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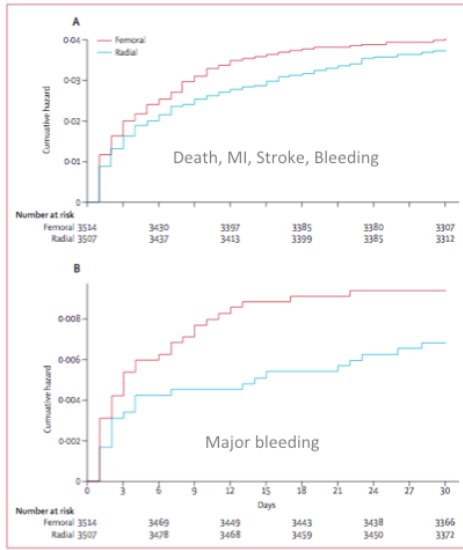
Impact of **Prolonged Occlusion Flow Mediated Dilatation** on Radial Artery Cannulation for Coronary Angiography

Interim analysis of the Radial Artery Dilatation to Improve cAnnulation success during radial access coronary angiography (RADIAL) Study

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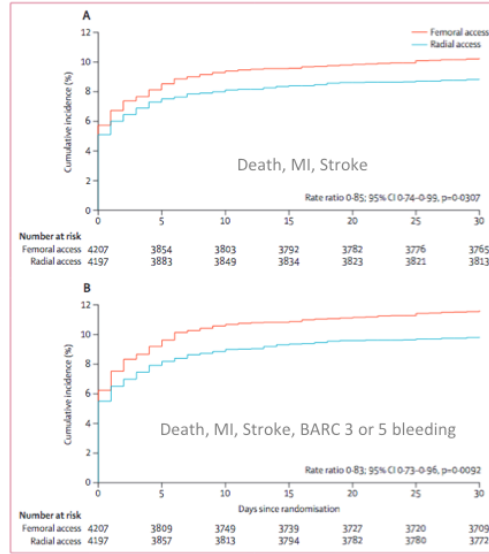
On behalf on the RADIAL study investigators

RIVAL



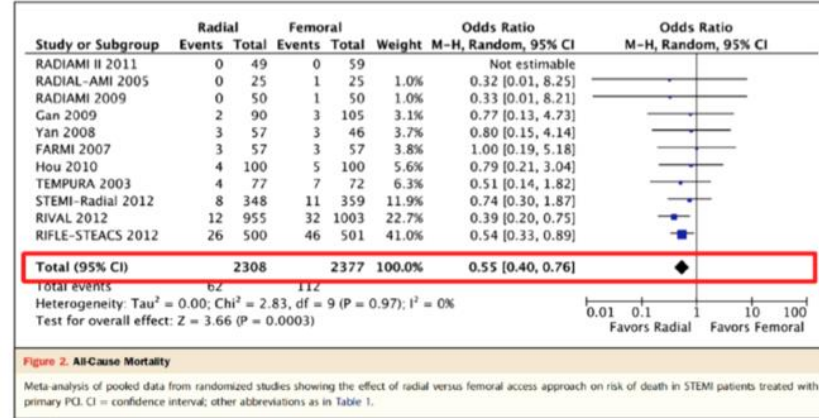
Jolly et al, Lancet 2011

MATRIX



Valgimigli et al, Lancet 2011

Meta-analysis in Primary PCI



Karrowni et al, Lancet 2011

1958

1st trans femoral angiogram

1989

1st trans radial angiogram



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Recommendations on choice of stent and access site

Recommendations	Class ^a	Level ^b
DES are recommended over BMS for any PCI irrespective of: <ul style="list-style-type: none"> • clinical presentation • lesion type • planned non-cardiac surgery • anticipated duration of DAPT • concomitant anticoagulant therapy.^{100,578,579,640} 	I	A
Radial access is recommended as the standard approach, unless there are overriding procedural considerations. ^{172,638,641}	I	A
BRS are currently not recommended for clinical use outside of clinical studies. ⁶⁴²⁻⁶⁵⁰	III	C

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Better?

~~Radial vs Femoral?~~

How can we get better at the radial approach?

European Heart Journal 2018



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Radial access



- Technically challenging with higher cannulation failure rates¹
- Can be complicated by
 - spasm
 - pulsation loss
 - occlusion
- **Hypothesis:** Dilating the radial artery prior to cannulation will increase cannulation success rates and possibly reduce complications

1. Agostini et al, JACC 2004

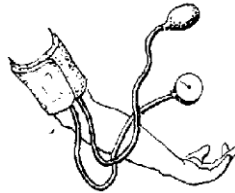
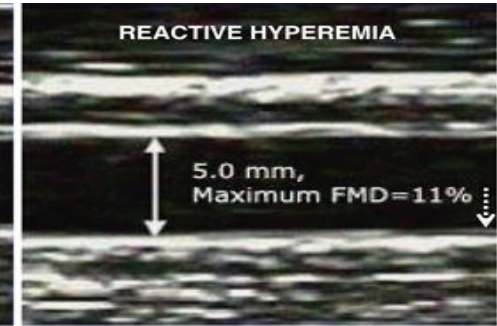
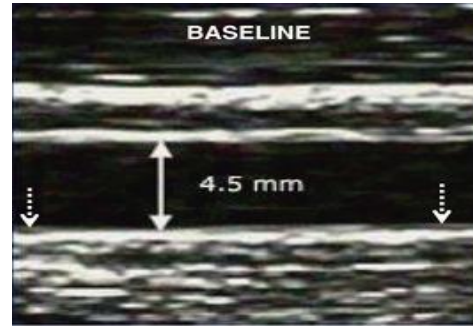
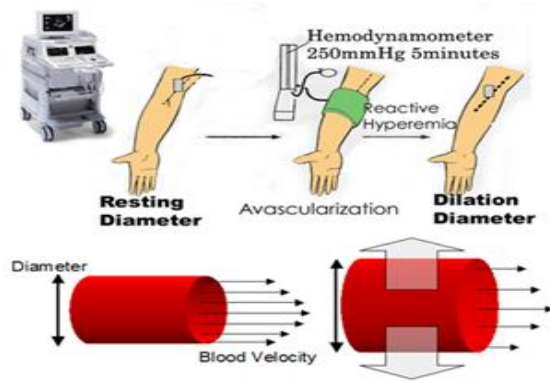


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Flow mediated dilatation

Definition: Physiological process whereby an artery is dilated by increasing the flow through it



<5 min: Brief, nitric oxide dependant vasodilatation

>5 min: Sustained, nitric oxide independent vasodilatation

Mullen MJ, Kharbanda RK, Cross J. Heterogenous nature of flow-mediated dilatation in human conduit arteries in vivo: Relevance to endothelial dysfunction in hypercholesterolemia. *Circ Res.* 2001;88:145–151.



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RADIAL Study

Aim:

To explore the use of **prolonged occlusion flow mediated dilatation (PO-FMD)** to dilate the radial artery prior to cannulation to increase cannulation success

Methods:

All patients undergoing transradial coronary angiography enrolled and randomized into **PO-FMD** and **sham PO-FMD** groups

PO-FMD: Blood pressure cuff inflated to 50mmHg above systolic BP for 10 minutes

Sham PO-FMD: Blood pressure cuff positioned but not inflated





Pre-Procedure

Radial artery ultrasound

Randomisation

BP cuff positioning +-
inflation for 10min



Intra- Procedure

Routine radial access (operator blinded to
PO-FMD / sham status)

Time to access (first puncture to sheath
insertion)

Number of attempts

Number of times artery punctured

Failed radial access

Complicated by radial spasm



Post-Procedure

Routine TR band protocol

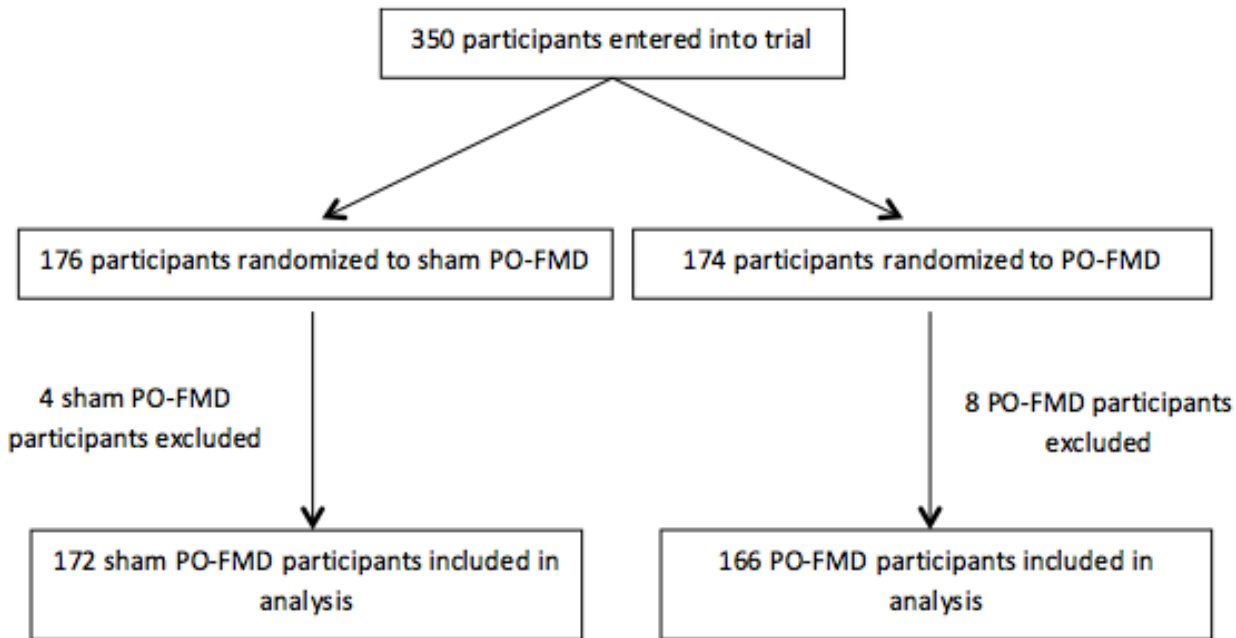
Clinical evaluation for pulsation
loss

Repeat radial ultrasound <24h



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PO-FMD: Prolonged occlusion – flow mediated dilatation



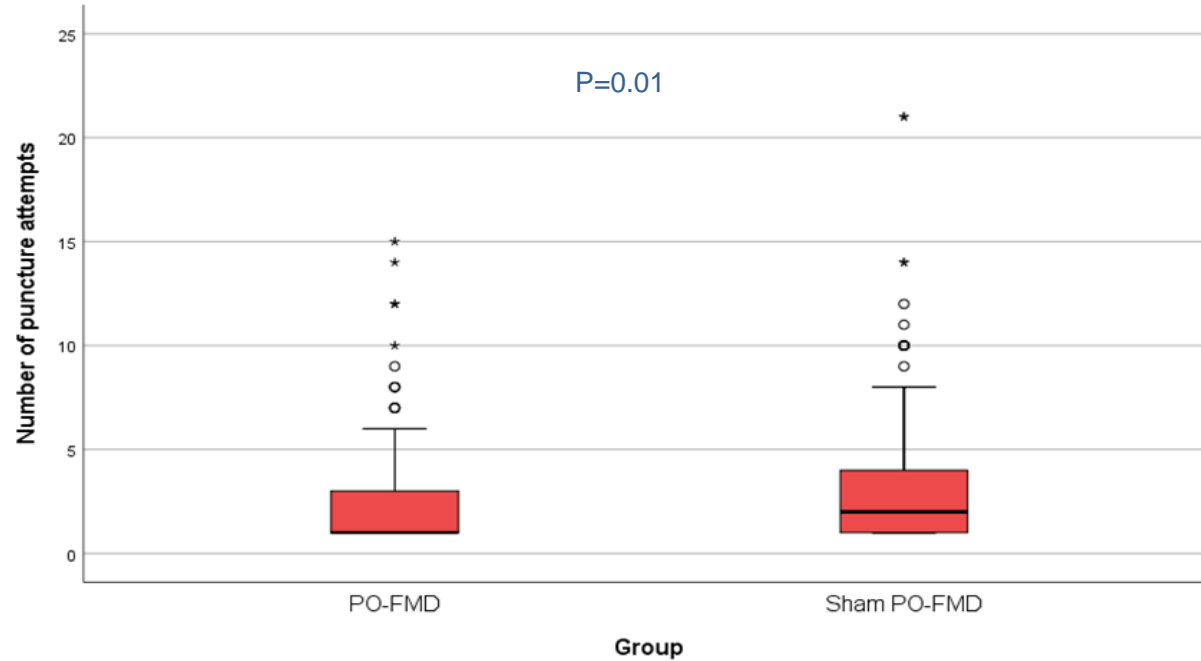
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	Sham (n=172)	PO-FMD (n=166)	p-value
Demographics			
Age (mean, std dev)	58.9 (10.9)	58.3 (11.6)	0.588
Male (n)	109 (64%)	99 (60%)	0.438
CVS Risk factors			
Smoking (n)	96 (59%)	93 (60%)	0.844
Hypertension (n)	106 (63%)	113 (69%)	0.300
Diabetes Mellitus (n)	54 (35%)	55 (33%)	0.601
Dyslipidaemia (n)	56 (37%)	52 (35%)	0.792
BMI (mean, sd)	29.45 (7.6)	29.22 (6.8)	0.713
Creatinine (mean, sd)	83.8 (24.4)	80.0 (24.1)	0.155
Radial artery diameter			
(mean, std dev)	2.27mm (0.45)	2.24mm (0.45)	0.575



Number of Puncture Attempts



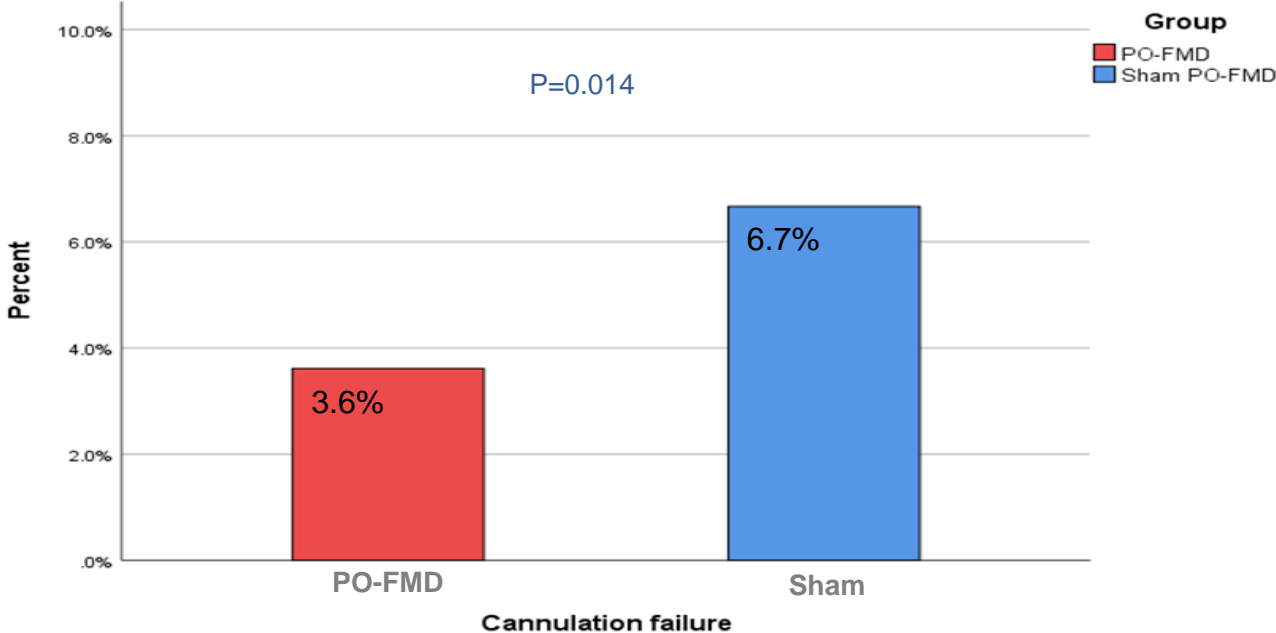
Time to Cannulation

	PO-FMD	Sham
Time to access (median)(s)	67	73

P =
NS



Cannulation failure rates



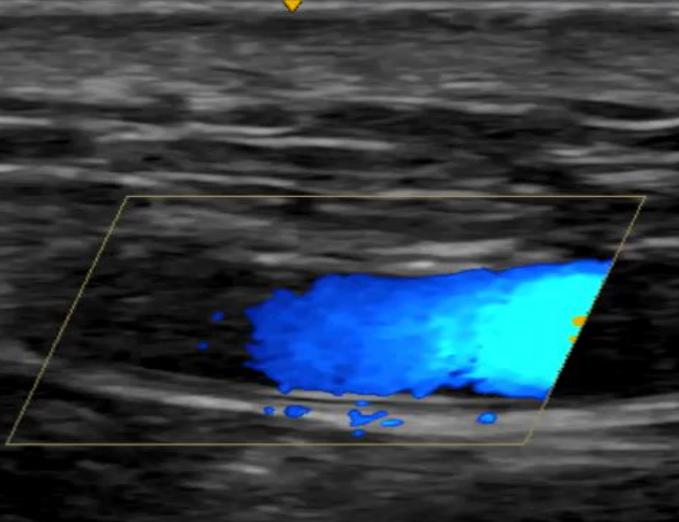
Complications

	Sham	PO-FMD	p-value
RA Spasm	11 (7.4%)	14 (9.5%)	0.531
RA Occlusion (U/S)	8 (5.4%)	9 (6.3%)	0.736
RA Pulsation loss (palpation)	8 (5.4%)	3 (2.1%)	0.139



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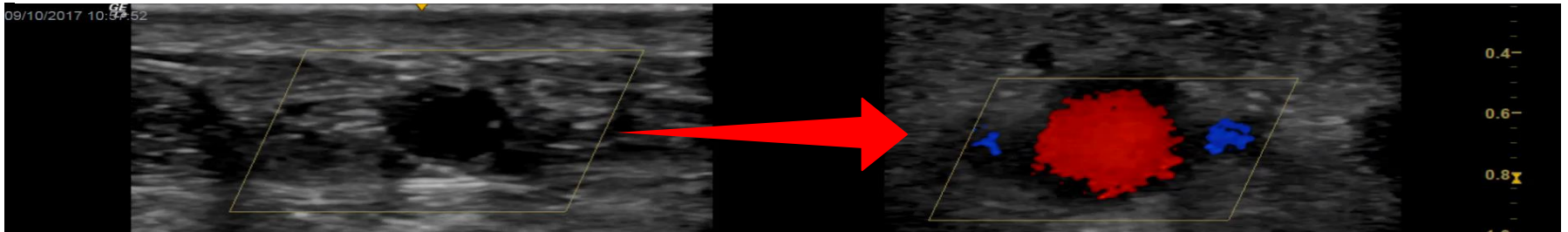
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Summary

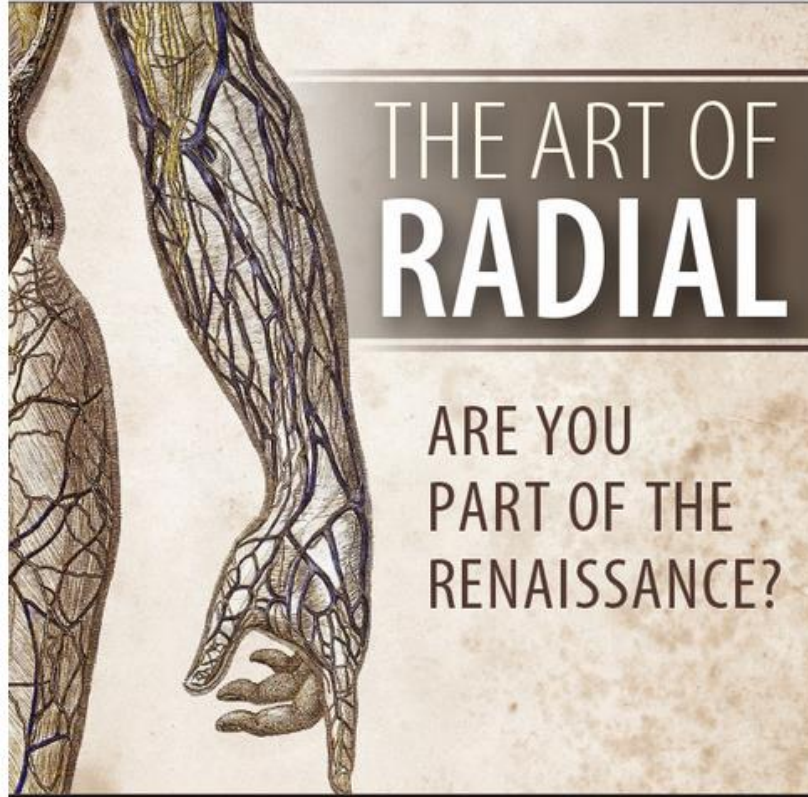
In our study, prolonged occlusion flow-mediated dilatation (PO-FMD) when compared sham resulted in:

- 50% reduction in radial artery cannulation failure
- Fewer puncture attempts, without significantly reducing access time
- No difference in complication rate



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