

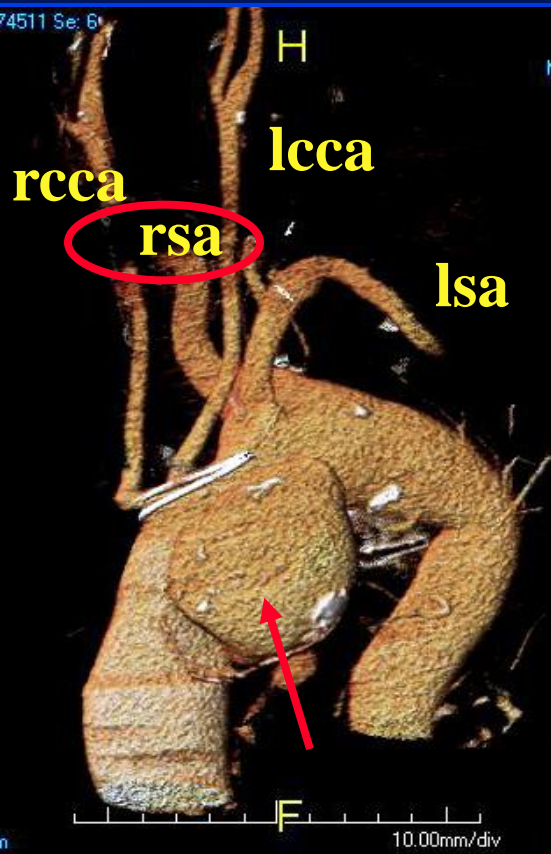
In Situ Fenestrations -Total Endovascular Arch Reconstruction

Björn Sonesson

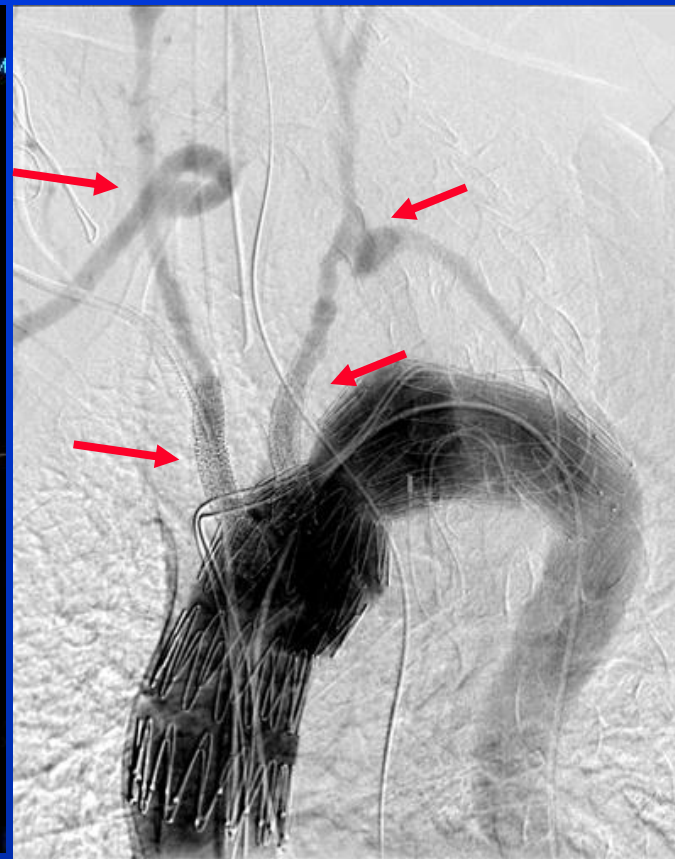
SUS

**Malmö University Hospital
Sweden**

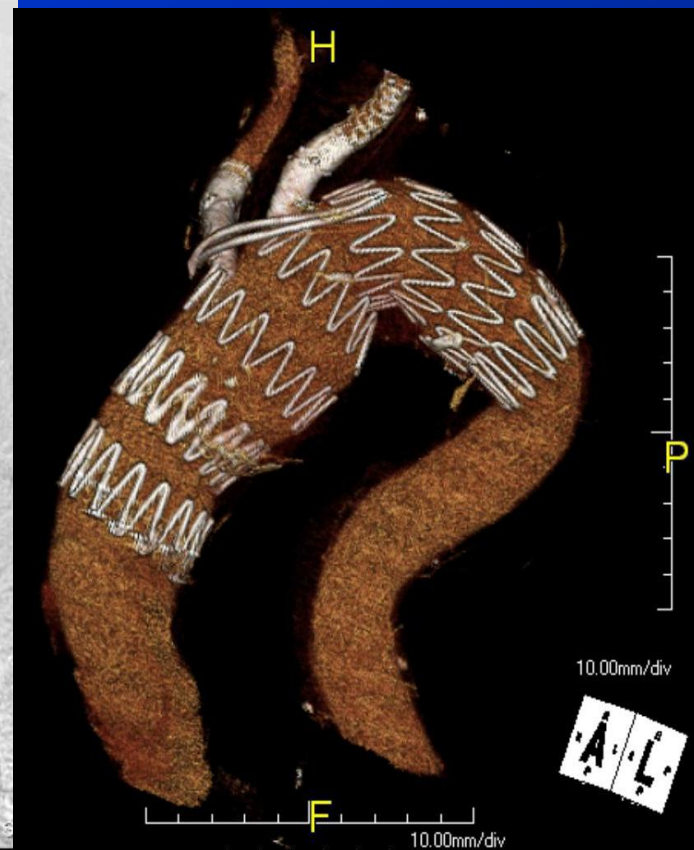
Arch Aneurysm



Final angio



2 year postop



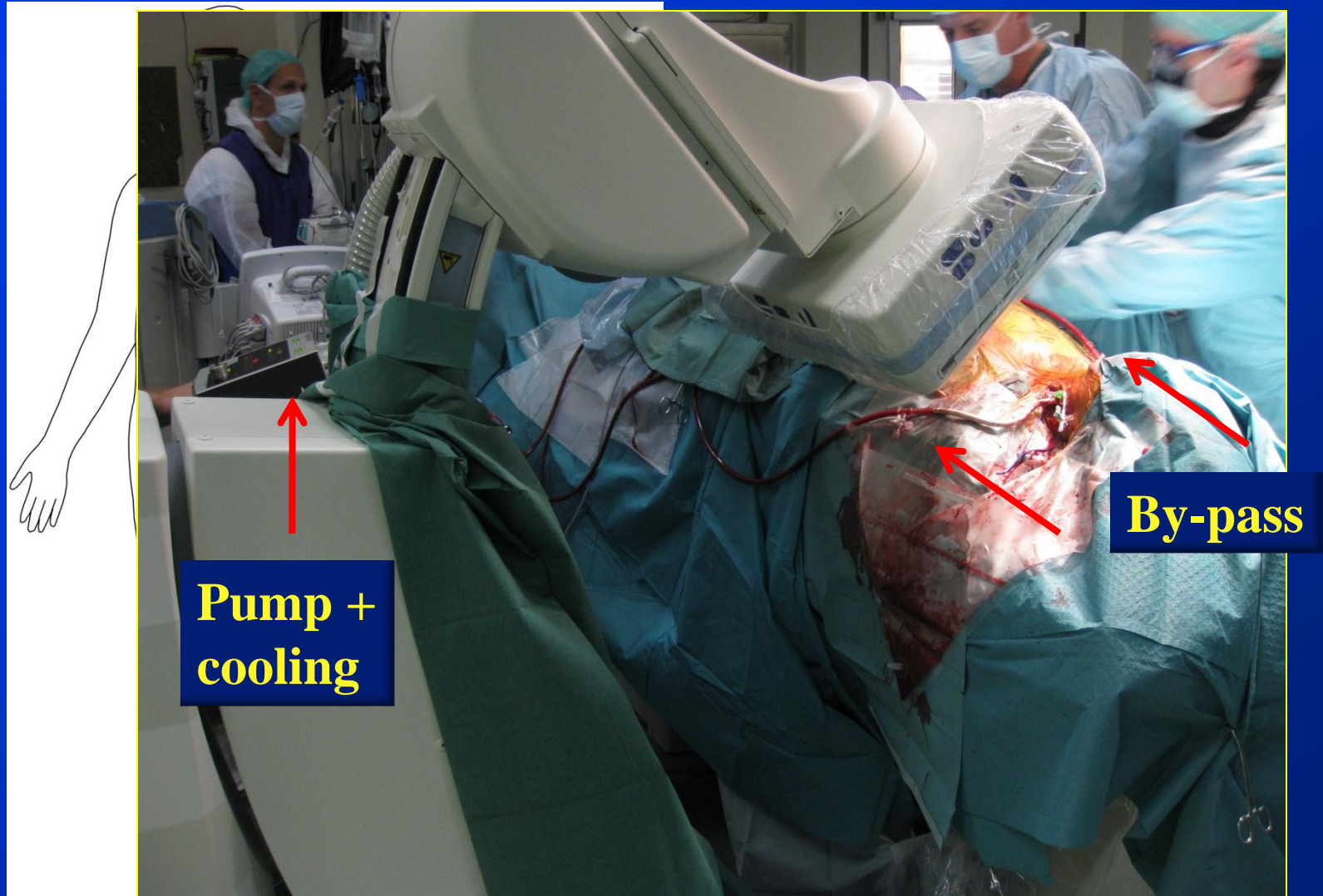
Steps for in situ fenestration

- ◆ Temporary by-pass from femoral to carotids
- ◆ Deployment of thoracic stent-graft
- ◆ Fenestration
- ◆ Termination of by -pass

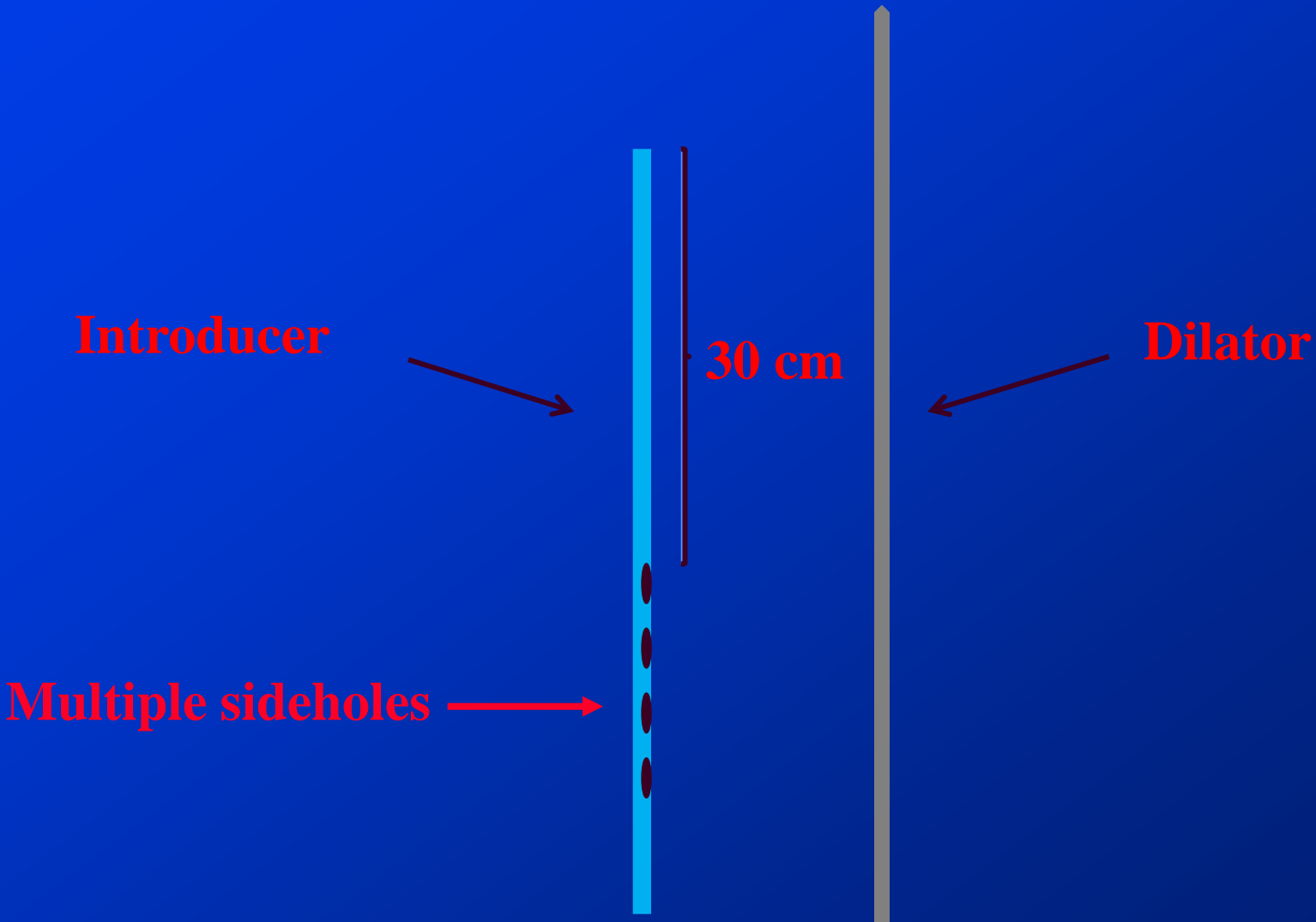
Issues

- ◆ Fenestration technique
- ◆ Brainperfusion during fenestration procedure
- ◆ Fenestration area in the stent graft
- ◆ Fabric-seal and stability

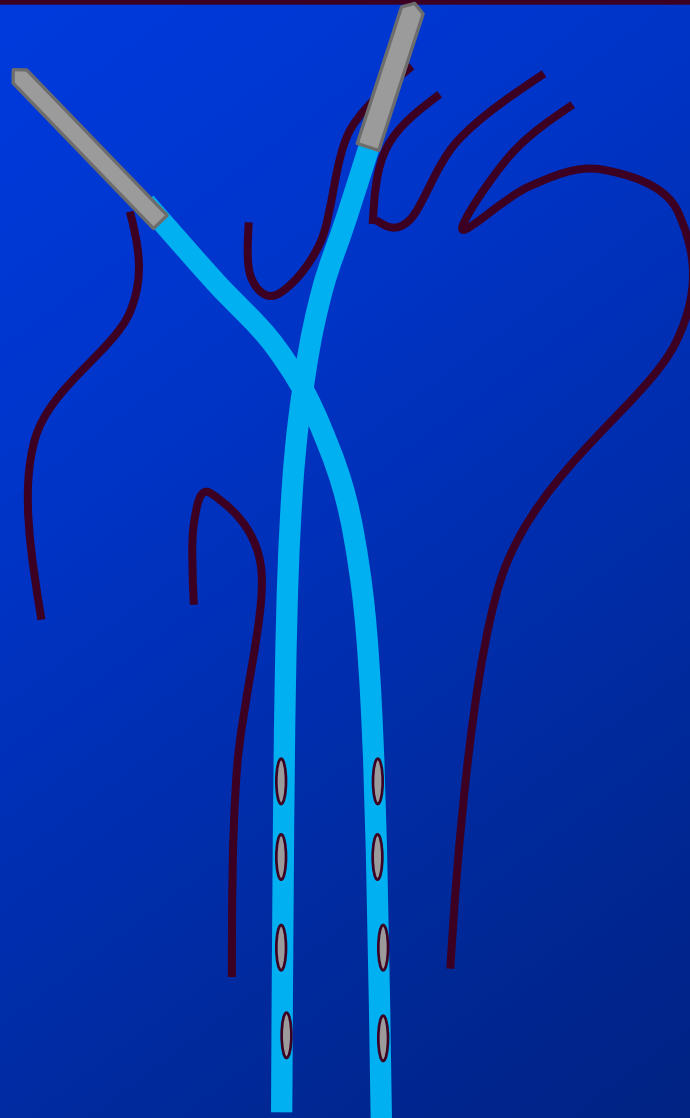
Temporary by-pass from femoral to carotids



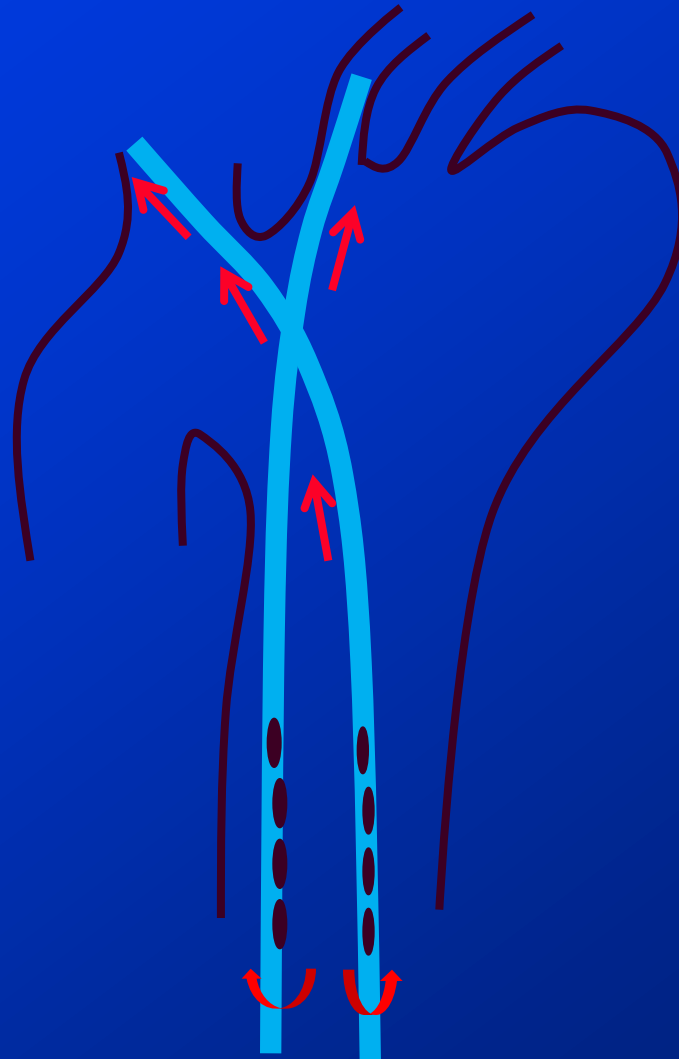
Introducershunt



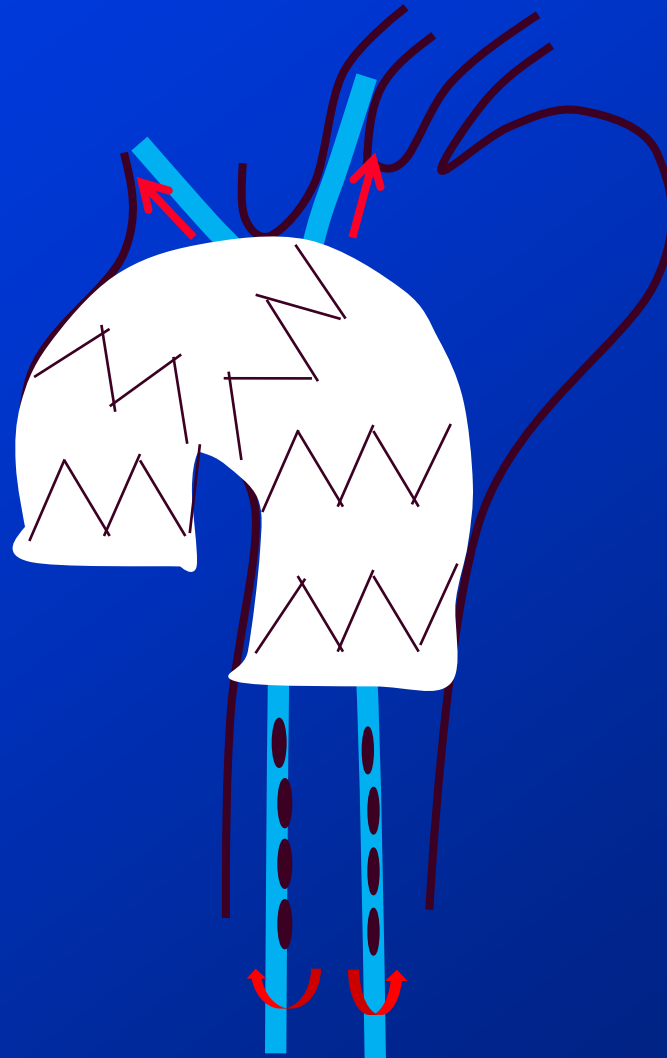
Introducershunt



Introducershunt



Introducershunt



- ◆ **What size requires the introducershunt to maintain adequate blood flow to the brain?**
- ◆ **What is the normal blood flow to the brain?**

Blood flow after carotid endarterectomy

- ◆ Endarterectomies between 2002 and 2005
- ◆ $n=367$
- ◆ 278 ± 91 ml/min

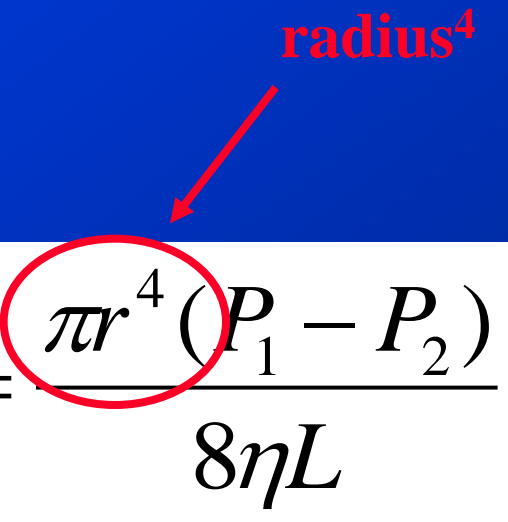
Blood flow during previous fenestrations with pump

- ◆ 250 ml/min without a change in cerebral oximetry (INVOS)

Calculation of introducershunt size

$$\text{Bloodflow} = \frac{\pi r^4 (P_1 - P_2)}{8\eta L}$$

radius⁴



400 ml/min → 10 Fr

Experimental porcine model



10 F = 422 ml/min

compared

required 250-300 ml/min

Conclusions

- ◆ **10 Fr Introducershunts Give Adequate Brain Perfusion During In Situ Fenestration**
- ◆ **Introducershunts Are Another Step Towards Complete Endovascular Arch Reconstruction**