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Background: A transradial (TR) approach for percutaneous coronary intervention (PCI) significantly reduces bleeding and vascular complications compared to the transfemoral (TF) approach. However, many patients undergoing PCI return for repeat procedures over time and limited data is available to guide the choice of TR vs TF approach in these patients. The present study compared procedural success and adverse outcomes of TR and TF approach in patients undergoing successive PCI procedures.
Methods: Baseline clinical, procedural and outcome data for patients undergoing successive ipsilateral TR or TF approach for PCI were compared. The primary outcome was procedural success defined as completion of PCI by ipsilateral TR.
Results: A total of 634 and 2195 patients underwent ≥ 2 PCI procedures by ipsilateral TR and TF approach respectively. The baseline characteristics, procedural parameters, clinical outcomes and vascular complications of the study group are shown in the Table.

			2PCI		3PCI		4PCI	
	TR-All (n=634)	TF-ALL (n= 2195)	RADIAL (n=509)	FEMORAL (n= 1376)	RADIAL (n=96)	FEMORAL (n=569)	RADIAL (n=29)	FEMORAL (n=250)
Procedural parameters Fluoro time, minutes (mean±SD)	18±9	17±10*	18±9	17±11	19±9	17±9*	22±8	17±8*
Contrast volume, ml (mean±SD)	194±73	199±75	196±76	202±78	184±63	192±66	188±53	194±61
Guides per patient (mean±SD)	1.1±0.3	1.2±0.4*	1.2±0.3	1.2±0.5	1.1±0.2	1.1±0.3	1.1±0.2	1.1±0.3
Stent per patient (mean±SD)	2.7±1.6	2.8±2.2	2.6±1.5	2.5±1.8	2.9±1.8	3.1±2.4	3.3±1.8	3.4±1.7
Clinical outcomes Procedural failure (%)	42 (7)	3 (0.1)*	33 (6)	2 (0.1)*	7 (7)	0 (0)*	2 (7)	1 (0.4)*
In hospital death (%)	0 (0)	6 (0.3)	0 (0)	2 (0.1)	0 (0)	3 (0.5)	0 (0)	1 (0.4)
Stroke (%)	0 (0)	10 (0.4)	0 (0)	6 (0.4)	0 (0)	2 (0.3)	0 (0)	2 (0.8)
Transfusion (%)	1 (0.2)	8 (0.4)	1 (0.2)	6 (0.4)	0 (0)	2 (0.3)	0 (0)	0 (0)
Δ eGFR (mean±SD)	7±18	6±23	6±17	5±19	10±19	7±25	6±18	5±32
Access site complications Bleeding (%)	2 (0.3)	20 (0.9)	2 (0.4)	13 (0.9)	0 (0)	7 (1.2)	0 (0)	0 (0)
Pseudoaneurysm (%)	0 (0)	22 (1) *	0 (0)	18 (1.3) *	0 (0)	4 (0.7)	0 (0)	0 (0)
Any vascular complication (%)	12 (1.9)	88 (4) *	10 (2)	66 (4.8) *	2 (2.1)	19 (3.3)	0 (0)	3 (1.2)

CABG-coronary artery bypass surgery, MACE-major adverse cardiac events, Δ eGFR-increase in estimated glomerular filtration rate post procedure, *p<0.05

Conclusions: Successive ipsilateral TR approach can be accomplished in more than 90% of patients undergoing repeat PCI with no clinically important difference in radiation exposure and contrast usage. In addition, TR approach results in a significantly lower risk of vascular complications and similar clinical outcomes compared to the transfemoral approach. TR approach should be the preferred therapy for patients undergoing repeat PCI.

TCT-820

How to limit radial artery spasm in patients treated by transradial interventions

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Background: Radial artery spasm (RAS) remains the major limitation for transradial approach, especially among transfemoralists physicians. Our team has performed three successive randomized controlled trials sharing similar methodology and endpoints and evaluating different vasodilator agents in the prevention of RAS. We are reporting the results of the pooled analysis of our three studies.
Methods: A total of 1,950 patients were consecutively randomized to receive diltiazem, verapamil, molsidomine, isosorbide dinitrate (ISDN) or placebo, through the arterial sheath after radial artery catheterization. The primary endpoint was the occurrence of a RAS defined as a limitation of the catheter movement and/or a significant pain perceived by the patient during catheter mobilization. Secondary endpoints included the occurrence of symptomatic or significant fall of systolic blood pressure and determination of independent predictors of RAS.
Results: RAS occurred in 44/198 patients (22.22 %) in the placebo group with a significant reduction in the molsidomine 27/203 (13.3%) and verapamil 88/847 (10.4%) group (P=0.02). The rate of occurrence of RAS was similar between the placebo, IDN and diltiazem groups (P=0.2). Significant fall of blood pressure occurred significantly more with diltiazem and ISDN compared to placebo or other vasodilators (p=0.001). Female gender and the use of more than 3 catheters were identified as independent predictors of RAS.
Conclusions: Among vasodilators verapamil and/or molsidomine showed the best efficacy to prevent RAS without affecting patient safety. Their use reduces the occurrence of RAS more than 50%. ISDN and diltiazem should be avoided as they don't prevent RAS.

TCT-821

Comparison of Frequency of Radial Artery Occlusion after 4-Fr versus 6-Fr Transradial Coronary Intervention from the NAUSICA (Novel Angioplasty USIng Coronary Accessor) Trial

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Background: The small profile of a 4-Fr guiding catheter may reduce complications associated with vascular access. In this study, we investigated the hypothesis whether the use of a 4-Fr guiding catheter would have a lower rate of radial artery occlusion compared with the use of a 6-Fr guiding catheter.
Methods: The study was conducted at 19 institutions across Asia. The frequency of radial artery occlusion was compared between patients receiving 4-Fr vs. 6-Fr transradial coronary interventions (TRI) in an open-label randomized trial (ClinicalTrials.gov identifier: NCT00815997). The primary outcome measure was radial artery occlusion on the day after TRI. The secondary outcome measures were the procedural success, major advanced cardiac events, access-site-related complications, procedural times, fluoroscopy times, and contrast dye usage.
Results: The present study comprised a total of 160 patients divided into 2 groups, those who underwent 4-Fr TRI and those who underwent 6-Fr TRI. The procedure was successful in 79 of 80 patients (99%) in both groups. While the 4-Fr group showed no access-site-related complications, the 6-Fr developed 5 (6%), including 3 radial artery occlusions and 2 bleedings (1 radial artery perforation and 1 massive hematoma) (p=0.02). Although the radial artery occlusion rate was lower in the 4-Fr vs. in the 6-Fr groups, the difference was not significant (0% vs. 4%, p=0.08). The mean hemostasis time was significantly shorter in the 4-Fr than in the 6-Fr groups (237 ± 105 min vs. 320 ± 238 min, p=0.007).
Conclusions: The current study demonstrates that 4-Fr TRI could deliver procedural success rates that are comparable to 6-Fr TRI, with shorter times to hemostasis and fewer access-site-related complications. Furthermore, 4-Fr TRI may reduce radial artery occlusions. Hence, these findings suggest that 4-Fr PCI may provide a less invasive approach to treat coronary artery diseases.

TCT-822

Overcoming The Challenge Of Transradial Interventions In Women : Insights From a Color Doppler Study

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Background: The use of compression of the other artery [(COOA):ulnar compression for radial access and vice versa], could increase access artery diameter(AAD)(via collateral flow through palmar arch) thus reducing puncture failure in small arteries, which is a major challenge of transradial access in women; another being risk of >1:1mismatch of small AADs with sheath size and consequent AA spasm. We aimed to assess AADs (bilateral RA&UA); prevalence of a 'single largest' AA(with remaining 3AAs being smaller by >0.2mm(>0.1mm in 1.5mm group)) in various size groups, in females compared to males; comparison of crossover, procedure failure & AA occlusion (at 4 weeks)in < 1.7mm vs ≥1.7mm AAD groups; and impact of COOA on puncture failures in patients with single largest AAD= 1.5,1.6 or 1.7mm.
Methods: AADs were measured using pre-procedure ultrasound (PPUAA). COOA (for 5 minutes) was randomly utilized at the time of elective procedures, in 50% patients in whom the single largest AAD was 1.5, 1.6 or 1.7mm. 1.5mm arteries were used for coronary angiogram(CAG);≥1.6mm were used for percutaneous coronary intervention(PCI).
Results: A total of 1110 patients: 264 females (F) & 846 males (M) were enrolled. The baseline mean AADs(mm) were larger in males (1.82±0.2(radial(RA)),1.78-±0.2(ulnar(UA)) vs 1.71±0.2(RA),1.60±0.2(UA))(p< 0.001). Females more often had only one largest AAD in the 1.5mm ((17.1%(F) vs 7.8%(M),1.6mm (9.6% (F) vs 3.8% (M)) and 1.7mm groups (10.6% (F) vs 4.5% (M) groups (p< 0.001). Again, females more commonly had single largest AA in the 1.8-2.0mm group (42.8% (F) vs 29.7% (M), p< 0.001). With COOA, the AAD increased by 16.6+6%; 14.5±3% &12±4.2% in the 1.5,1.6 &1.7mm groups respectively and puncture success was 78% vs 98%(p< 0.001), 88% vs 97.8% (P< 0.001) and 96.7% vs 98.5%(p=0.06) with and without COOA respectively. Crossover (&procedure failure)& AA occlusion were 3.9% vs 0.9% & 2.8% vs 0.8% respectively (p< 0.0001) in the < 1.7mm vs ≥1.7mm AAD groups.
Conclusions: Females more commonly have only one large AA, compared to men. In the 1.5-1.6mm AAs, the use of COOA reduces puncture failures. Smaller AAs(< 1.7mm), are associated with higher cross-over, procedure failure & AA occlusion.