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 45th Annual International Congress of the
 EGYPTIAN SOCIETY OF CARDIOLOGY
CardioEgypt 2018

Step by Step Technique

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 The Wright Center for Graduate Medical Center
 Associate Professor of Medicine,
 The Commonwealth Medical College, Scranton, PA

Disclosures

- Consultant: Medtronic, Terumo
- Equity: Vasoinnovations Inc.

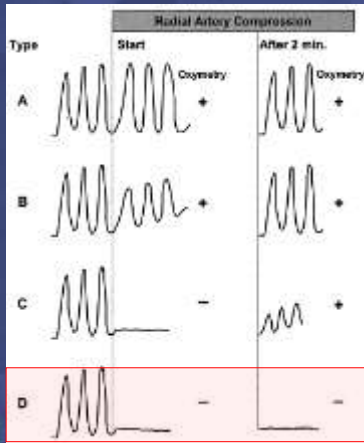


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Oxymetry + Plethysmography

The clamp sensor is applied to the thumb



No damping of pulse tracing immediately after radial artery compression

15%

Damping of pulse tracing

75%

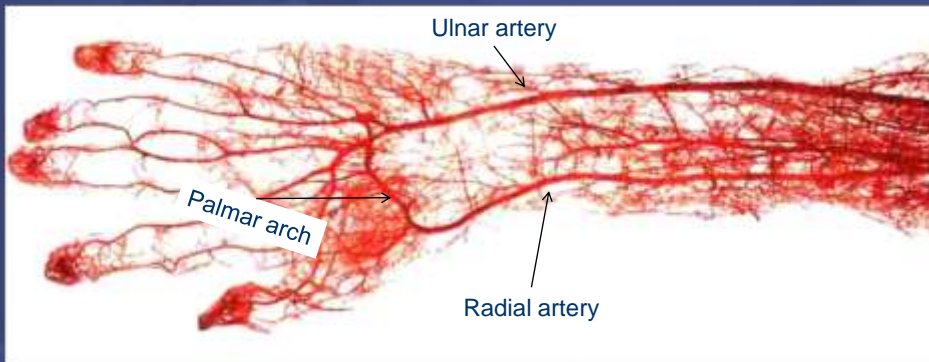
Loss of pulse tracing followed by recovery of pulse tracing within 2 minutes

5%

Loss of pulse tracing without recovery within 2 minutes.

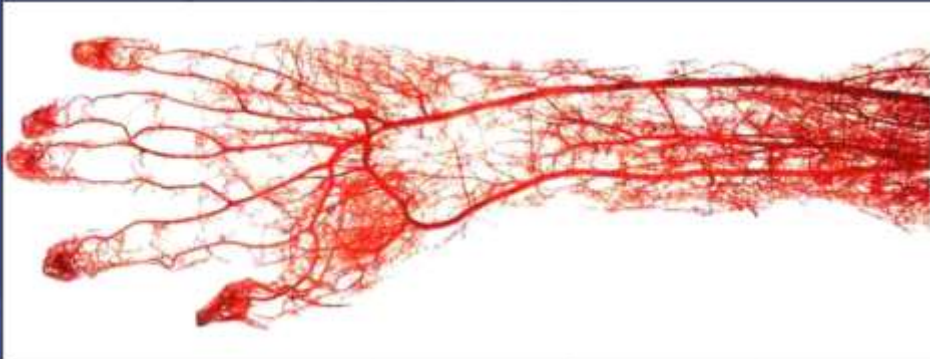
5%

Radial Approach



Collateralization in UE is more than we think

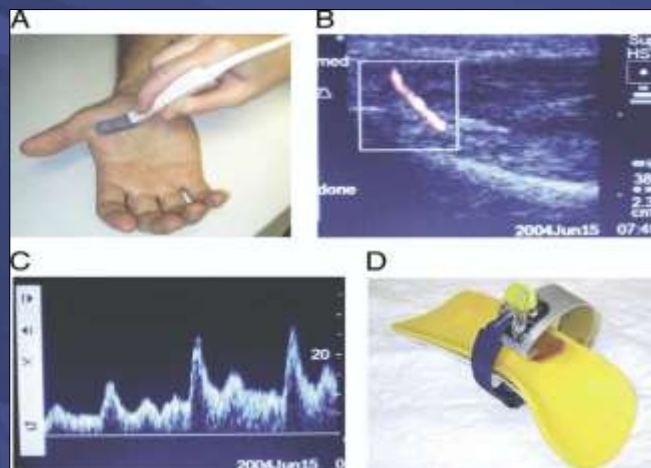
- Extensive interosseous collaterals
- Dynamic recruitable non-visible circuits.



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Recruitable circulation

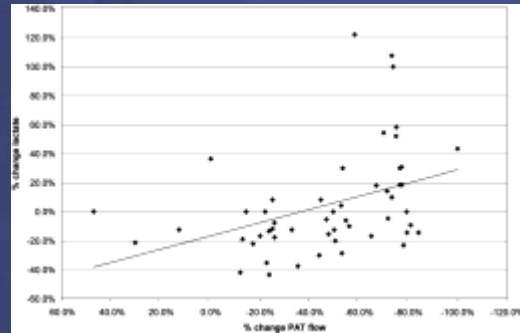


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JACC Vol. 46, No. 11, 2005 December 6, 2005:2013-7

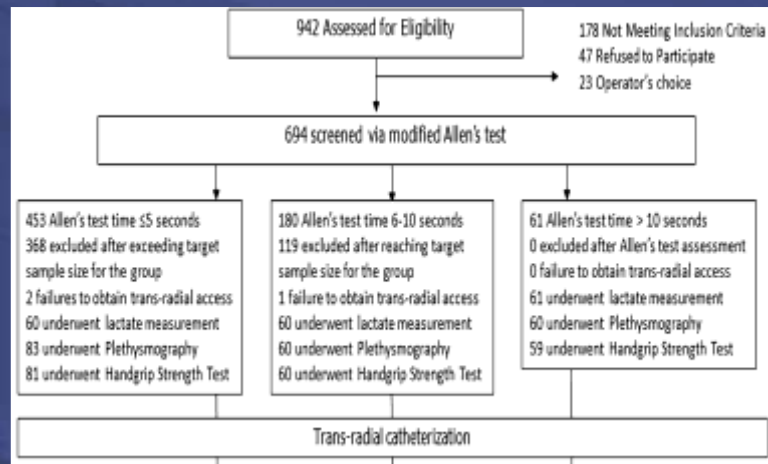
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Abnormal Allen's = ischemia?



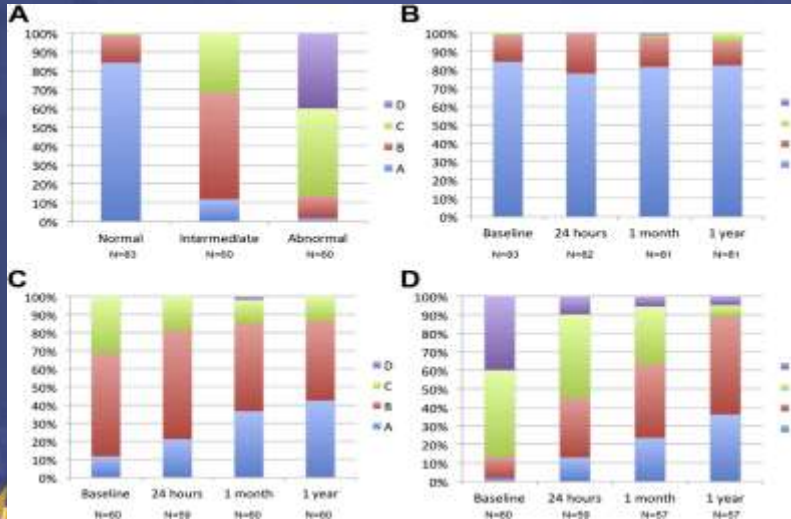
RADAR Study

N=203 patients



RADAR Study

N=203 patients



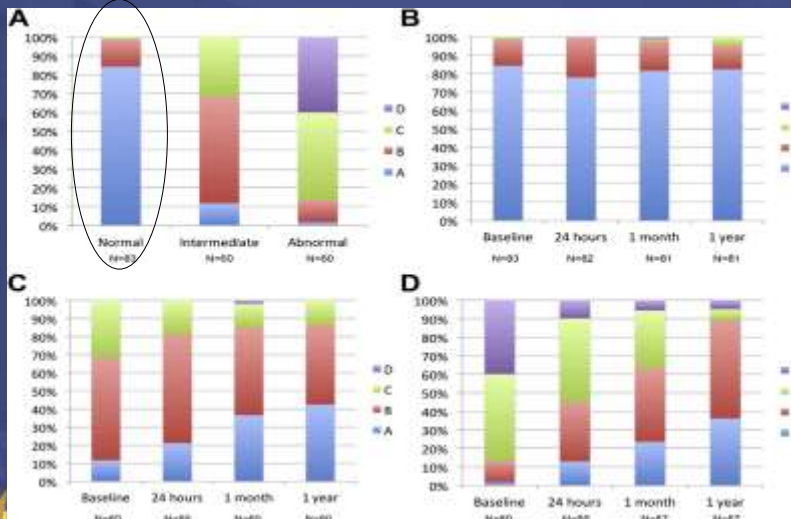
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Valgimigli M, et. al. JACC 2014

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N=203 patients



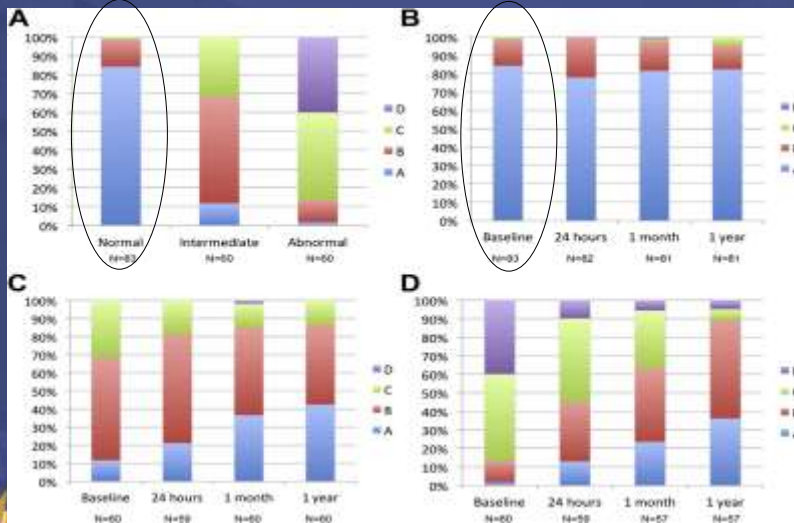
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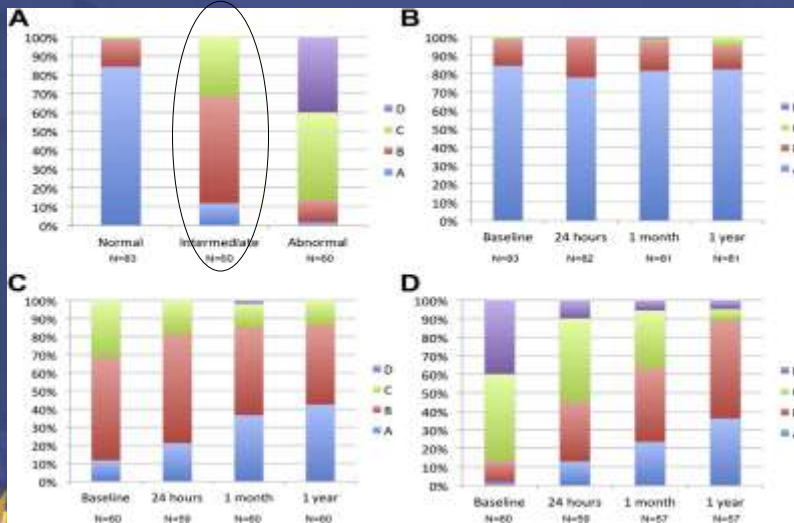
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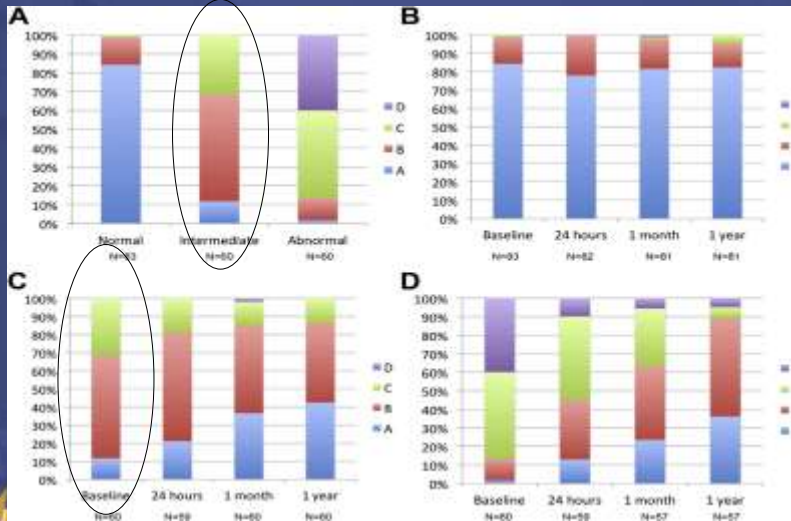
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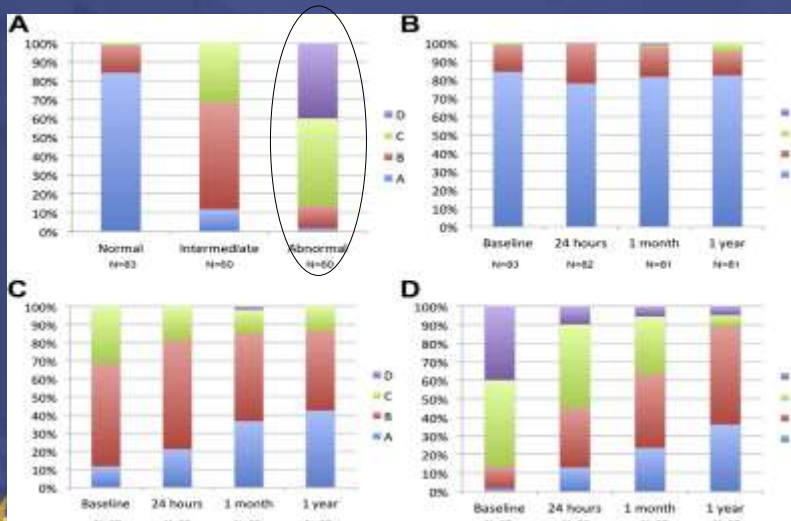
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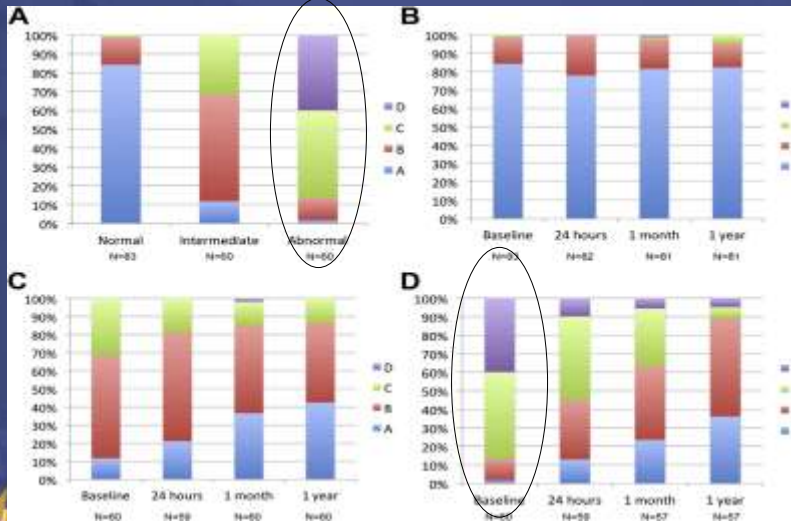
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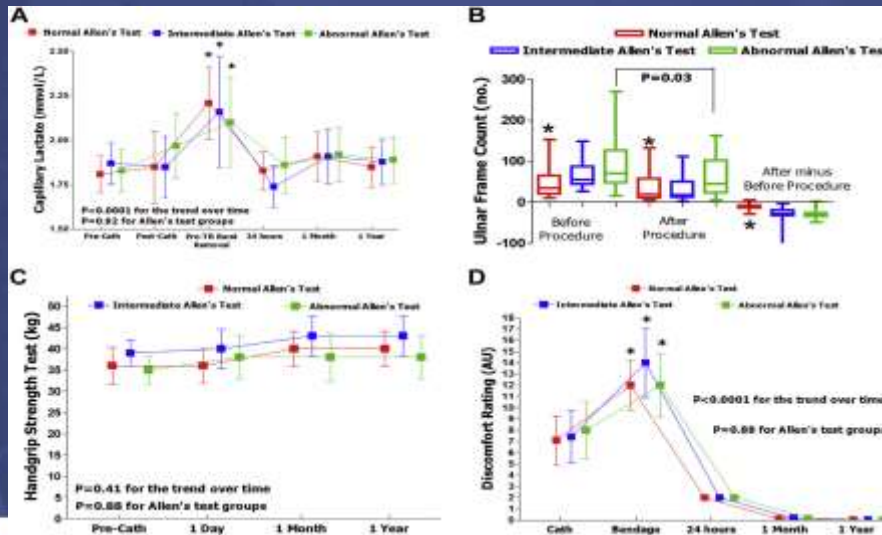
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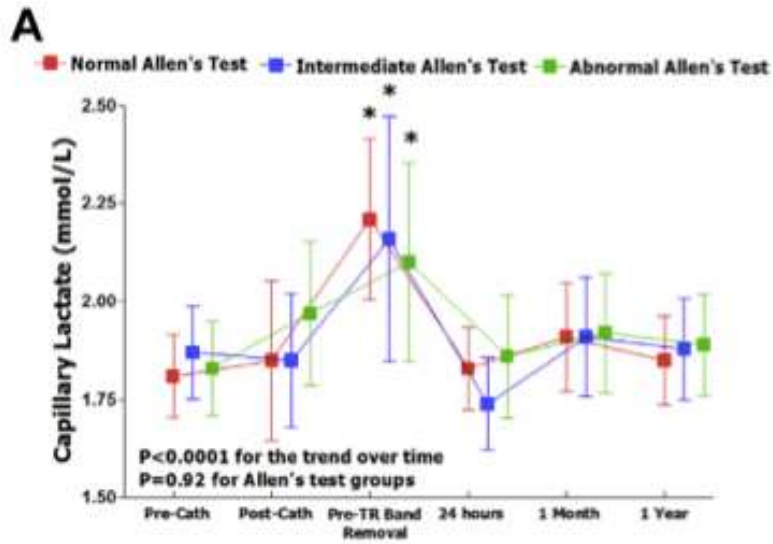


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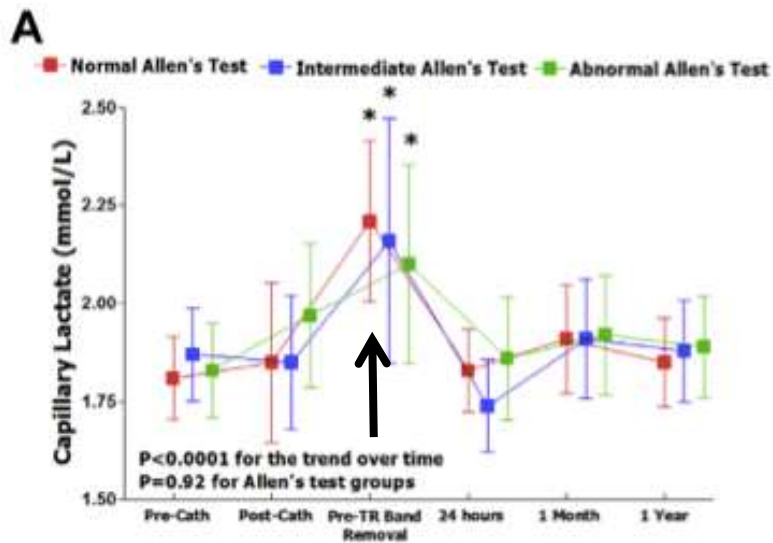
Valgimigli M, et al. JACC 2014

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RADAR



RADAR



Ideal Puncture Site

> 10 mm proximal to the "crease" of the wrist



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Fujji T et al J Inv Cardiol 2010;22(8):372-376

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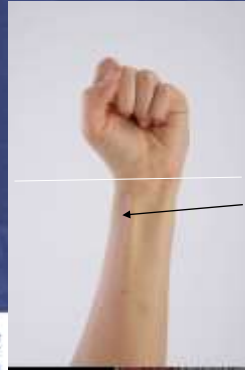


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Fujji T et al J Inv Cardiol 2010;22(8):372-376

Ideal Puncture Site

> 10 mm proximal to the "crease" of the wrist



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Fujji T et al J Invasive Cardiol 2010;22(8):372-376

Radial Artery Access

- TR vs. TF access
 - smaller needle (20" or 16")
 - bare-needle vs. teflon-sheathed needle
 - 0.018" or 0.021" guidewire



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Puncture techniques

- Anterior puncture technique
similar to femoral access



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Anterior puncture technique



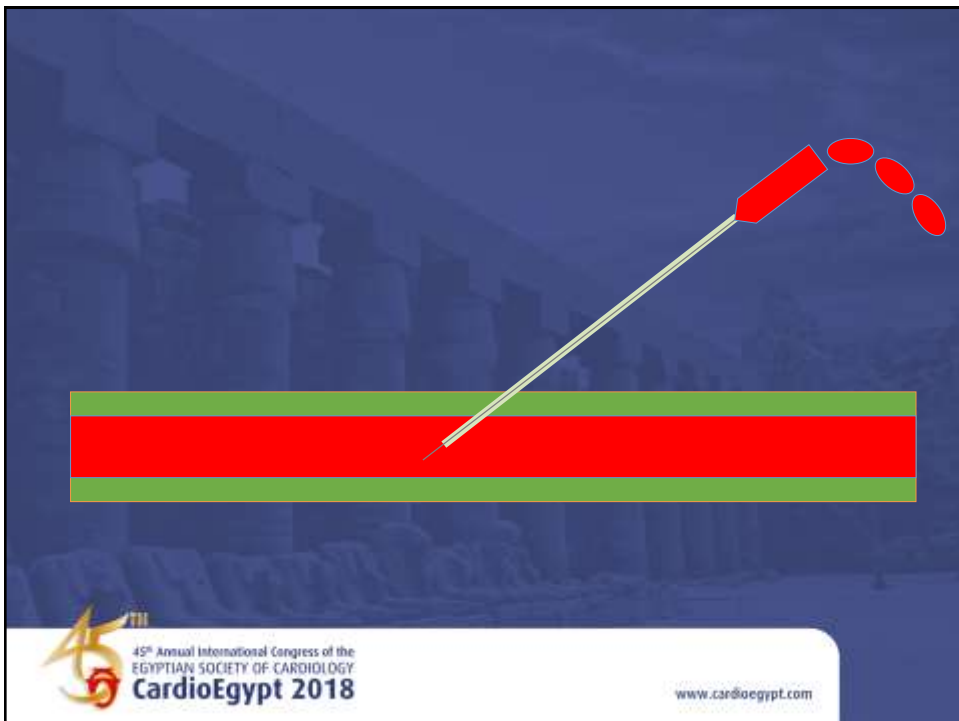
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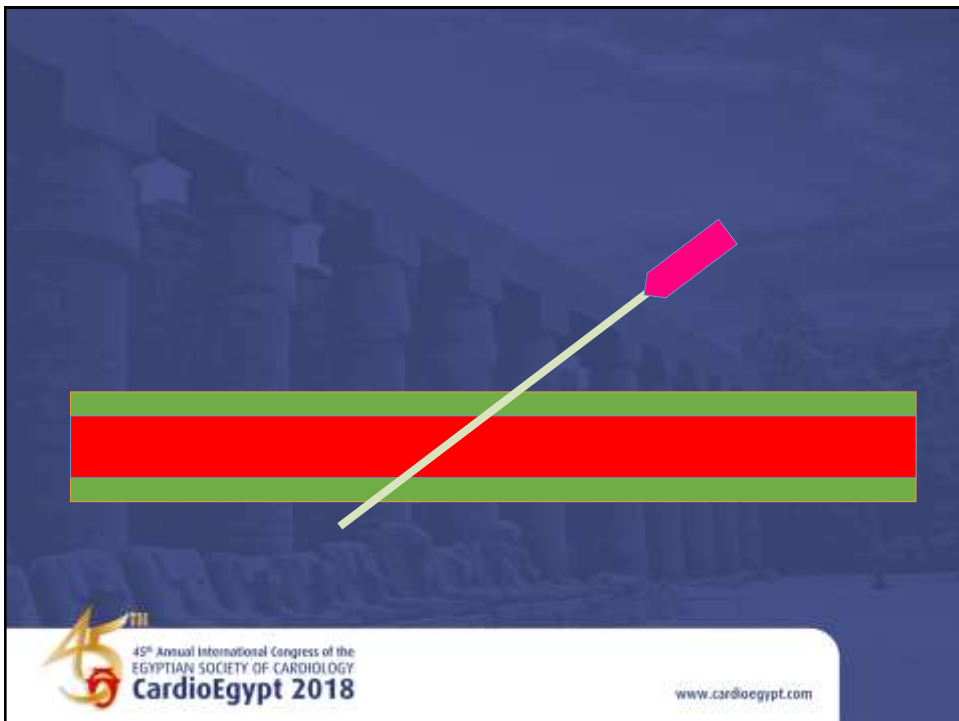
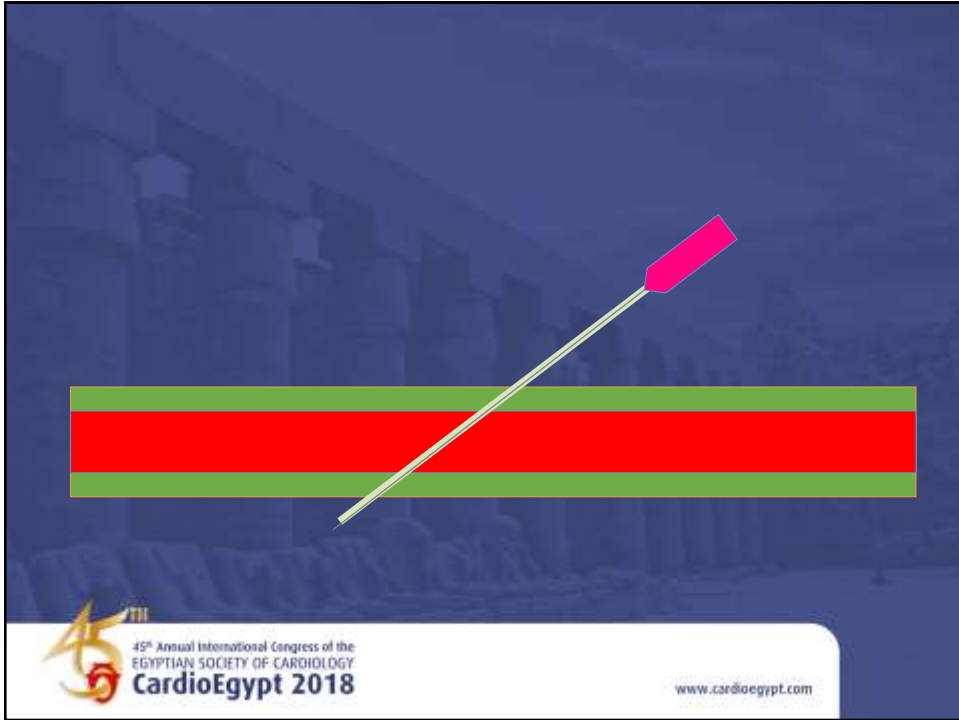
Anterior puncture technique

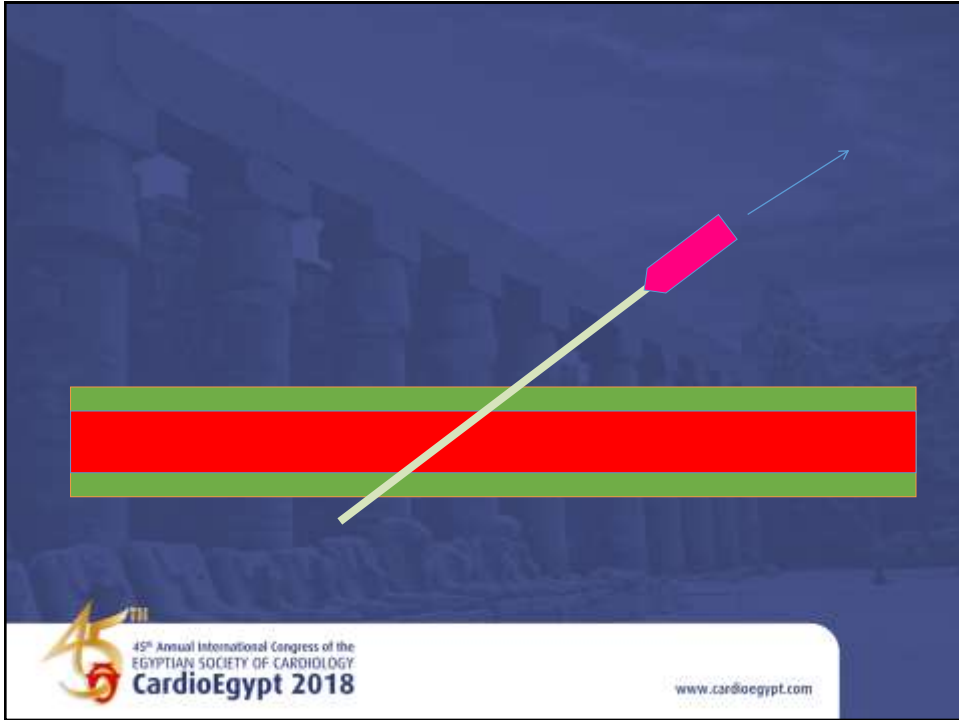


Counterpuncture technique

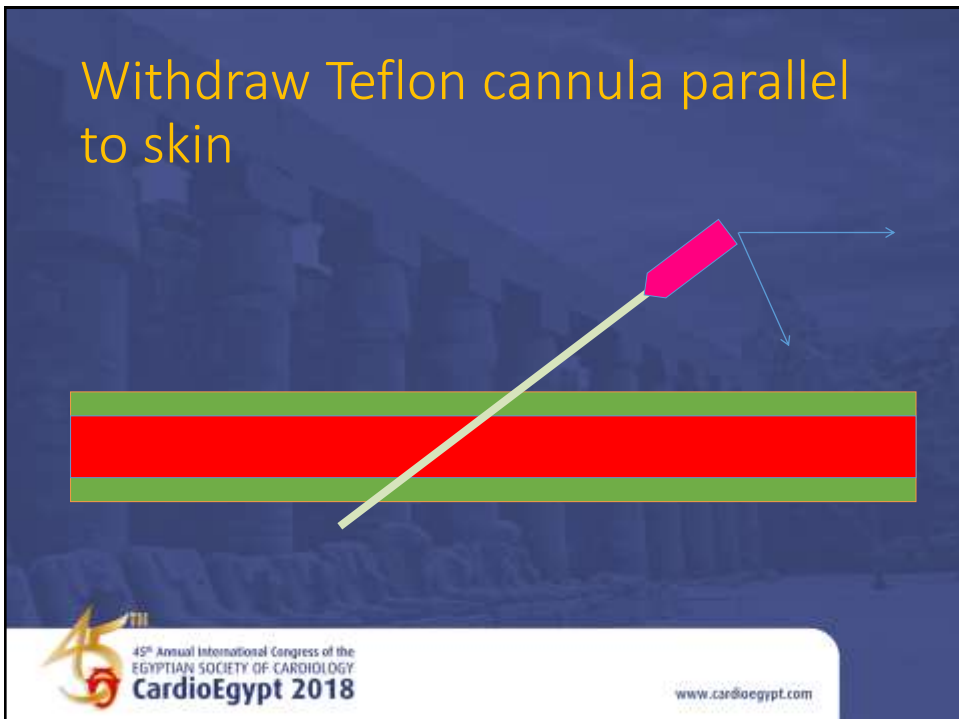








Withdraw Teflon cannula parallel
to skin



Kinking is prevented by constant pull



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Upon entry into lumen from posterior wall, cannula “straightens” out



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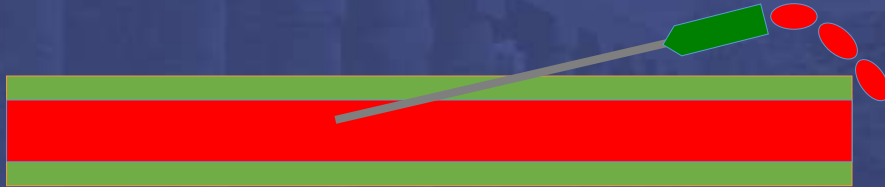
Upon entry into lumen from posterior wall, cannula “straightens” out



Upon entry into lumen from posterior wall, cannula “straightens” out



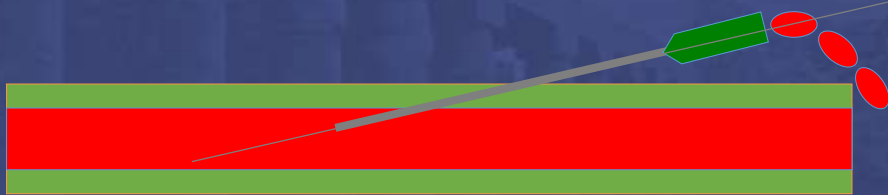
Anterior puncture / metallic needle users, enter at “shallow” angle



Anterior puncture / metallic needle users, enter at “shallow” angle



Anterior puncture / metallic needle users, enter at “shallow” angle



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RATE trial

	Group I (Seldinger technique) N=210	Group II (Modified Seldinger technique) N=202	P value
Hematoma (%)	1 (0.5)	3 (1.5)	> 0.2
Early RAO (%)	17 (8)	16 (7.9)	> 0.5
Chronic RAO (%)	9 (4.3)	8 (3.9)	> 0.5

Pancholy SB, Sanghvi KA, Patel TM. Catheter Cardiovasc Interv. 2012 Aug 1;80(2):288-91

Hydrophilic sheath

- Less spasm (Saito et al, Rathore et al),
- Increased comfort
- ? Less entrapment
- ? Less RAO



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Radial Cocktail

- Vasodilators (prevent spasm)

Nitrates (200 mcg IA)

Calcium channel blockers

Diltiazem 5 mg, Verapamil 2.5 mg
IA



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Anticoagulants

- Prevent radial artery occlusion



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Anticoagulants

- Unfractionated heparin at least 50 U/Kg
(Spaulding et al, Leipzig study,
Bernat et al)
- systemic effect, IA vs IV
(Pancholy et al)



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Anticoagulation

- Effect probably related to degree of anticoagulation
- Seen with Bivalirudin (Plante et al)



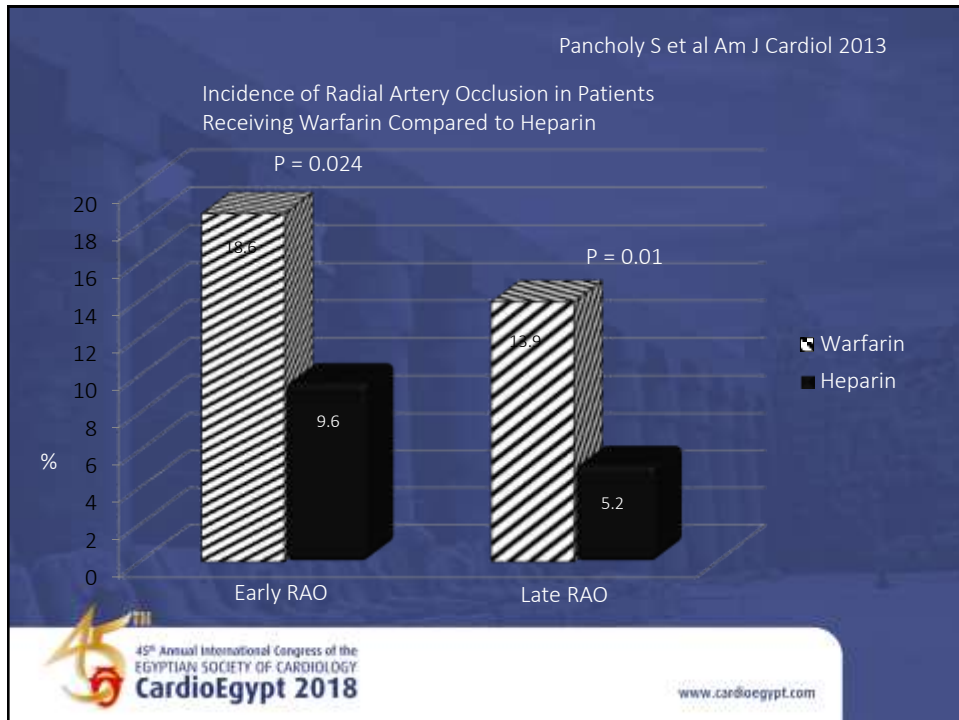
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Warfarin anticoagulation

- RAO prevention = UFH



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Summary

- Use dedicated access equipment
- ?Counterpuncture faster, first-attempt success
- Hydrophilic introducer sheath
- Spasmolytic cocktail
- Anticoagulation

