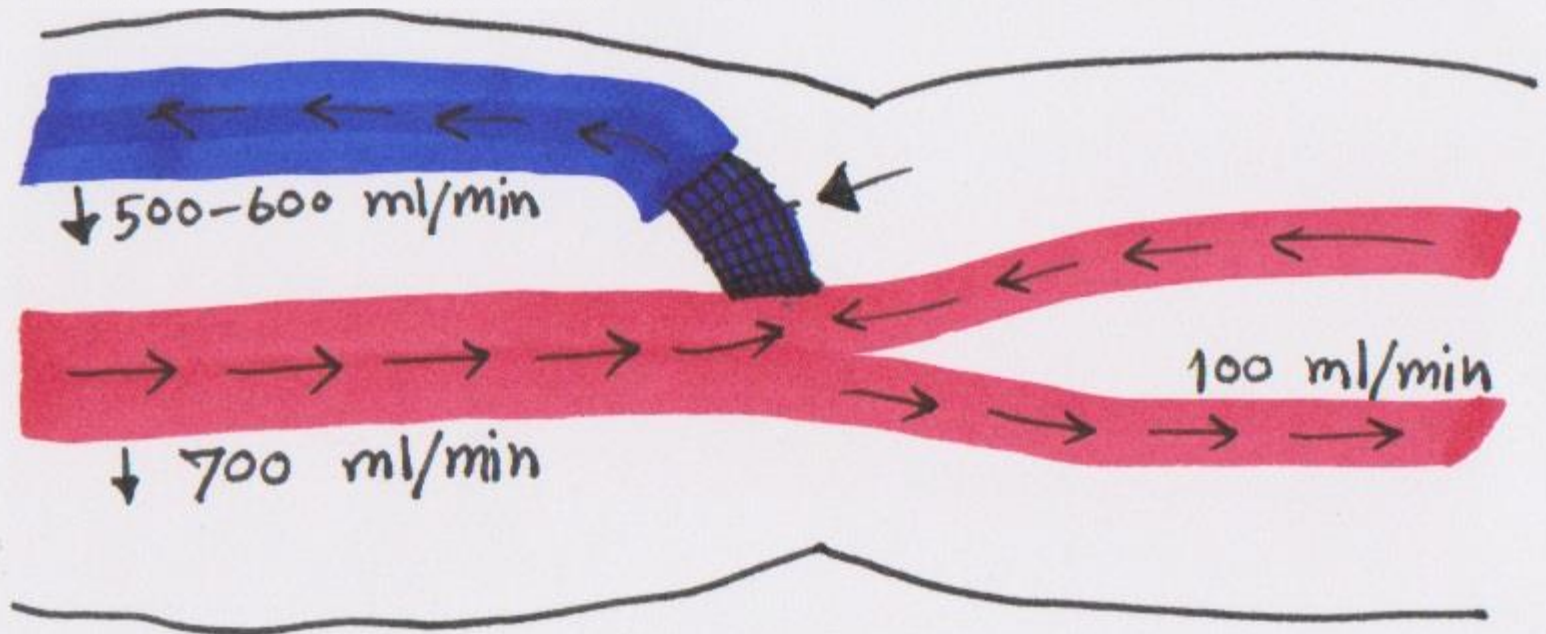
High-flow AVF



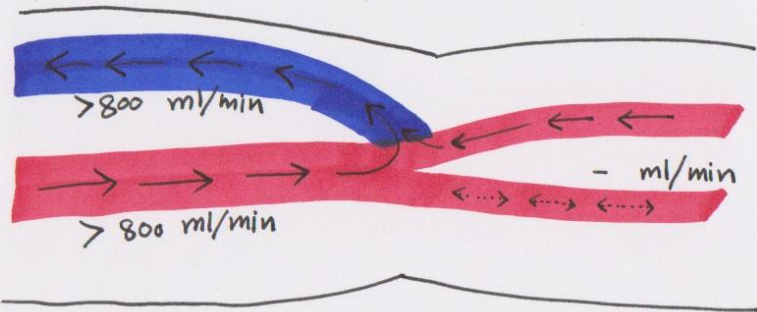
High-flow AVF



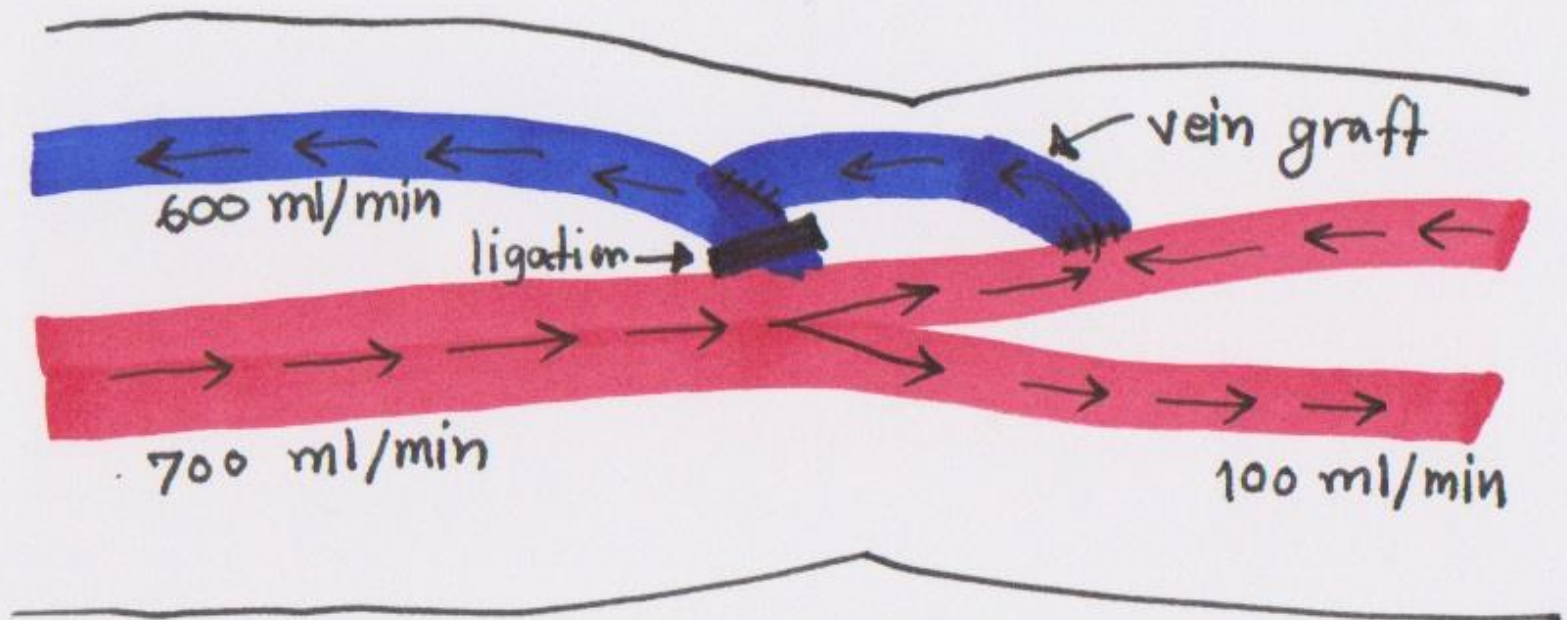
Banding



High-flow AVF



RUDI



Grade 2b-4a

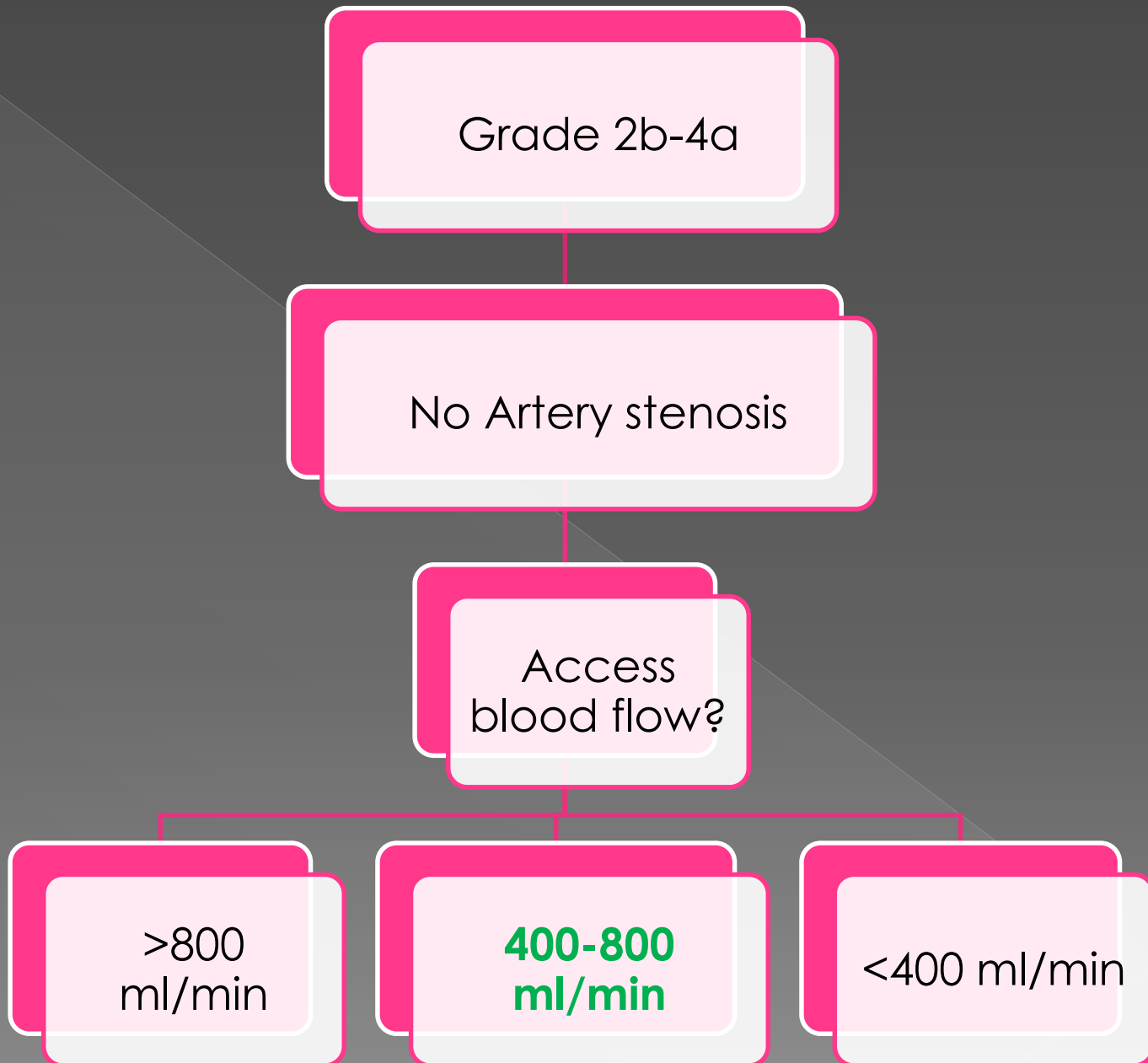
No Artery stenosis

Access
blood flow?

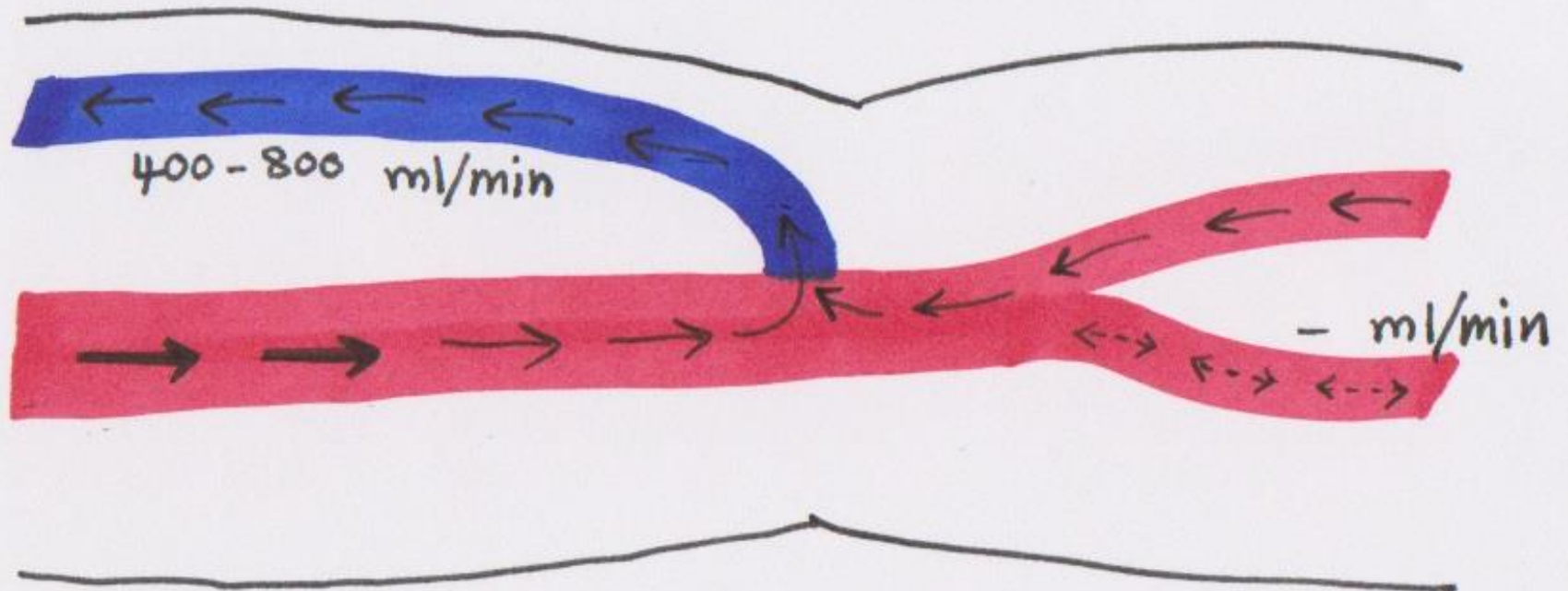
>800
ml/min

400-800
ml/min

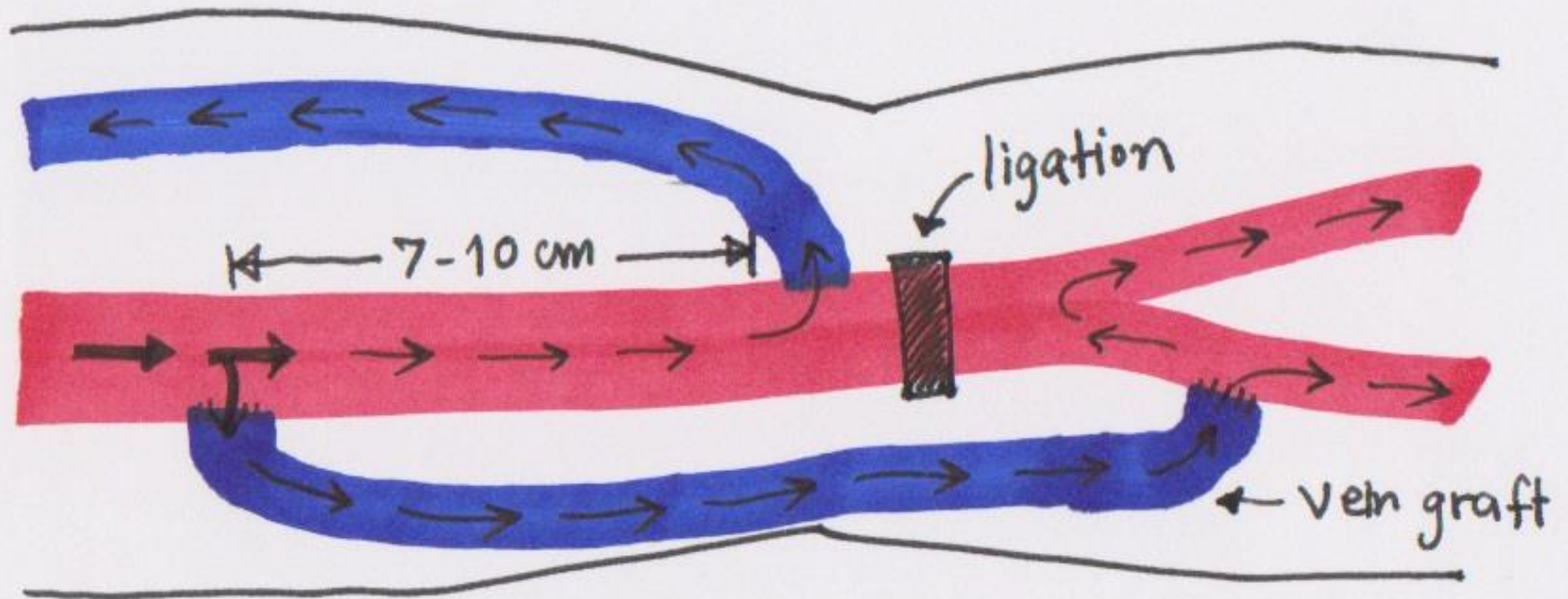
<400 ml/min



Normal flow AVF



DRIL



Grade 2b-4a

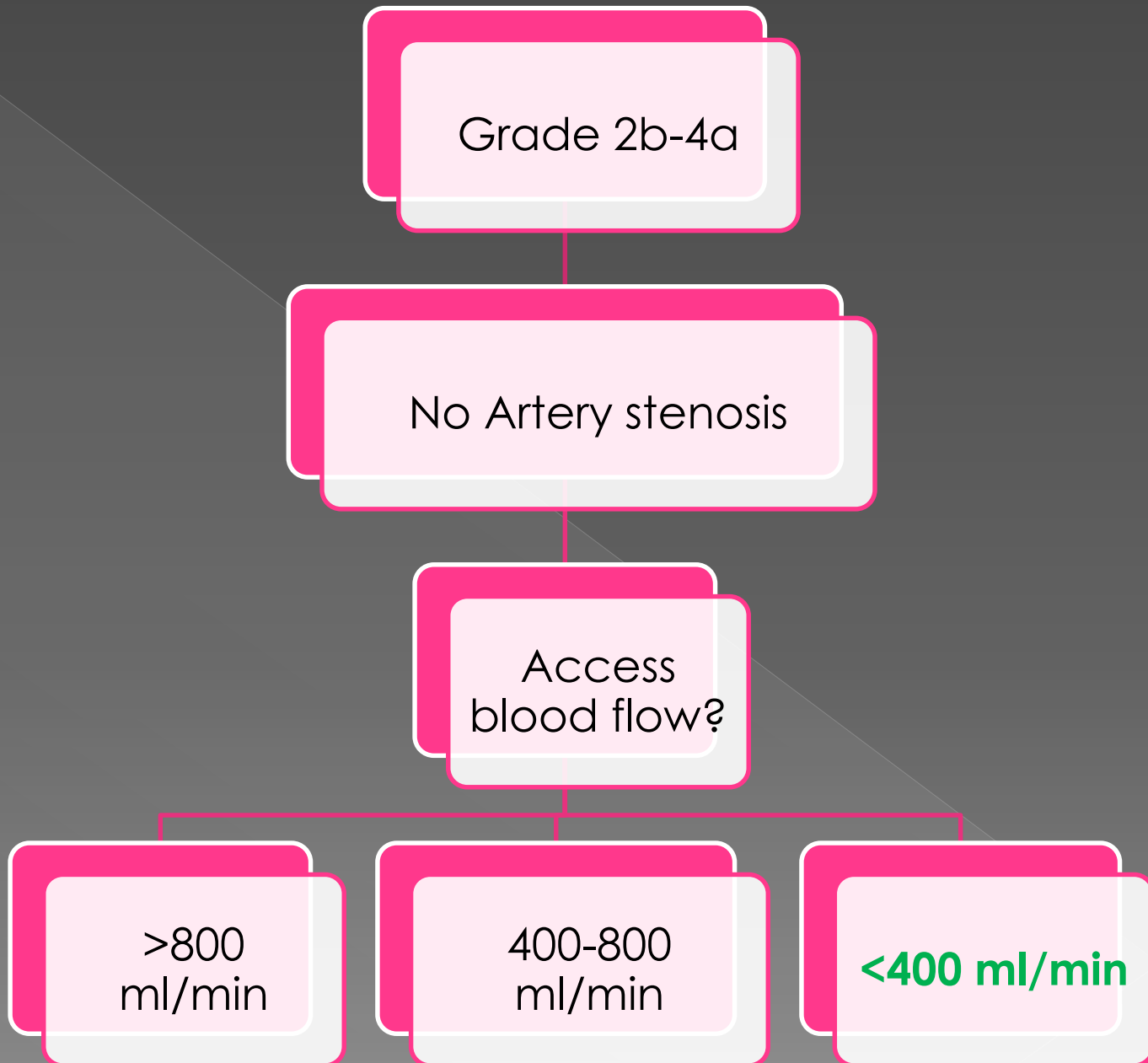
No Artery stenosis

Access
blood flow?

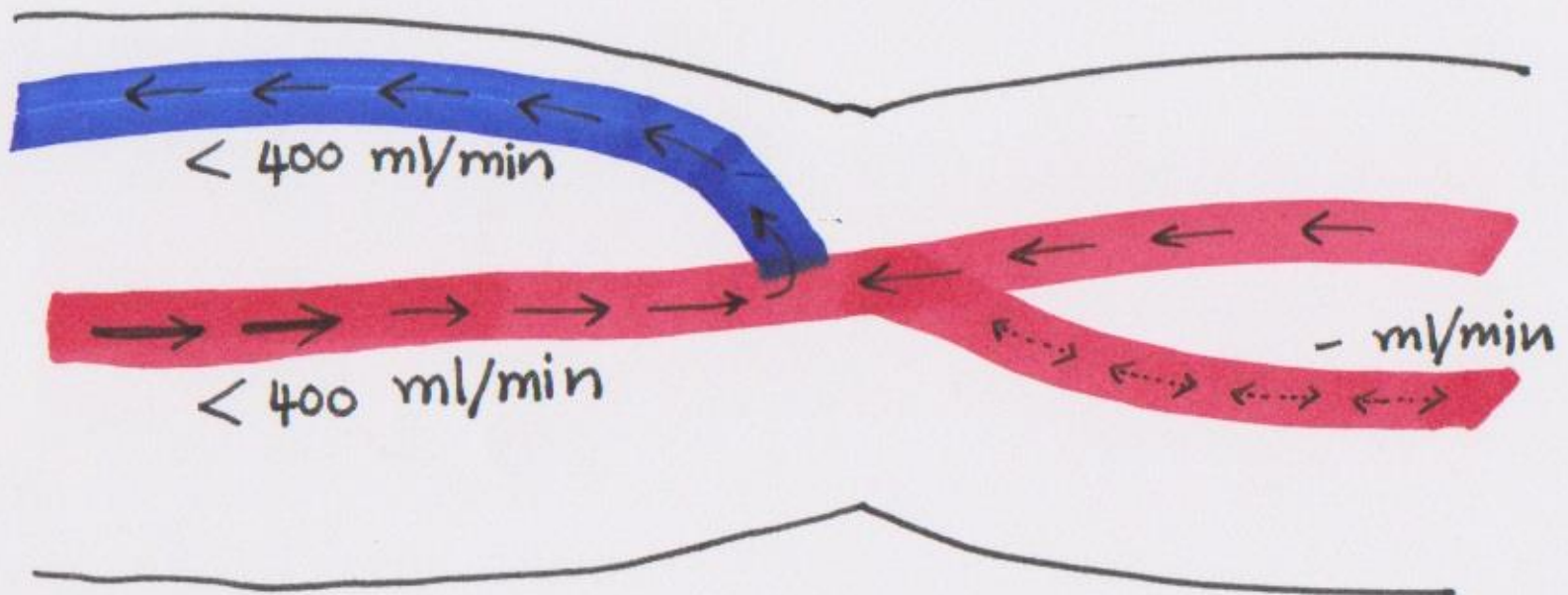
>800
ml/min

400-800
ml/min

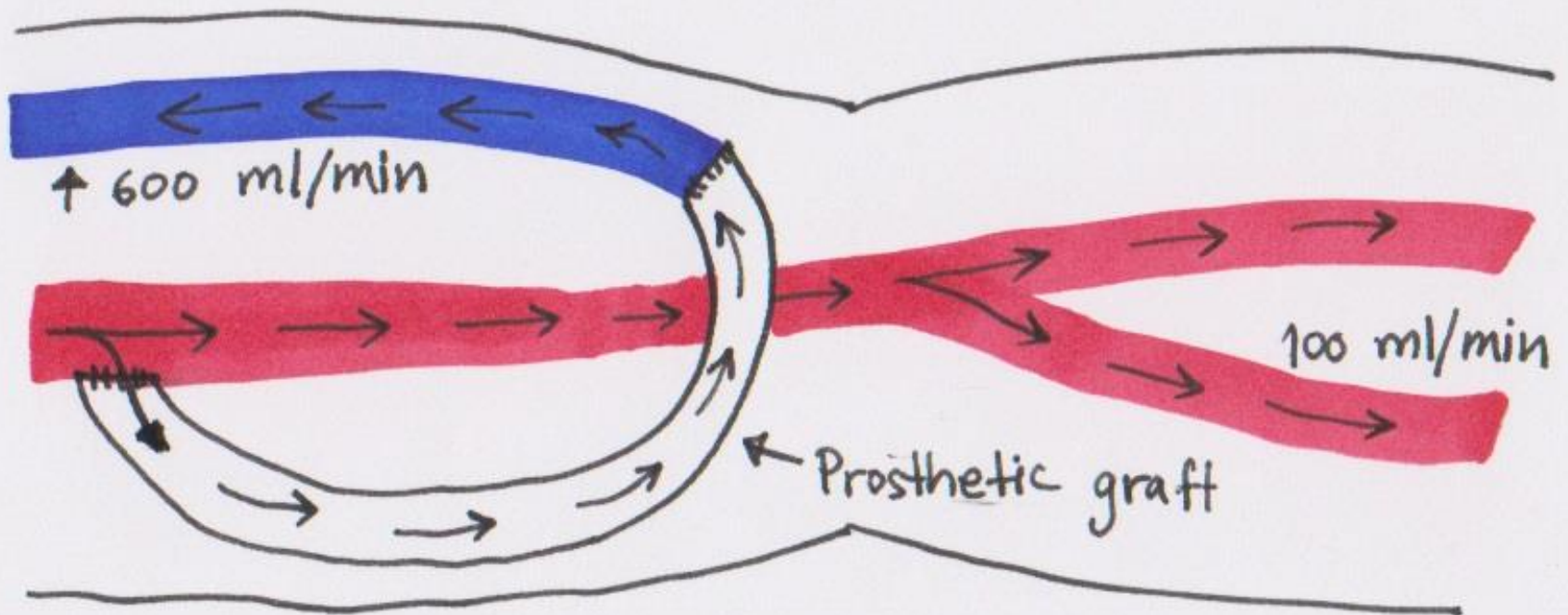
<400 ml/min



Low-flow AVF



PAI



Grade 2b-4a

Artery stenosis?

Yes

No

PTA

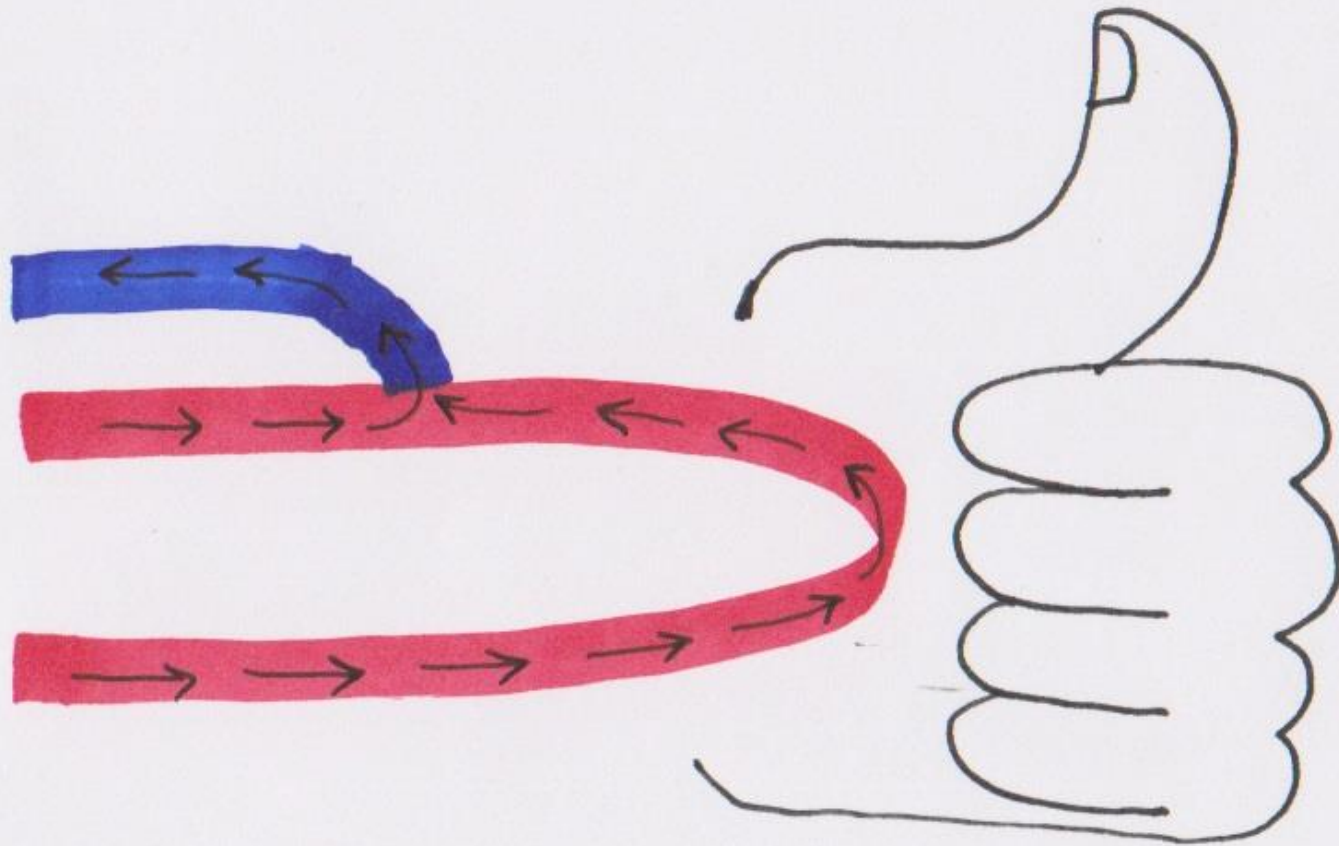
Access blood flow?

>800 ml/min
RUDI or Banding

400-800
ml/min
DRIL

<400 ml/min
PAI

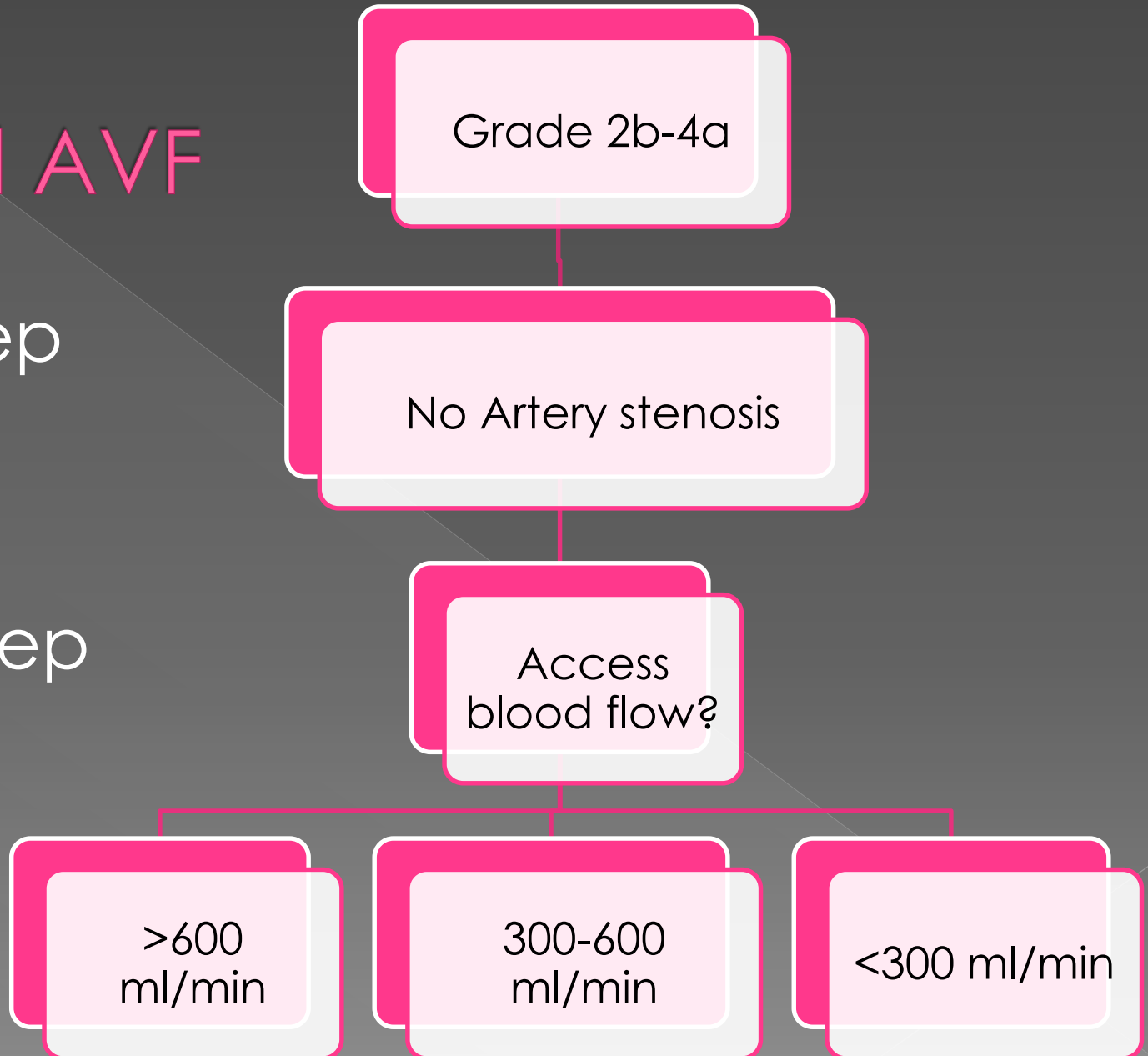
Distal AVF



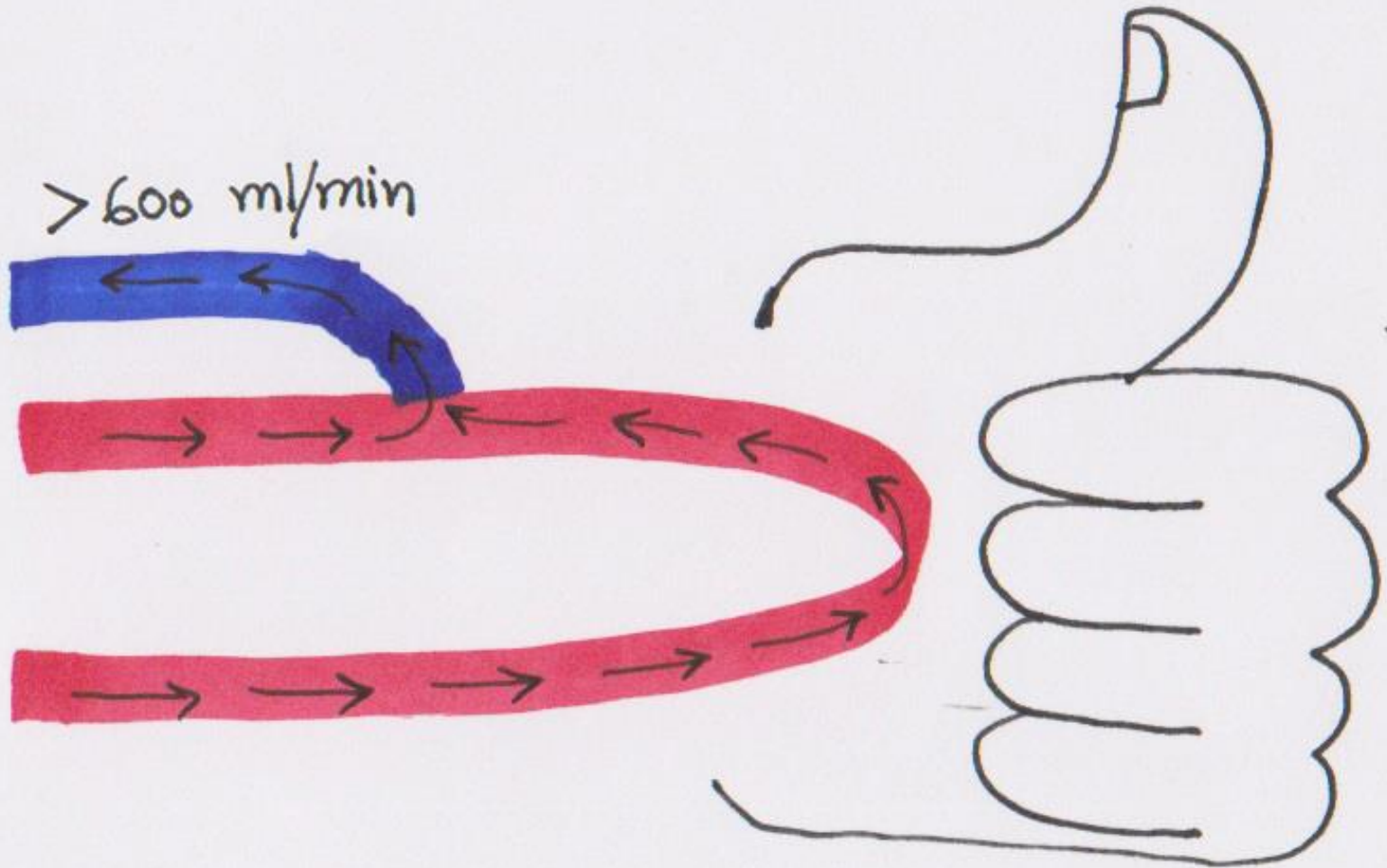
Distal AVF

● 1st step

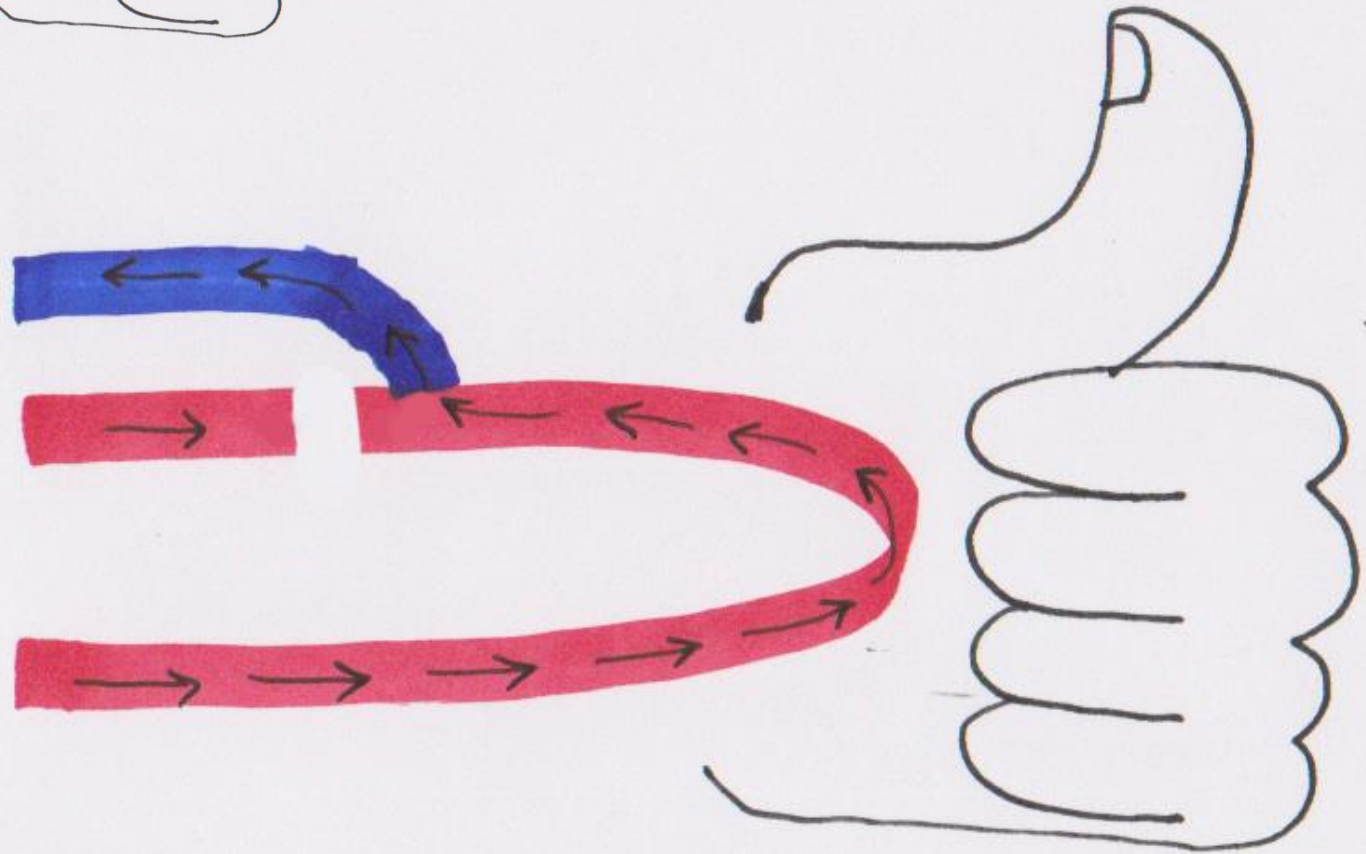
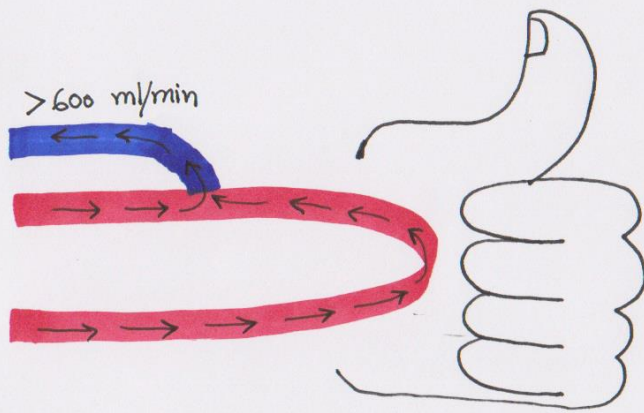
● 2nd step



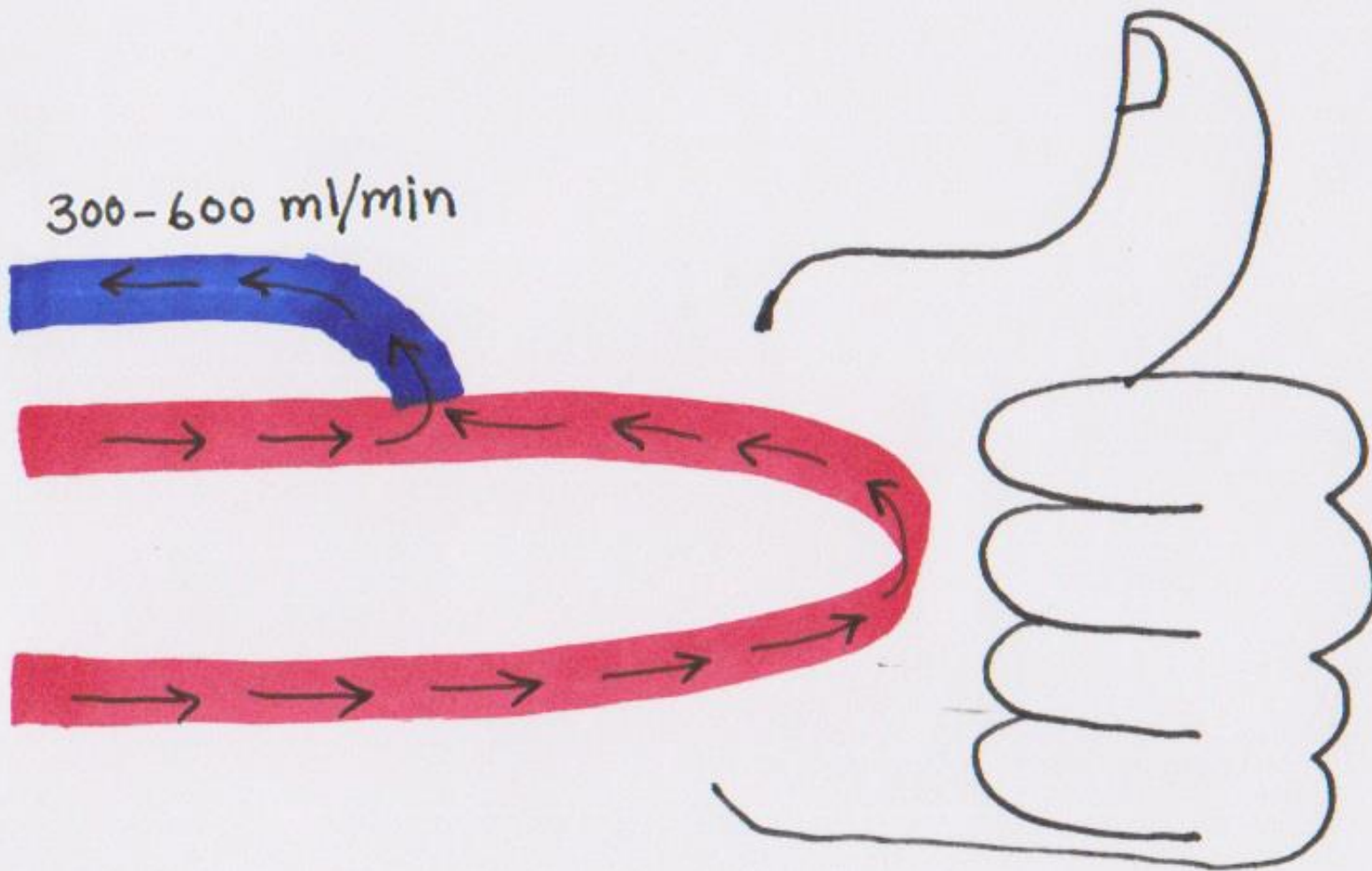
$> 600 \text{ ml/min}$



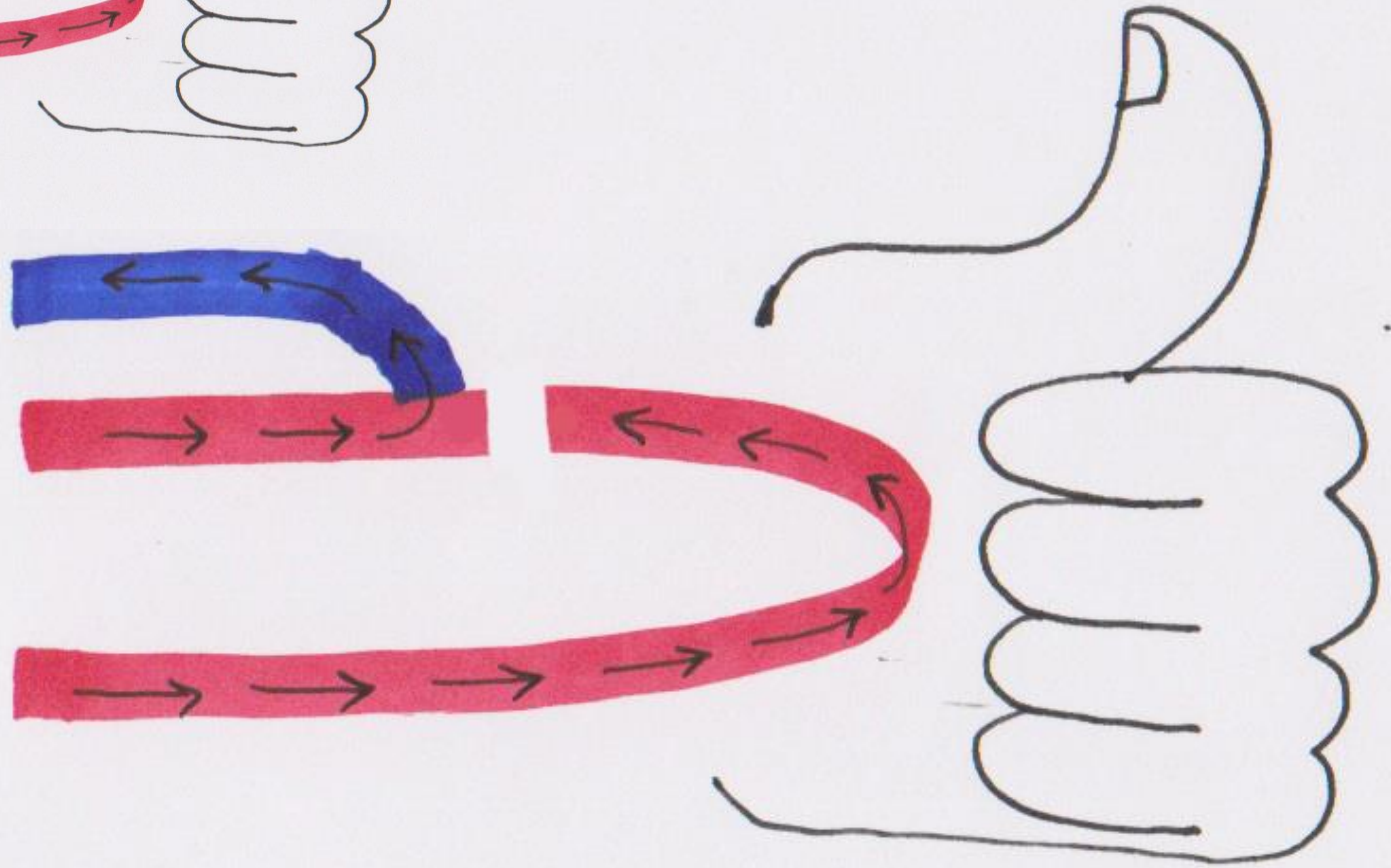
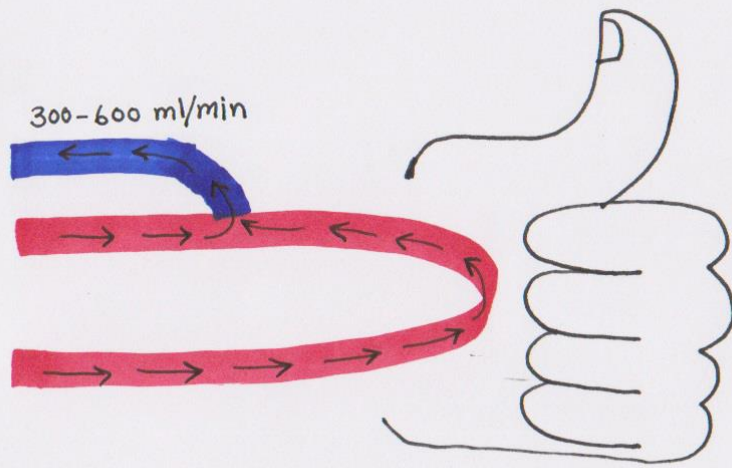
PRAL



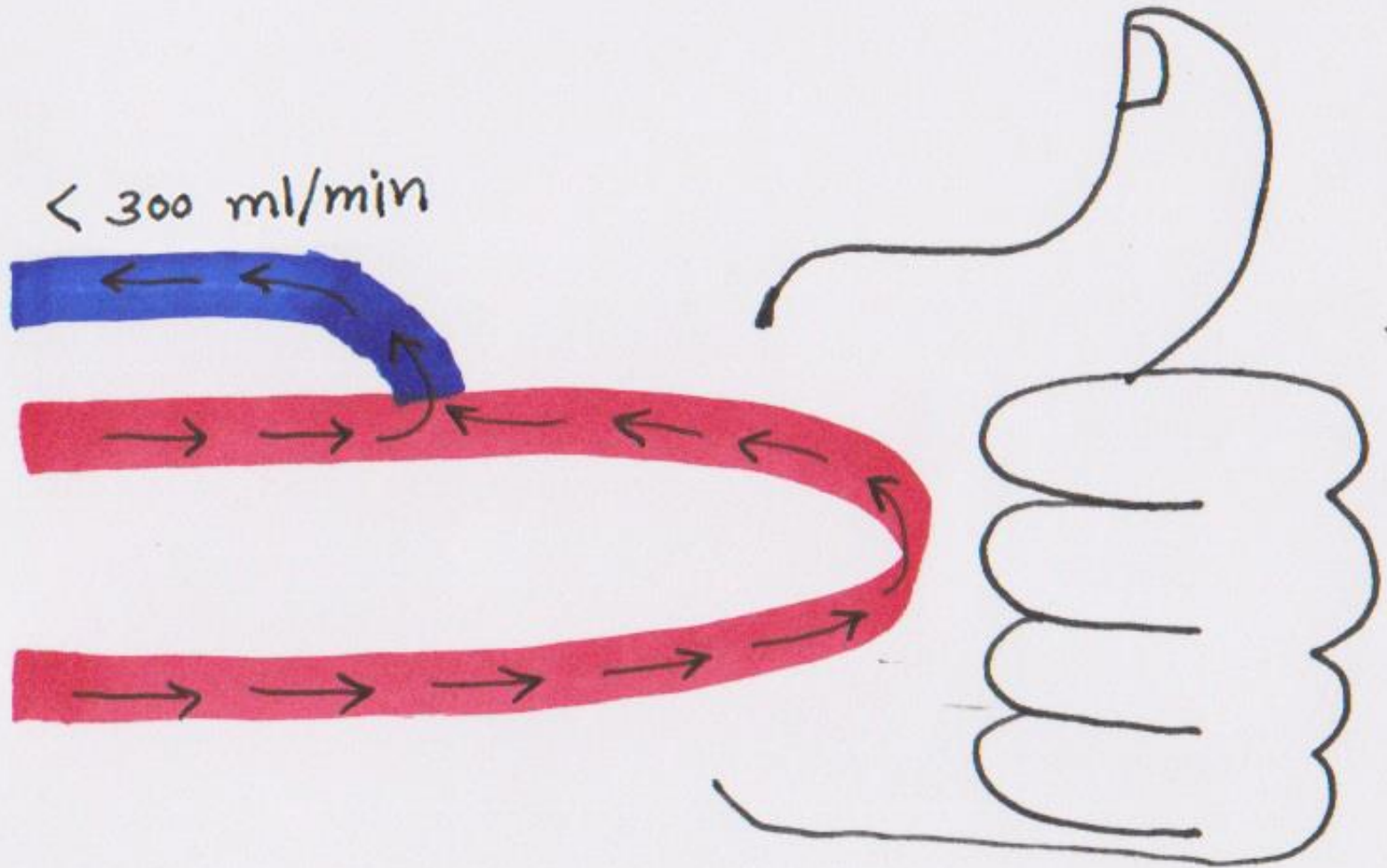
300-600 ml/min



DREAL

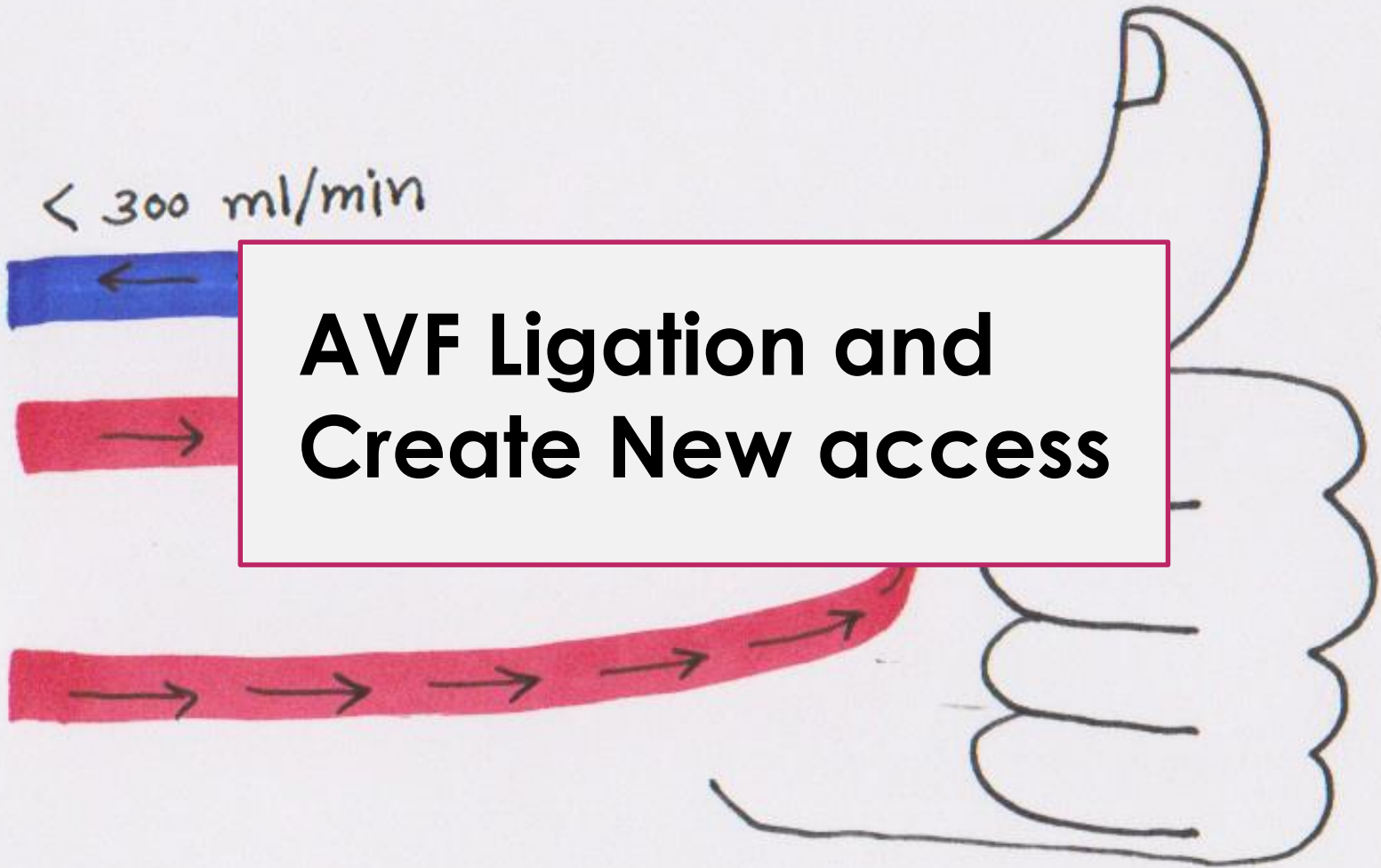


$< 300 \text{ ml/min}$

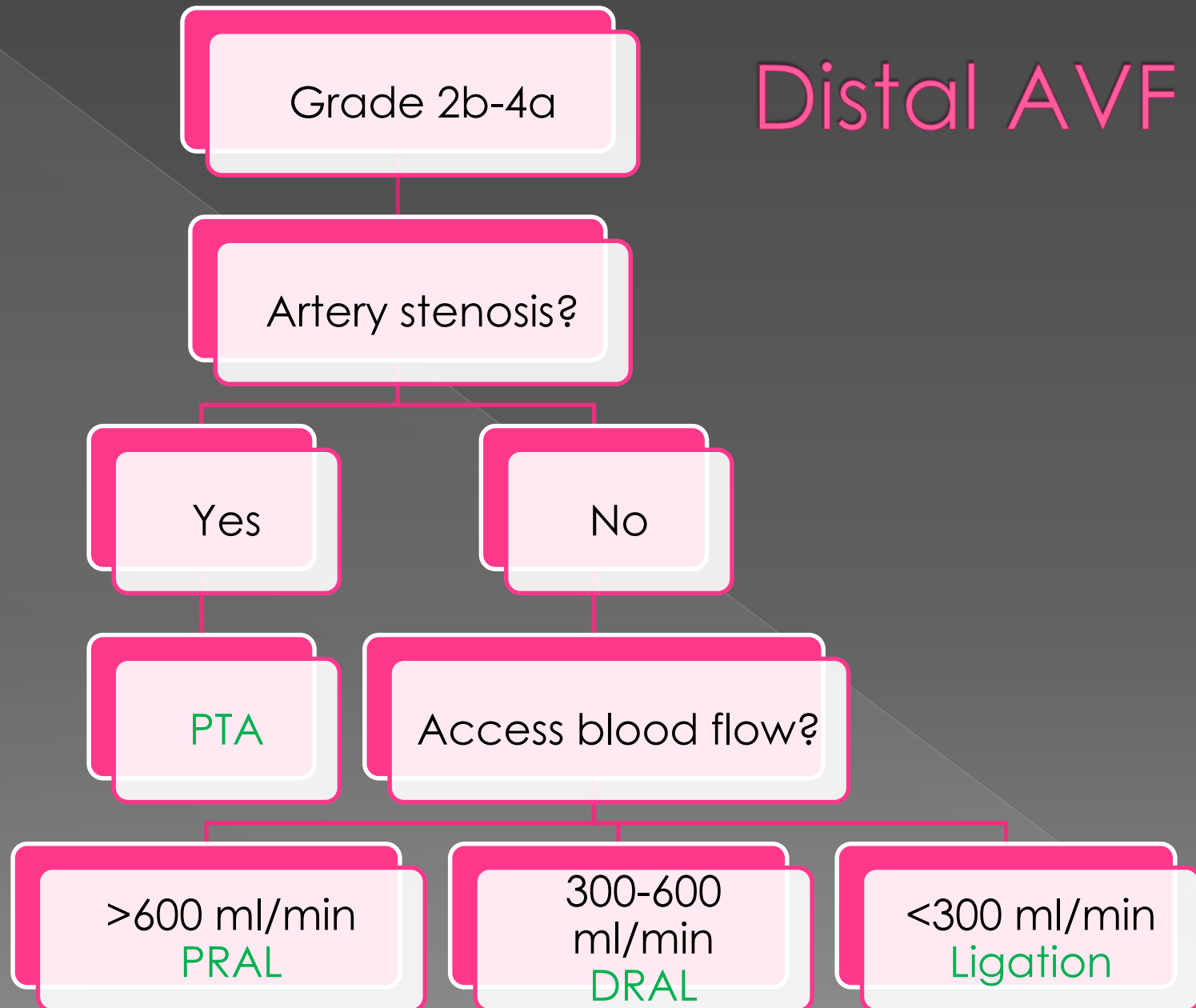


< 300 ml/min

AVF Ligation and Create New access



Distal AVF



Conclusion

- ◉ Grade 1-2a = Conservative
- ◉ Grade 2b-4a = Intervention
 - ◉ Access evaluation
 - ◉ Duplex/angiography
 - ◉ Treat arterial stenosis first
 - ◉ Choose treatment options
 - ◉ According to access blood flow
- ◉ Grade 4b = Ligation