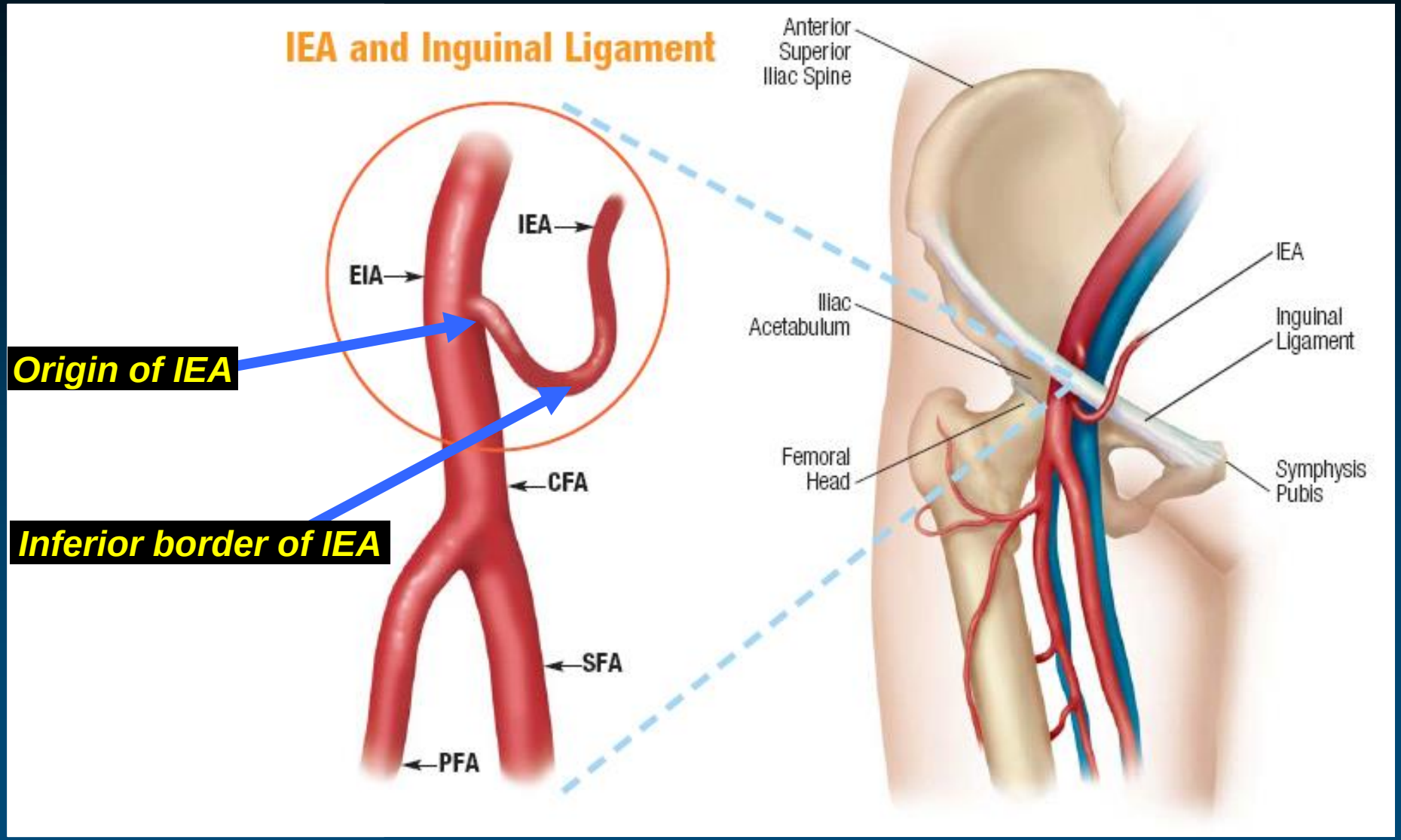
Avoiding Access Site Complication & Completion with Safe Vascular Closure

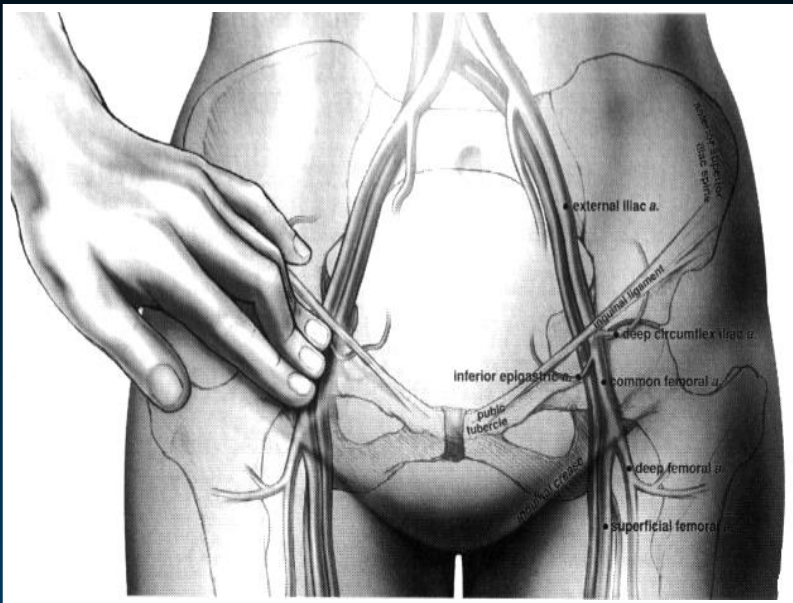
Jae-Hyung Roh, MD, PhD

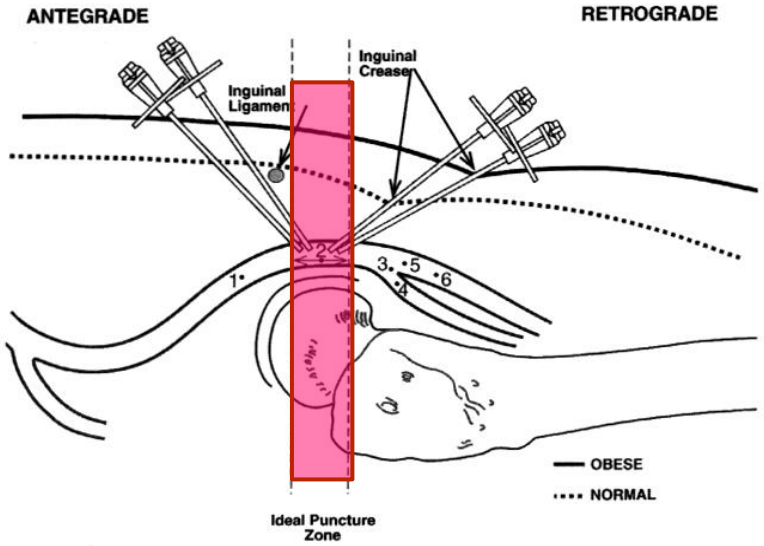
Cardiovascular Center in
Chungnam National University Hospital

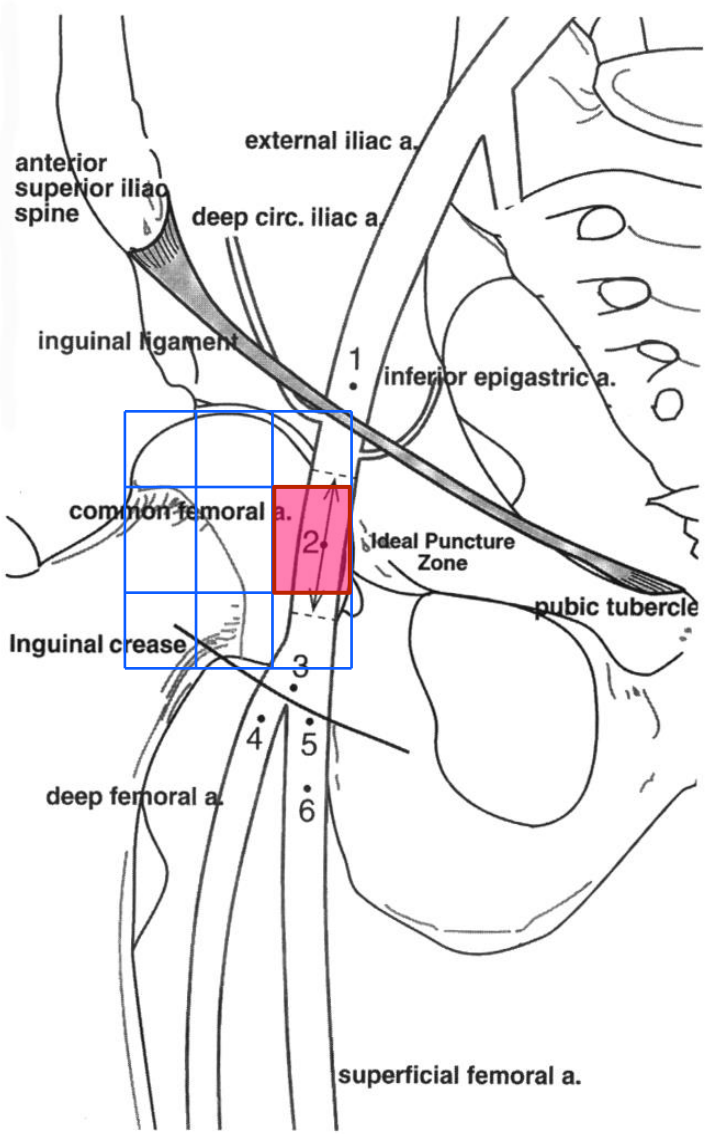
Anatomy of Femoral Access Site



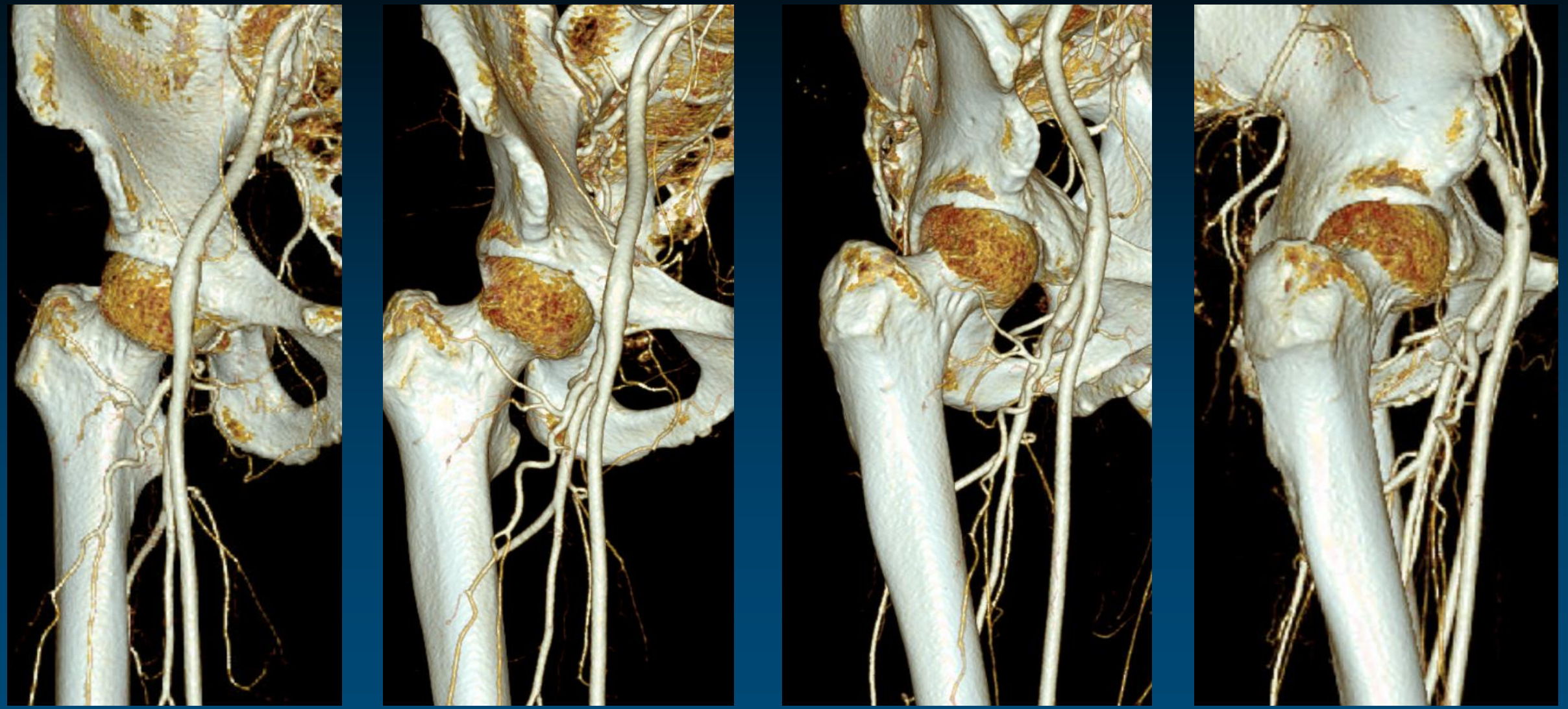
Standard Puncture site



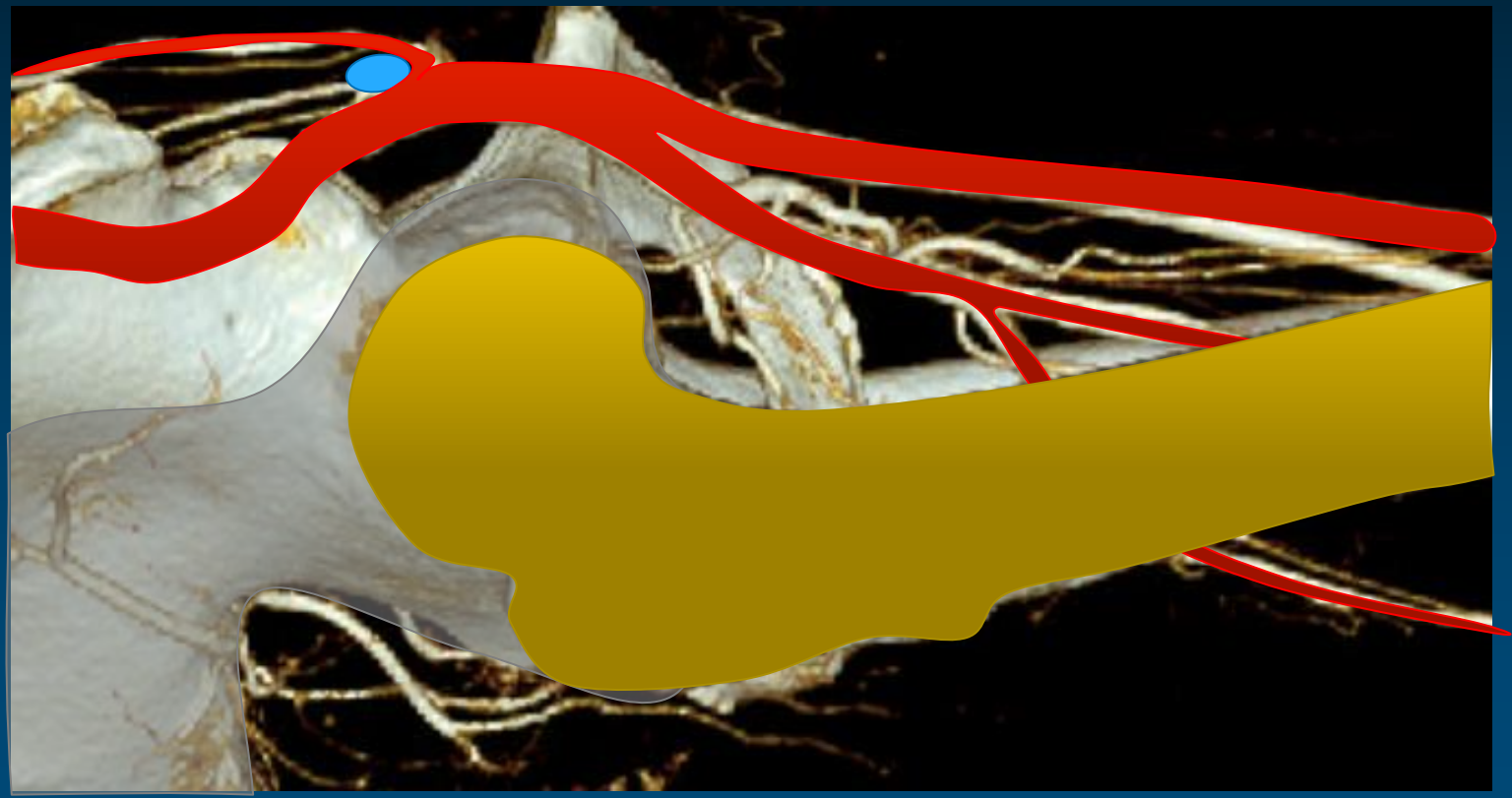




Puncture site

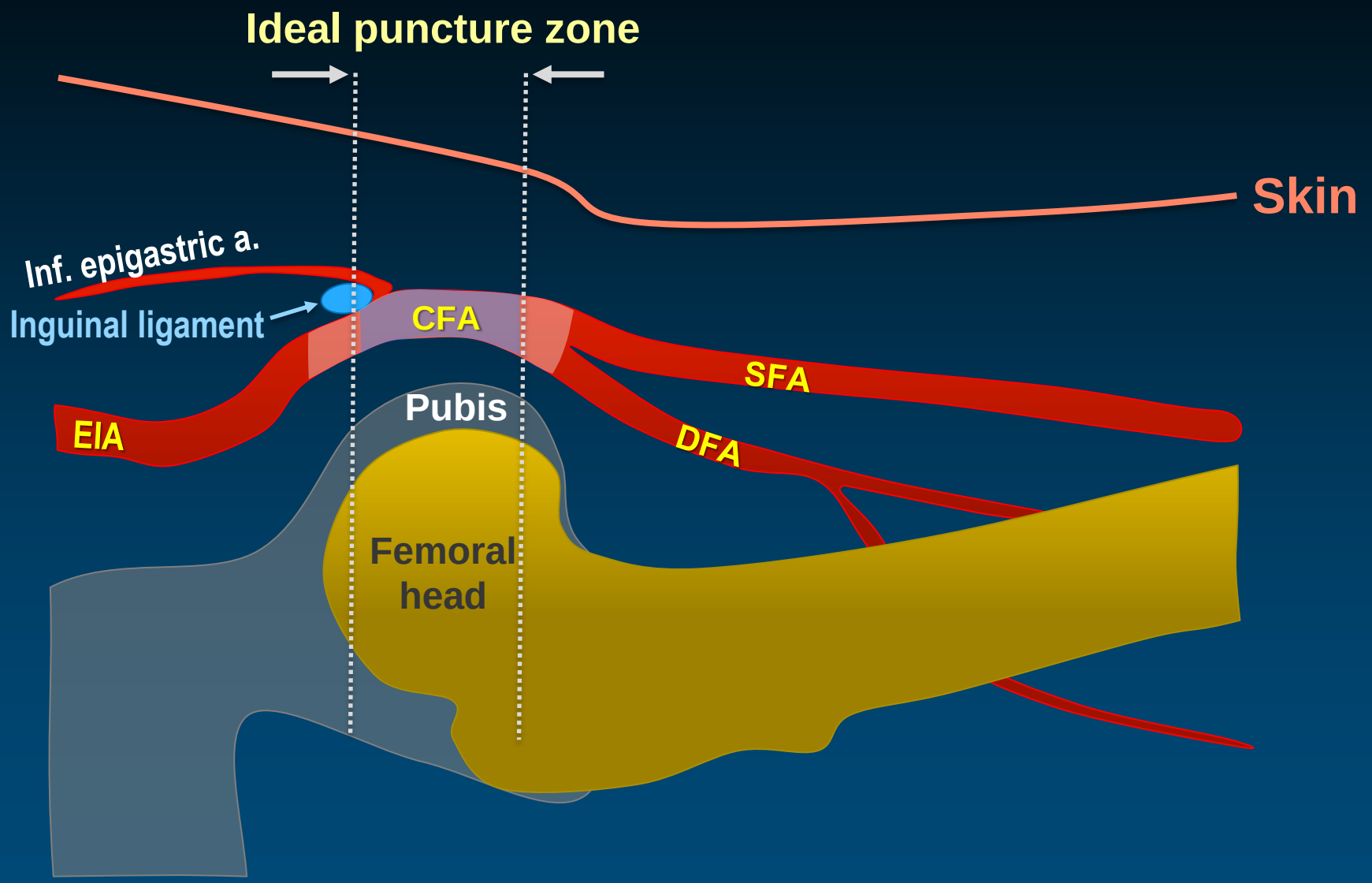


Puncture site ?



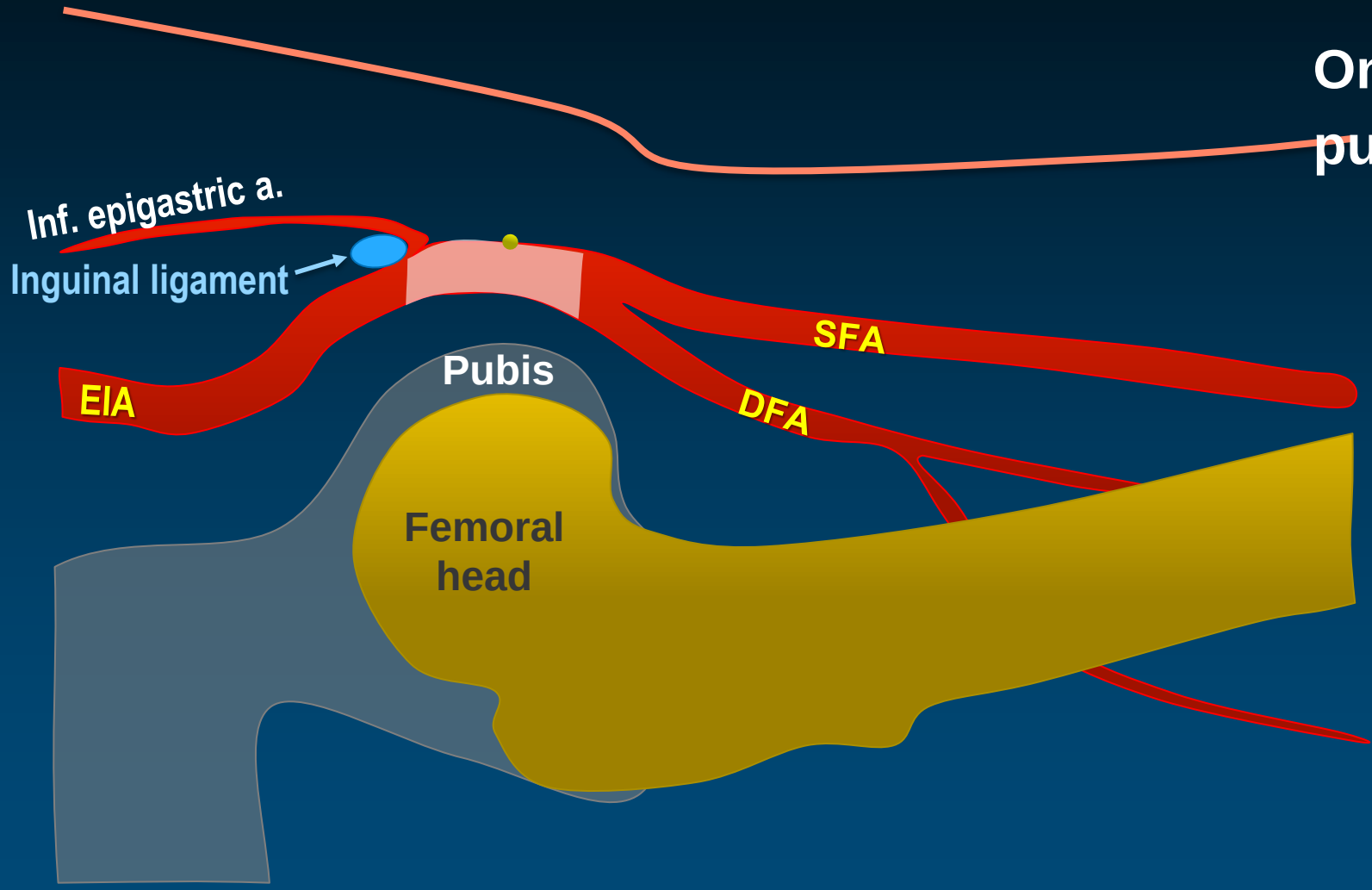
Drawn by J. H. Lee, MD, F

Anatiomical CFA ≠ Ideal puncture zone



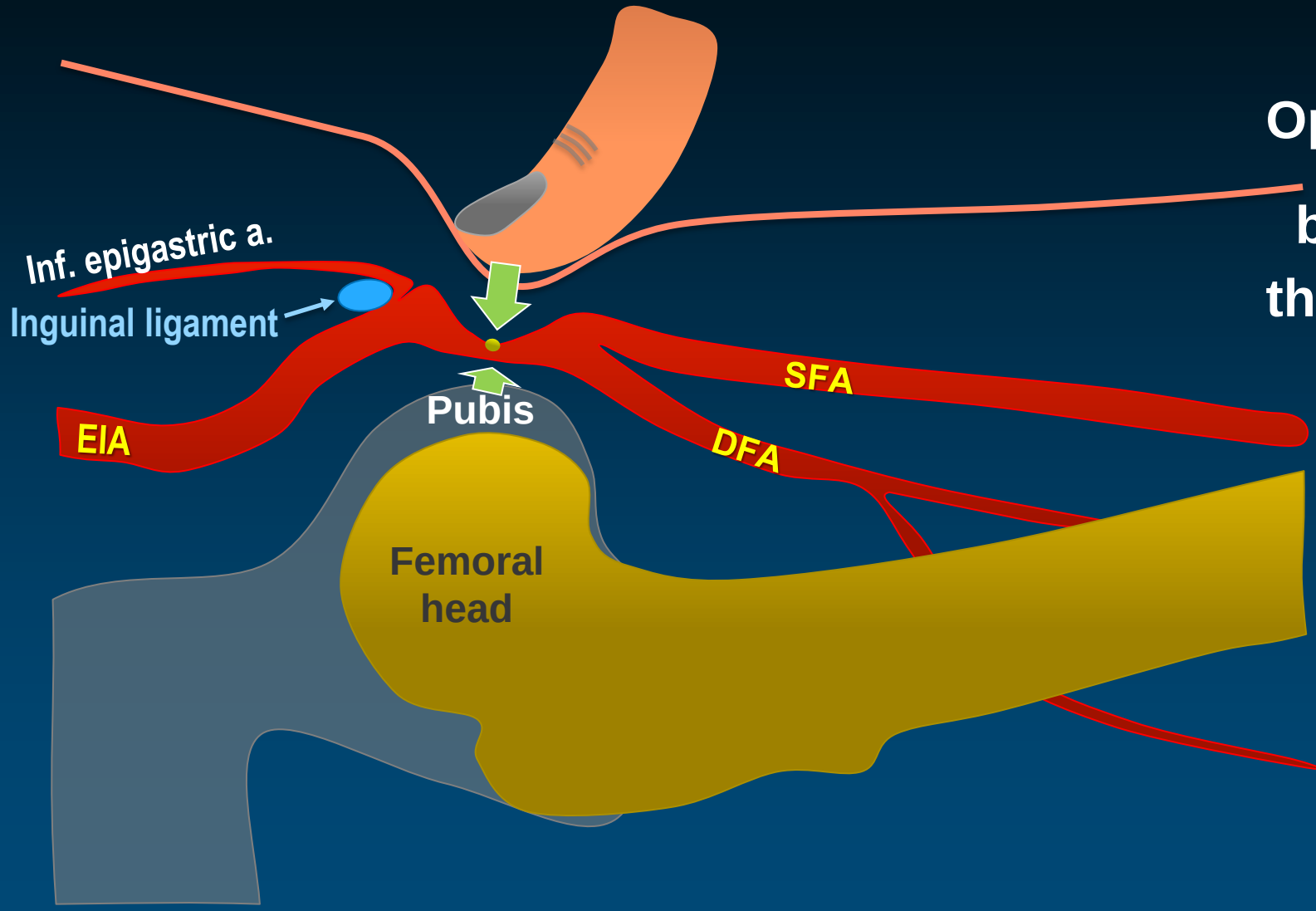
Drawn by J. H. Lee, MD, F

External Compression on Proper Access Site



On the femoral head and pubic bone

External Compression on Proper Access Site

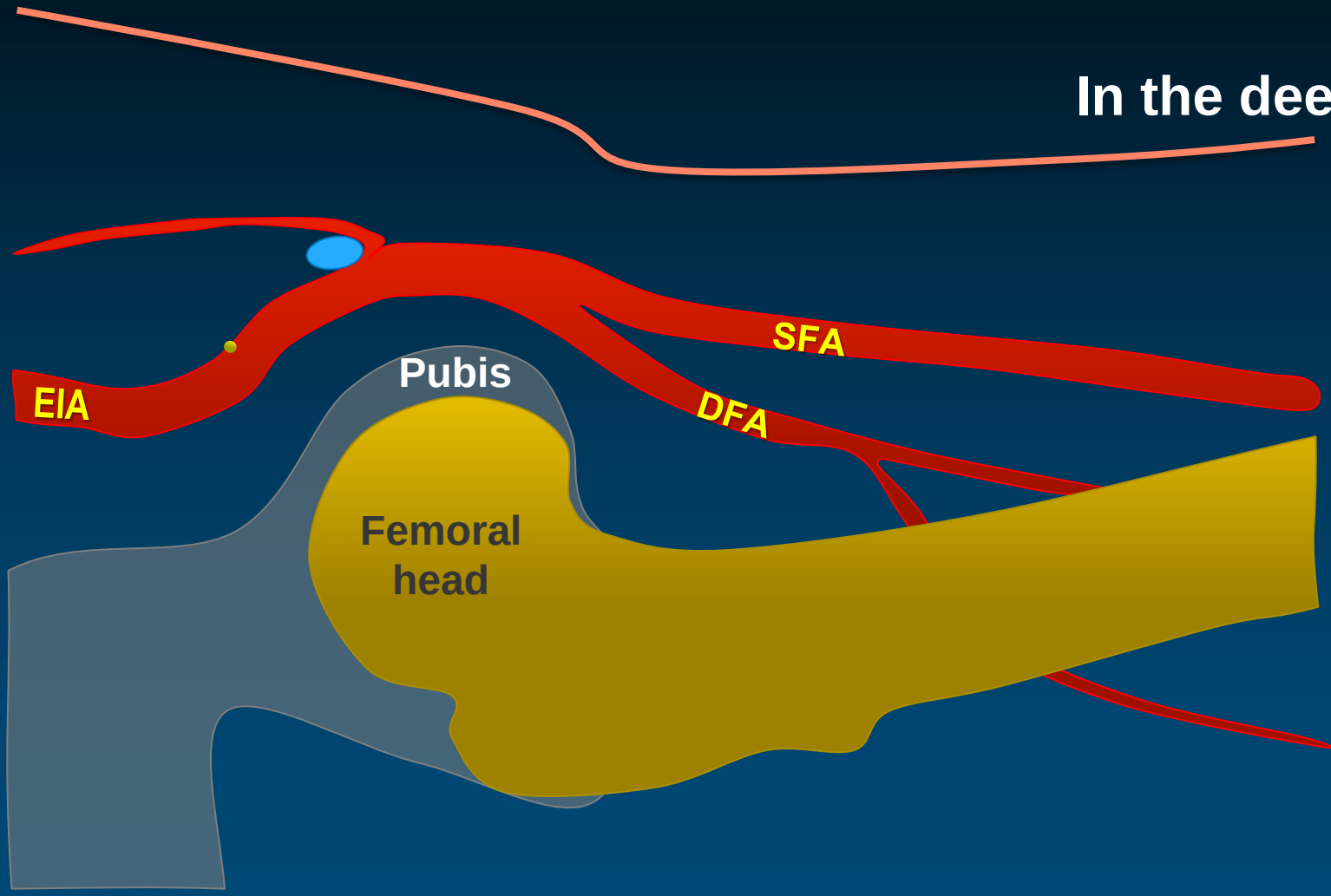


Optimal hemostasis

between the finger and the bony structures

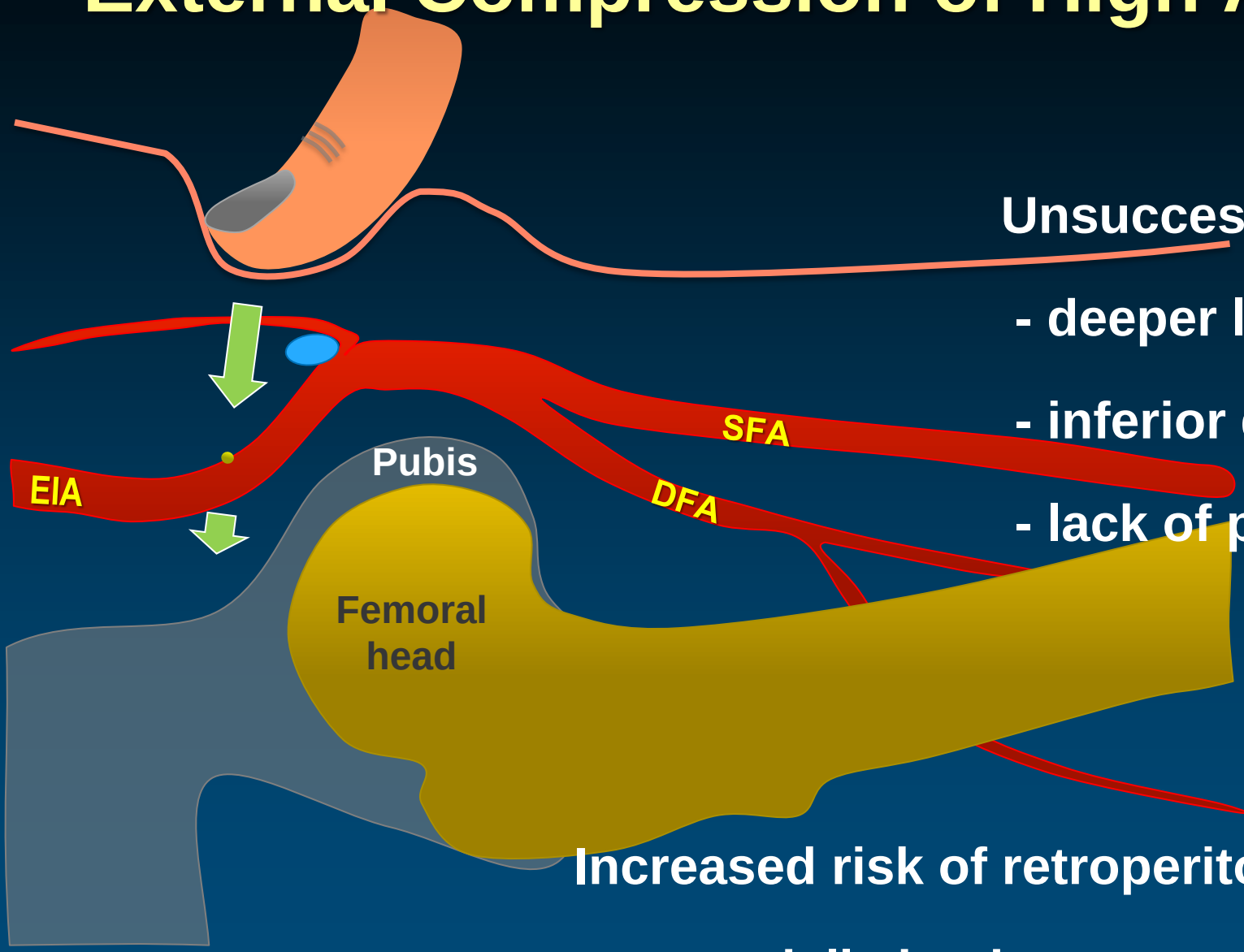
Drawn by J. H. Lee, MD, F

External Compression on High Access Site



Drawn by J. H. Lee, MD, F

External Compression of High Access Site



Unsuccessful hemostasis d/t

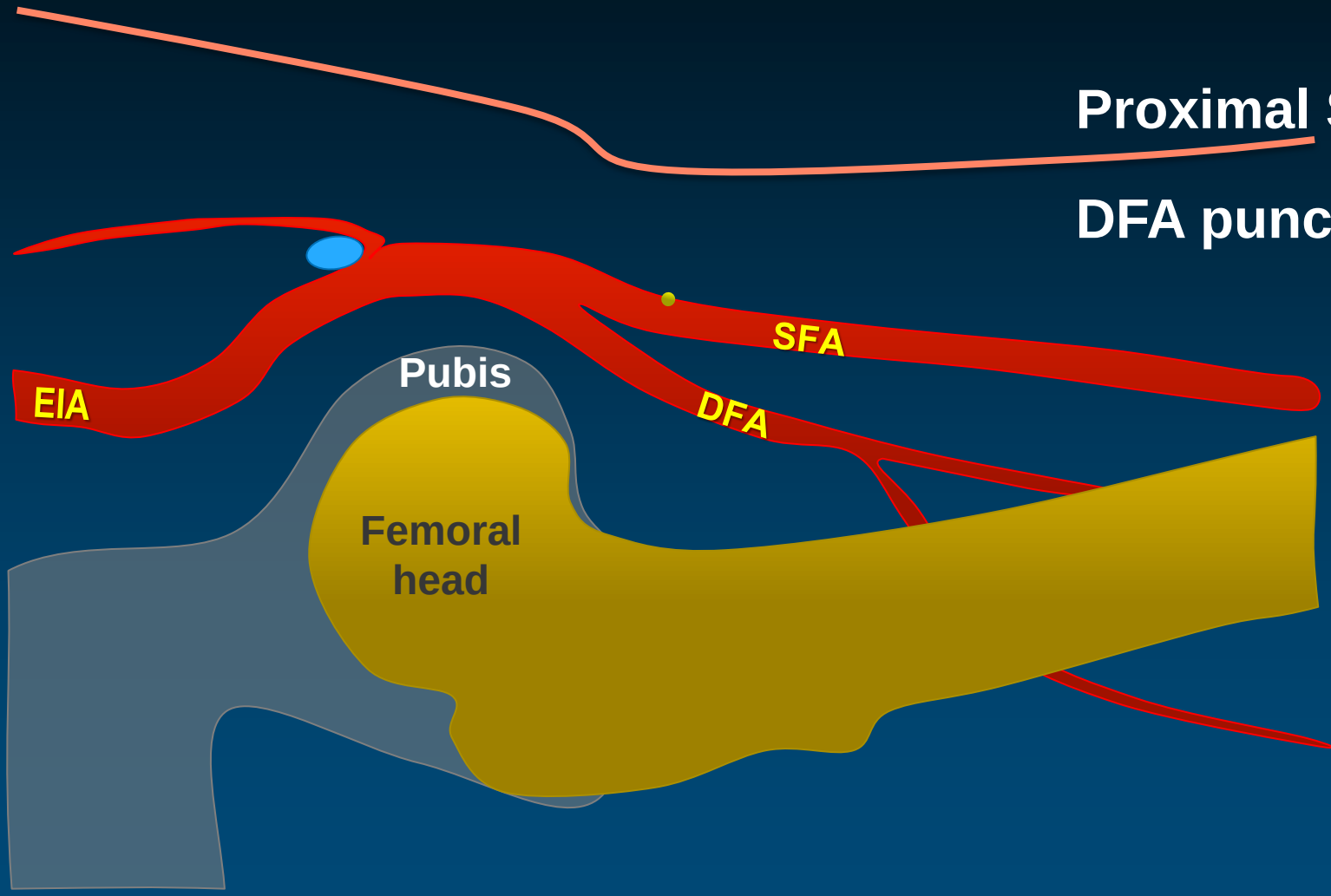
- deeper location of vessel
- inferior displacement of vessel
- lack of posterior bony structure

Increased risk of retroperitoneal bleeding

- especially in obese pt. and posterior wall puncture

Drawn by J. H. Lee, MD, F

External Compression on Low Access Site

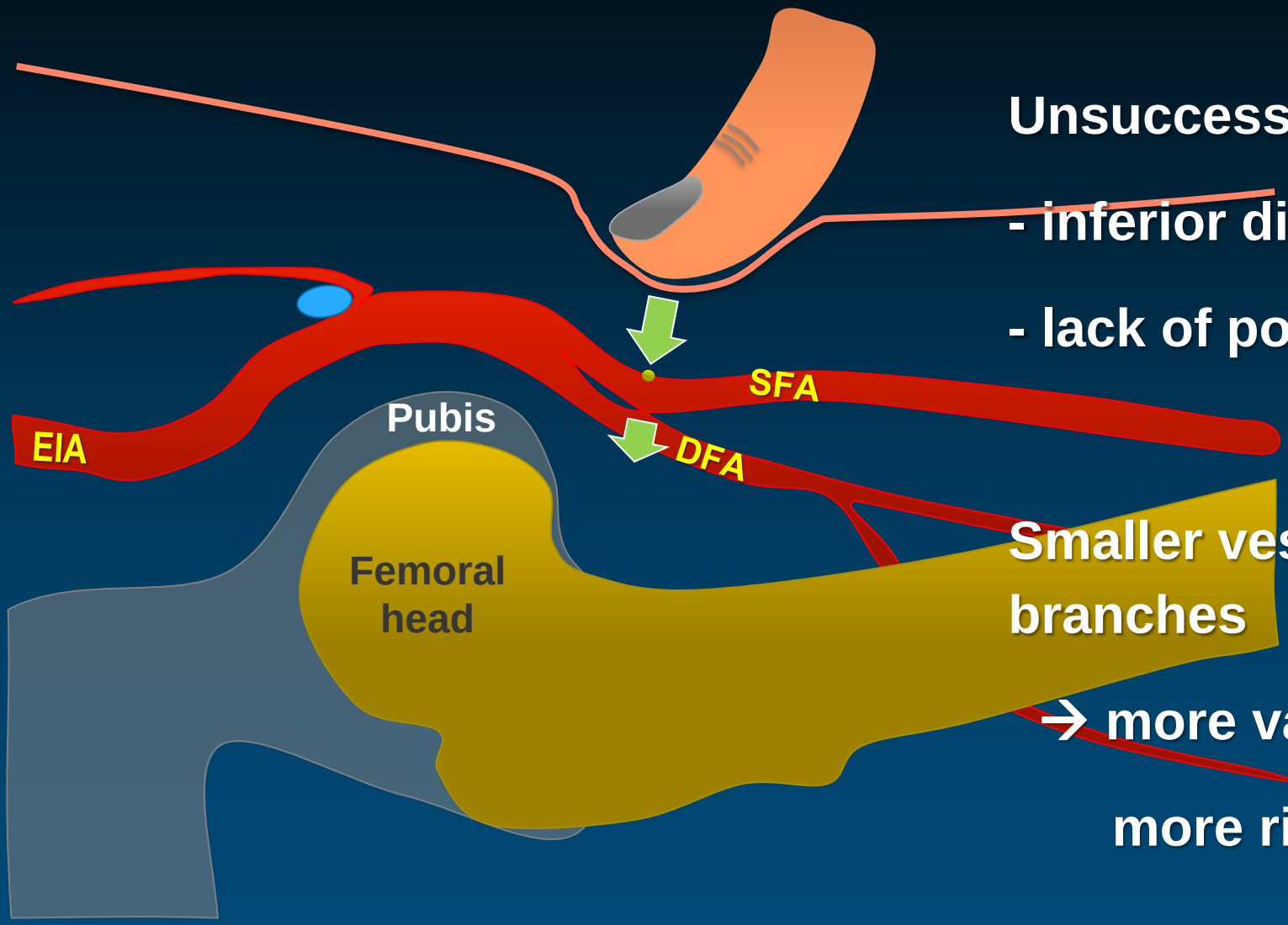


Proximal SFA puncture, usually

DFA puncture, sometimes

Drawn by J. H. Lee, MD, F

External Compression of Low Access Site



Unsuccessful hemostasis d/t

- inferior displacement of vessel

- lack of posterior bony structure

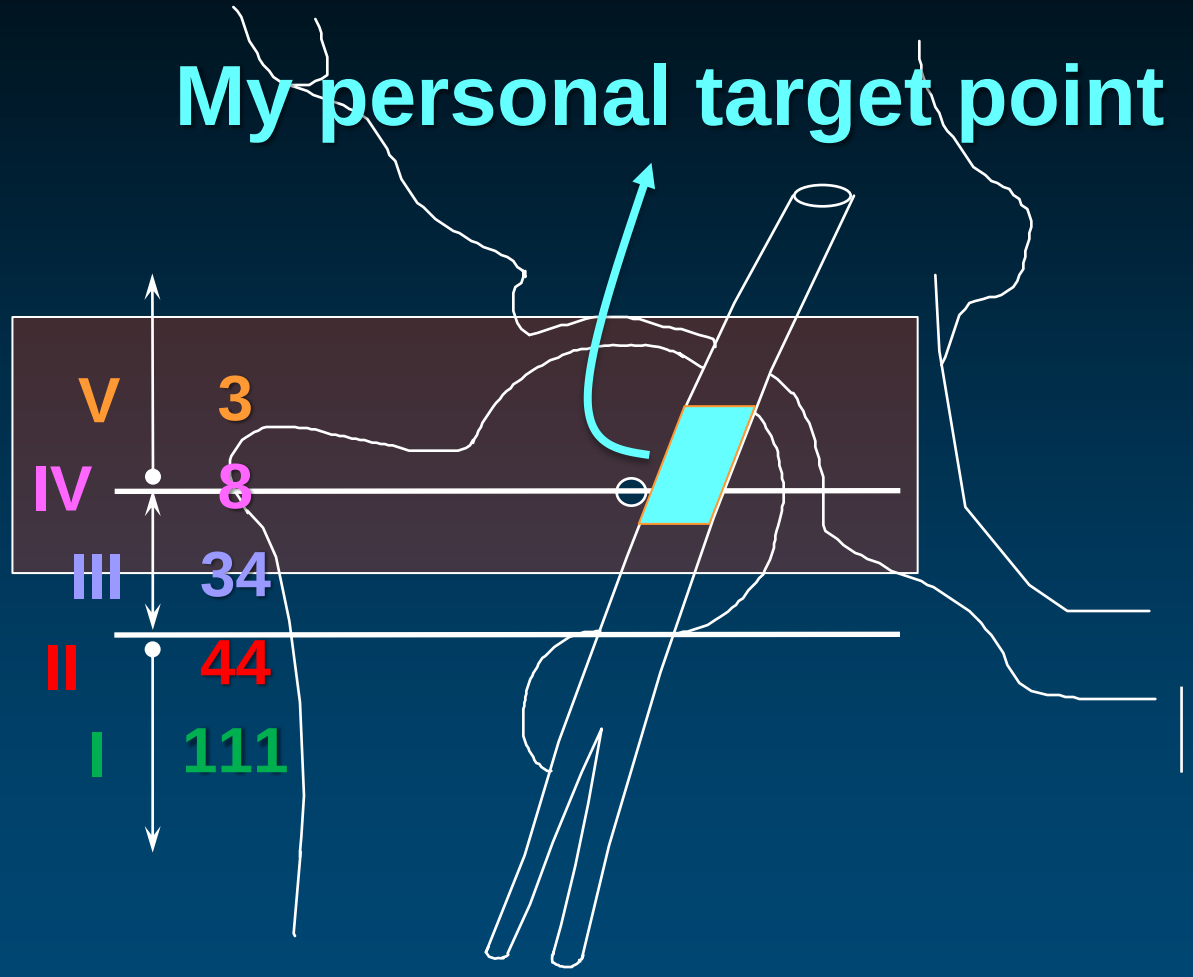
Smaller vessel size & plenty of branches

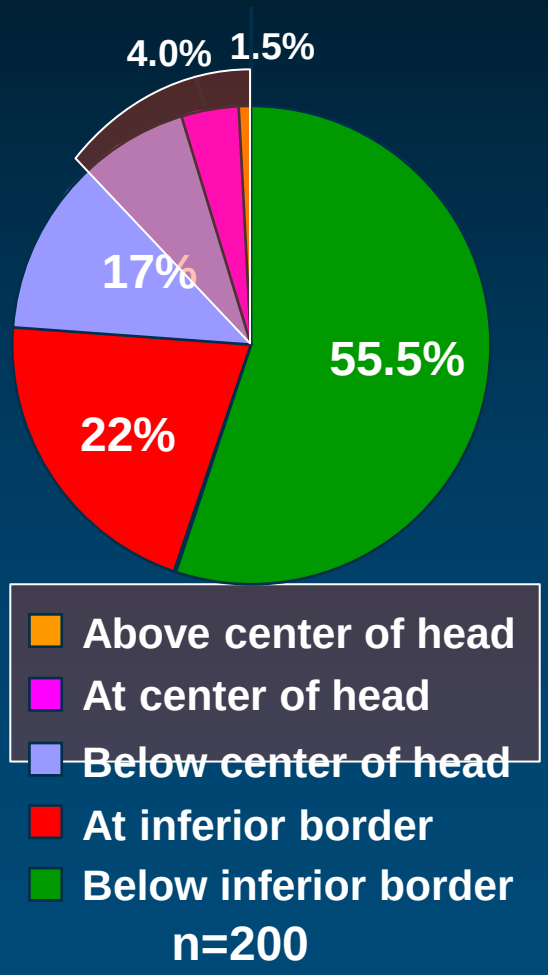
→ more vascular complication

more risk of pseudoaneurysm

Drawn by J. H. Lee, MD, Phd

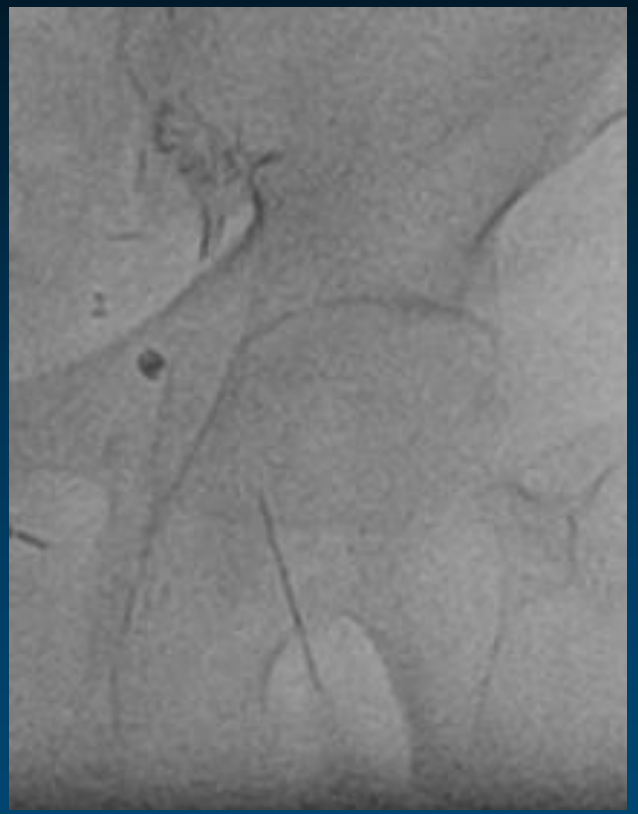
Femoral Head and the CFA Bifurcation





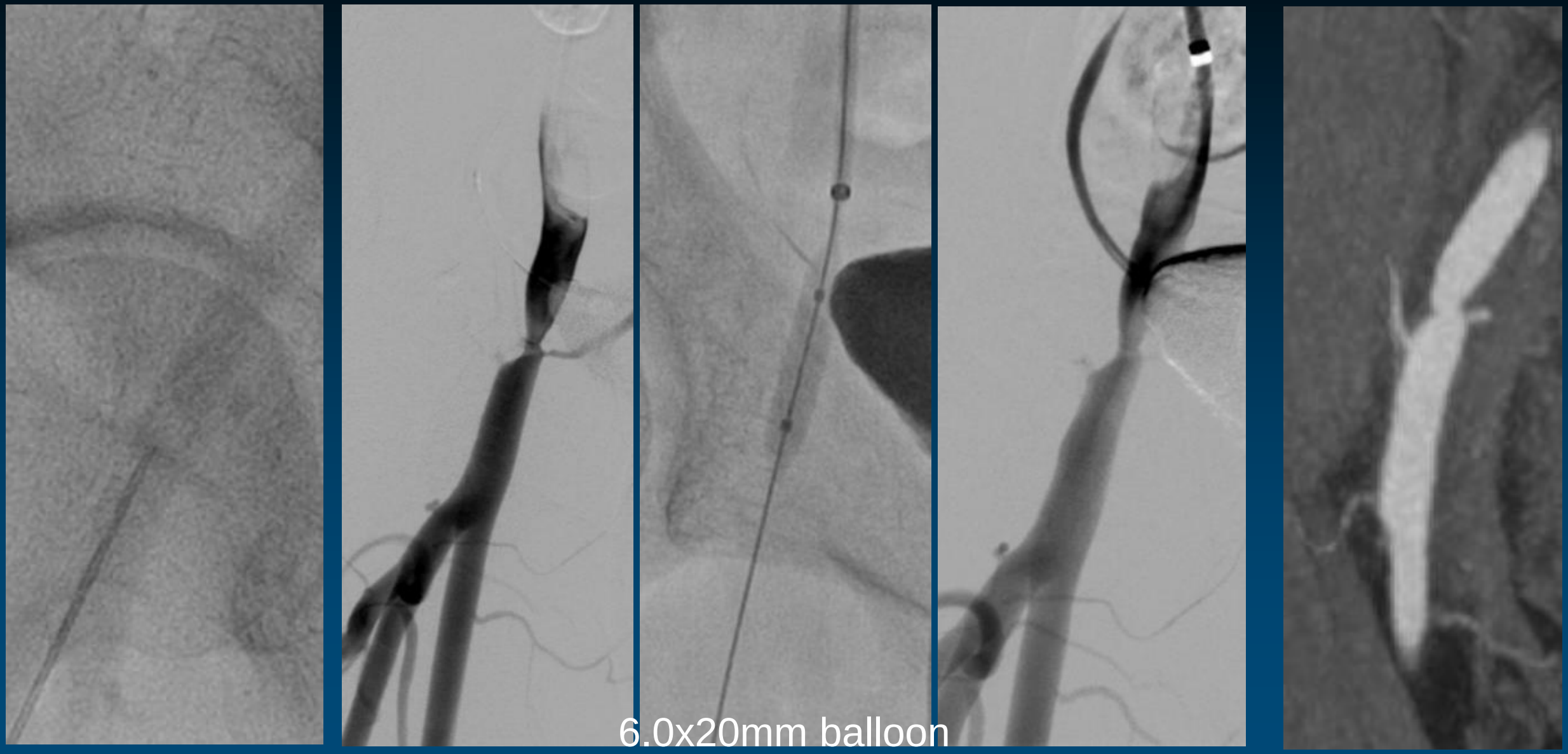
Do Not Use Skin Crease As A Landmark

- Skin crease
- Maximum pulse
- Bony landmarks
- Previous puncture site

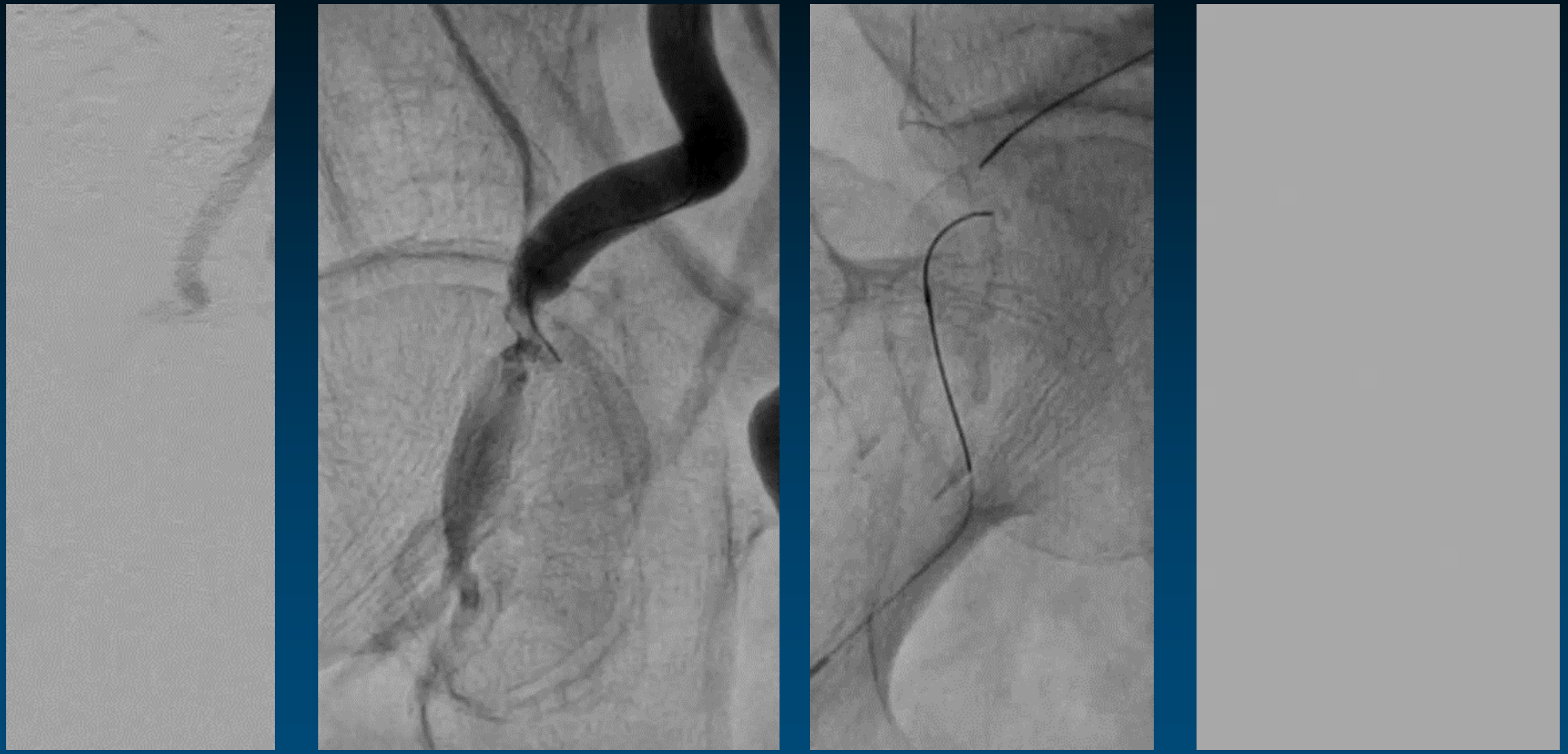


Landmark = Fluoroscopy-guided femoral head

Puncture Site Stenosis After EVAR



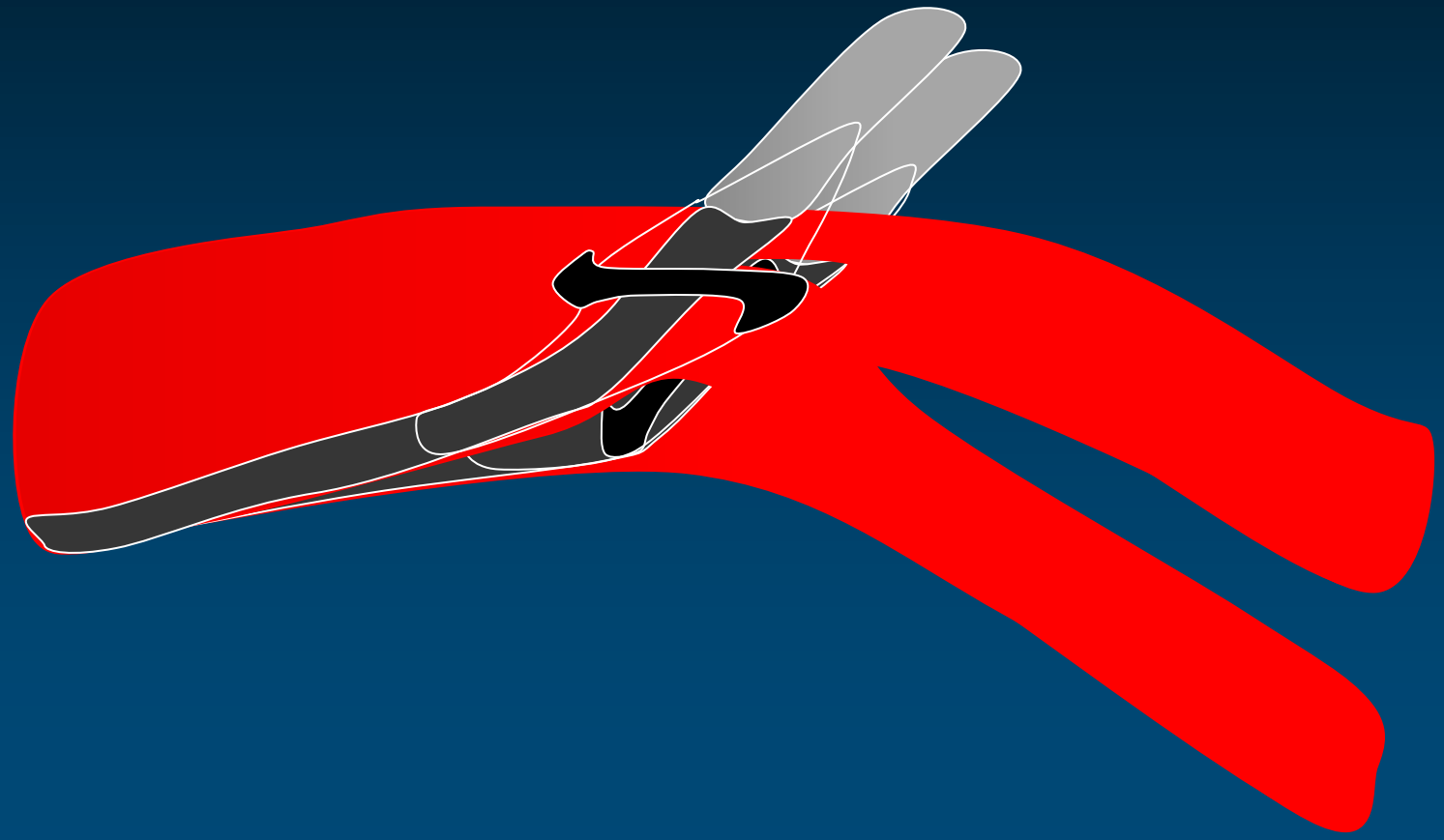
Puncture Site Occlusion After EVAR



Failed bidirectional approach → Surgical angioplasty

Potential Mechanism of Access Site Stenosis

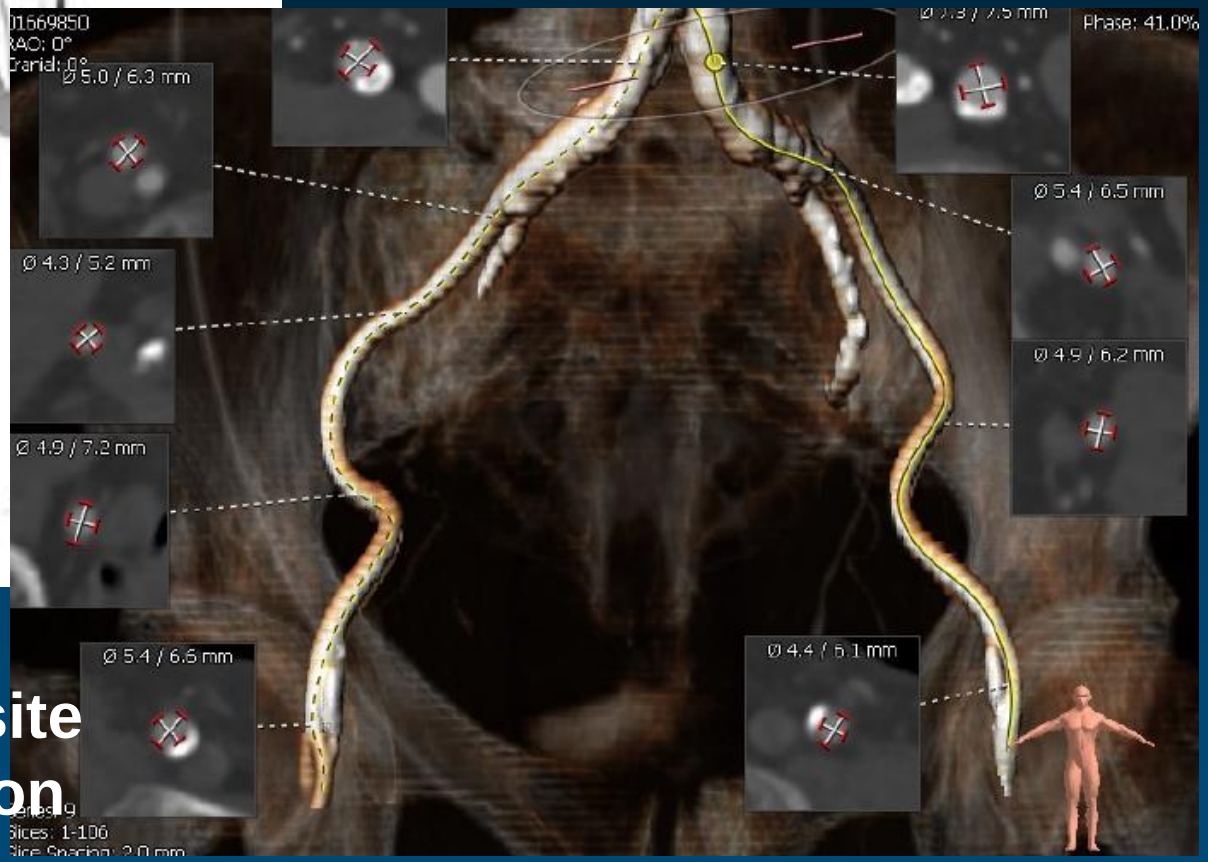
Puncture of CFA Bifurcation



Drawn by Jae-Hwan Lee, MD, PhD

Puncture Site Occlusion After TAVR

Puncture site calcification



Sticky delivery of S3 THV

→ **Small intima piece attached at the E-sheath**

→ **Narrowed puncture site after Proglides stitching**

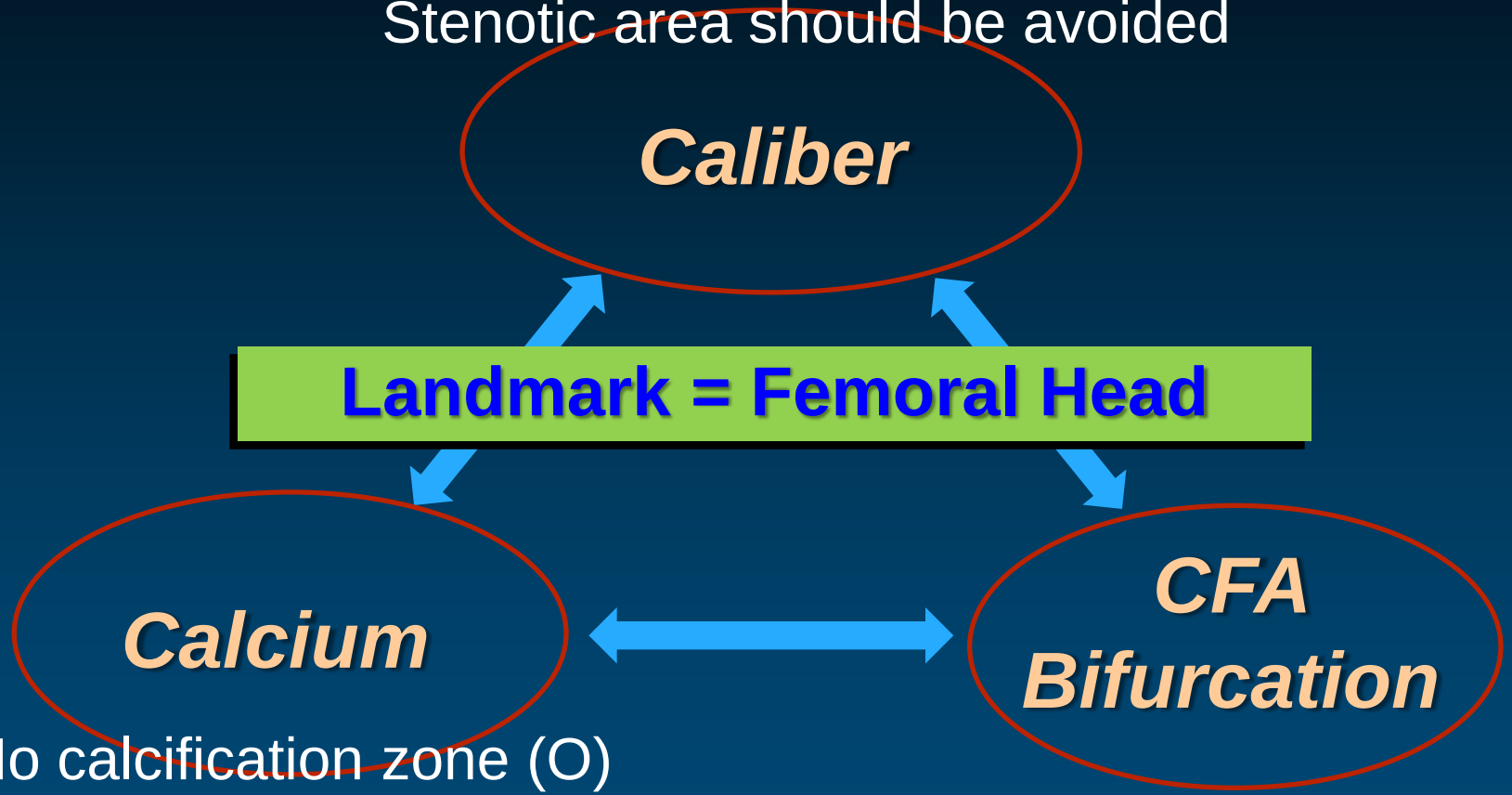
How To Remove The Stitched Proglides

Released Proglide Stitch

Prolonged balloon dilatation
+ Manual compression

Before The Puncture, The CT Image Should Be Carefully Analyzed

The largest diameter area should be targeted
Stenotic area should be avoided



No calcification zone (O)
Posterior wall calcium (X)
Anterior wall calcium (X)
Encircling calcium (X)

Puncture zone;
Roof of femoral head - CFA bifurcation

Vascular Access

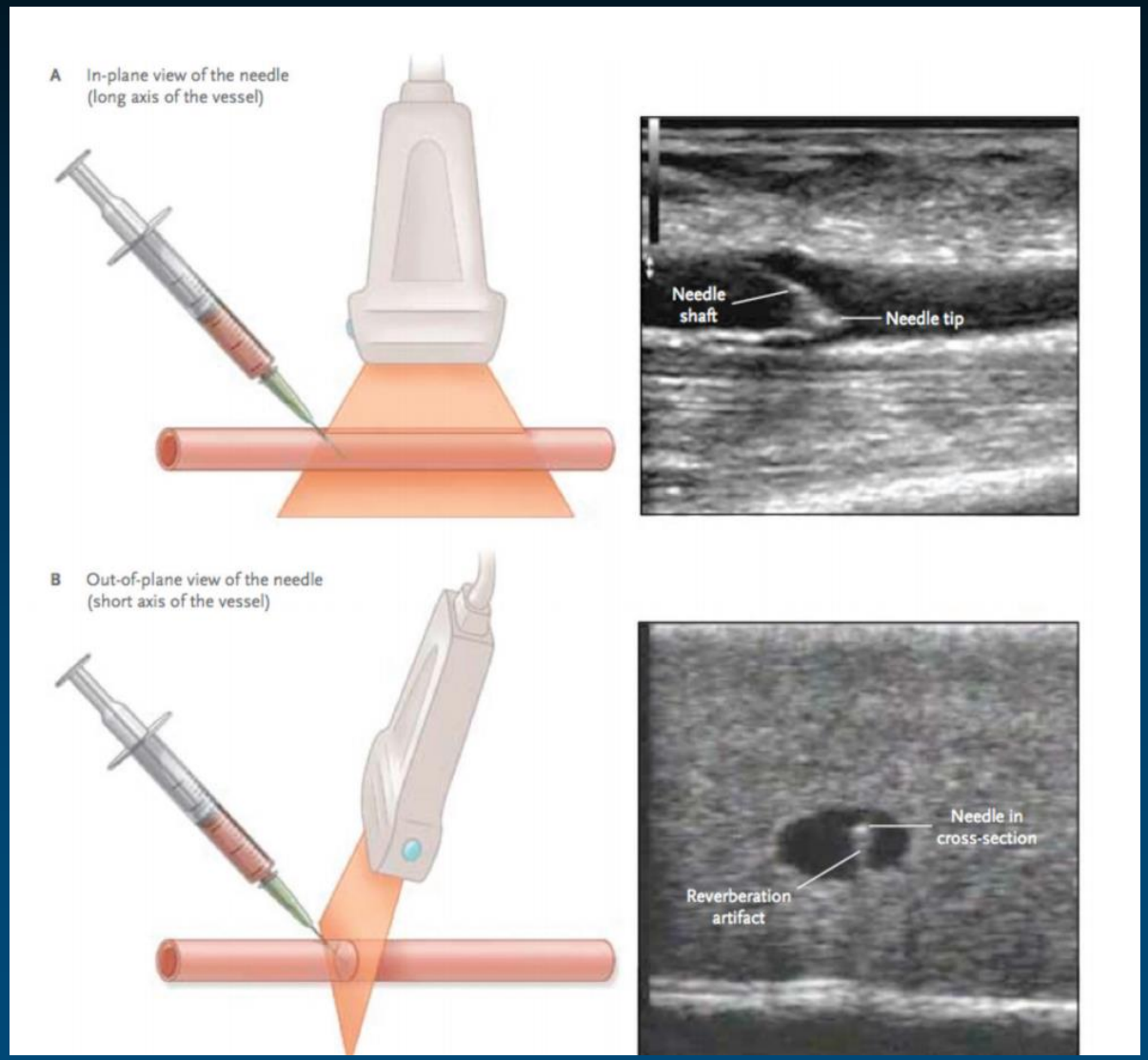
But, We Have Two Powerful Weapons

CT Angiogram

Contrast Injection From Opposite Access

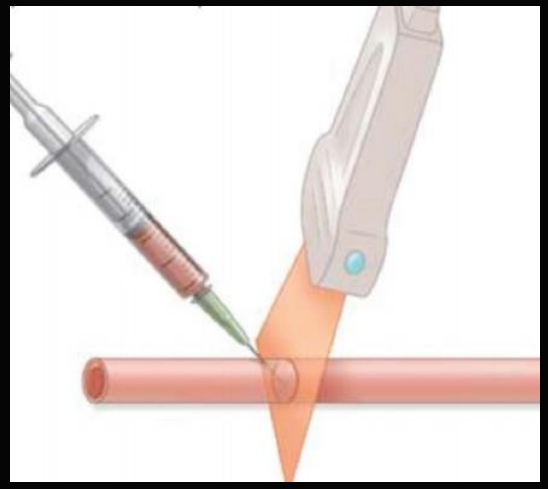
Real-time and additive information to CT

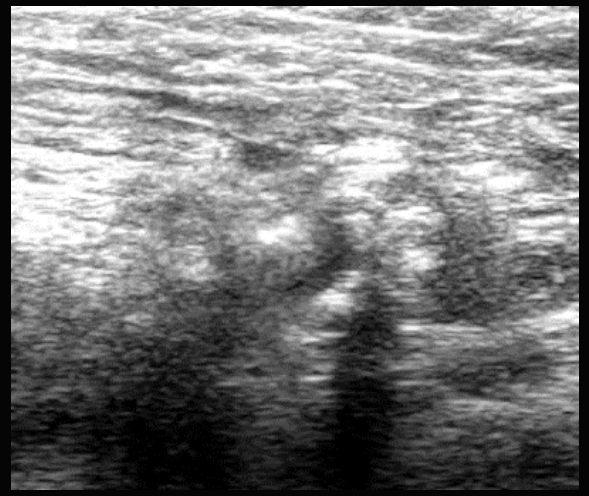
Ultrasound-Guided Puncture

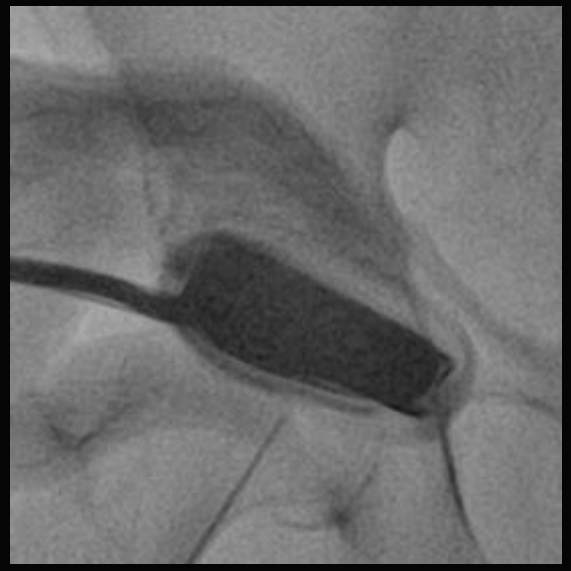


- Long-axis view
  - shows the needle progression
  - avoid calcified or stenotic zone
- Short-axis view
  - shows the needle entry point
  - puncture the center of vessel

Both Ultrasound & Fluoroscopy Guided Puncture





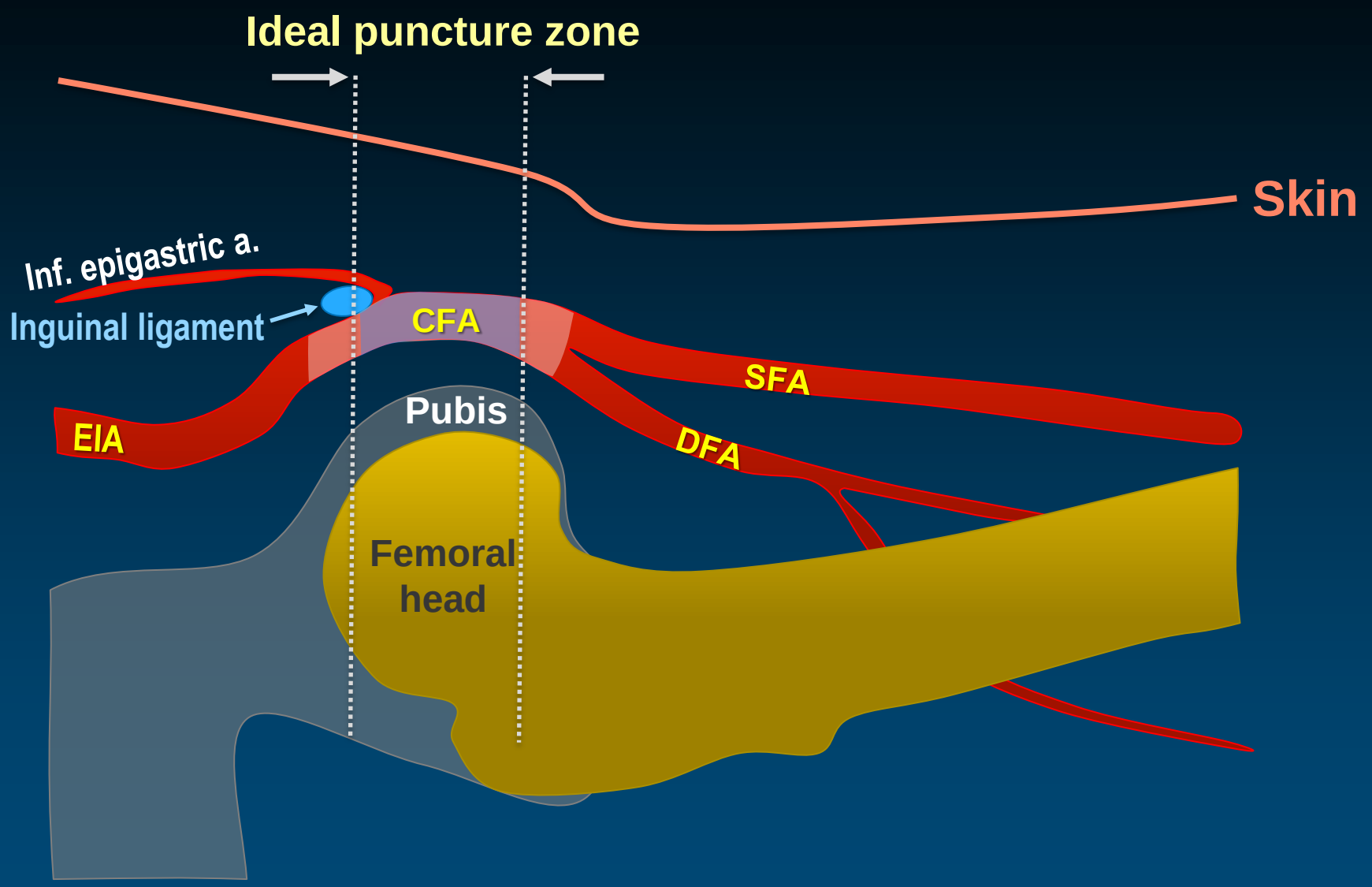


- Ultrasound
  - puncture the center of vessel

- Fluoroscopy
  - find the level of puncture
  - the relationship between the femoral head and the needle tip

Conclusion

- ***To obtain safe vascular access***
  - **Before the procedure, CT should be carefully evaluated for the most appropriate puncture site in relation to the femoral head.**
    ; Calcification / Stenosis / CFA bifurcation
  - **Single front-wall puncture at the center of femoral artery**
  - **Fluoroscopy-guided puncture using contrast material injected from the contralateral side is the most recommended.**
  - **Ultrasound plus fluoroscopic guidance → can save contrast**



Thanks for the Time

Drawn by J. H. Lee, MD, Phd