

Vascular Access and Closure**Moscone West, 1st Floor****Tuesday, October 29, 2013, 3:30 PM–5:30 PM**

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TCT-265**Switching from femoral to radial access is associated with reduced PCI mortality and morbidity**

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Background: Transradial (TR) percutaneous coronary intervention (PCI) reduces bleeding complications compared with transfemoral access (TF). However, operator switch from TF to TR access is associated with a significant learning curve. Concerns therefore remain as to whether this observed benefit translates into real world practice. We sought to ascertain whether instituting TR access would impact on bleeding complications and mortality.

Methods: Patients undergoing PCI at a single centre over 4 years from 2008-11 had procedural data collected prospectively. Interventional strategy and adjunctive therapy were left to the discretion of the operator. Post procedural complications and survival were identified from local and regional databases. Bleeding complications were categorized using Bleeding Academic Research Consortium (BARC) definitions.

Results: 8166 consecutive patients (mean age 64.8±11.5 yrs, 76.2% male) were included in the analysis. Rate of TR PCI increased from 2.0% to 42.7% over 4 years. 3.6% of TR cases required conversion to TF approach. Patients undergoing TR PCI were more likely to be male (78.9% vs. 75.7%, p=0.01), smokers (45.4% vs. 41.1%, p=0.004) and overweight (BMI 29.4 vs. 28.2, p<0.001), but less likely to have had previous CABG (4.7% vs. 8.6%, p<0.001) when compared to those undergoing TF PCI. Over 4 years the annual bleeding complication rate fell from 1.64% to 0.95% (p=0.05). TR access was associated with lower rates of BARC 2-5 bleeding compared to TF access (0.30% vs. 1.45%, p<0.001) and lower length of stay (1.57±3.04 vs. 1.79±3.37 days, p=0.017). As rate of TR access increased, a significant improvement in 1-year survival was observed (97.7% TR vs. 96.5% TF, p=0.028), driven predominantly by survival advantage in patients presenting for primary PCI (96.6% TR vs. 92.8% TF, p=0.017; odds ratio 0.45, 95% CI 0.23-0.88, p=0.02).

Conclusions: Despite the learning curve, changing from TF to TR access was associated with lower overall bleeding complications and enhanced 1-year survival after PCI.

TCT-266**A Randomized Comparison of Transradial versus Transfemoral Approach for Coronary Artery Bypass Graft Angiography and Intervention (the RADIAL CABG trial)**

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Background: We sought to compare contrast utilization and radiation exposure using radial vs. femoral access for diagnostic coronary angiography and intervention in patients with prior coronary artery bypass graft surgery (CABG).

Methods: Consecutive patients with prior CABG (n=128) referred for cardiac catheterization were randomized to radial or femoral access. The primary study endpoint was contrast volume. Secondary endpoints included fluoroscopy time, procedure time, radiation exposure dose to patients and operators, vascular complications and major adverse cardiac events. Analyses were by intention to treat.

Results: Compared to femoral access, diagnostic coronary angiography through radial access was associated with higher mean contrast volume (142 vs. 171 ml, p=0.006), longer procedure (21.9 vs. 34.2 min, p<0.001) and fluoroscopy (8.5 vs. 12.7 min, p<0.001) time, higher patient air kerma radiation exposure (1.08 vs. 1.29

Gray, p=0.056) and higher operator radiation dose (first operator: 1.3 vs. 2.6 mrem, p<0.001; second operator 0.8 vs. 1.8 mrem, p=0.011) (Table 1). Fewer patients underwent ad hoc PCI in the radial group (24 vs. 30, p=0.282) and radial PCI procedures were less complex. The incidence of the primary and secondary endpoints was similar with femoral and radial access among PCI patients. Access cross-over was higher in the radial group (17.2% vs. 0%, p<0.001) and vascular access site complications were similar in both groups (3.1%).

Variables	Radial, n=63	Femoral, n=63	p value
Contrast volume (ml)	171±72	142±39	0.006
Procedure time (min)	34.2±14.7	21.9±6.8	<0.001
Fluoroscopy time (min)	12.7±6.6	8.5.0±4.7	<0.001
Patient air kerma radiation exposure (Gray)	1.29±0.67	1.08±0.54	0.055
First operator radiation exposure (mrem)	2.6±1.7	0.8±1.1	<0.001
Second operator radiation exposure (mrem)	1.8±2.1	0.8±1.1	0.011
Number of patent grafts	2.2±1.0	2.3±0.9	0.558
Number of diagnostic catheters used	3.3±1.3	2.9±0.7	0.040

Conclusions: In prior CABG patients transradial diagnostic coronary angiography was associated with higher contrast utilization, procedure and fluoroscopy time, access crossover and operator radiation exposure compared to transfemoral angiography. (RADIAL Versus Femoral Access for Coronary Artery Bypass Graft Angiography and Intervention (RADIAL CABG) Trial; NCT01446263).

TCT-267**How We Can Manage of Radial Artery Late Occlusion: Recanalization of Occlusion or "High" Puncture of Radial Artery**

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Background: Transradial interventions (TRI) are associated with certain risk of radial artery (RA) occlusion, limiting the possibility of re-intervention through the same access site.

Methods: In case of late radial/ulnar artery (RA/UA) occlusion if the distal stump was palpable pulse, puncture and cannulation of the postocclusion segment and retrograde RA/UA recanalization and angioplasty was performed using the "Dotter-technique" or plain balloon dilatation or mixed technique. In case of patent preocclusion segment (confirmed by ultrasound) "high" puncture and cannulation under ultrasound guidance of this segment is possible.

Results: Recanalization of occluded RA/UA attempted in 61 cases, 49 in chronic total occlusions (CTO) and 12 in subacute RA/UA occlusions. Immediate success was achieved in 52 cases (85.2%): in 41 out of 49 CTO cases (83.7%) and 11 out of 12 cases of subacute occlusion (91.7%). In 24 out of 52 cases of successful recanalization late reocclusions were occurred (46.2%). Of these, 2 patients were subjected to repeat successful recanalization of reoccluded artery. In 4 cases we have successfully performed under ultrasound guidance "high" puncture and catheterization of proximal (preocclusion) segment of radial artery and coronary intervention thereafter. In these cases retrograde recanalization of occluded radial artery was impossible due to lack of collateral pulse on the radial artery stump.

Conclusions: Conclusion: Retrograde recanalization of late radial/ulnar artery occlusion for repeat arterial access is technically feasible and safe. Despite the high risk of reocclusion in the long run, this new technique allows to solve the problem of access in cases where no other traditional access sites are available. In case of inability of retrograde recanalization of occluded radial artery (absent of collateral pulse) "high" radial artery puncture under ultrasound guidance is possible in certain anatomic situation.

TCT-268**Transradial versus transfemoral approach for High-Speed Rotational Atherectomy facilitated Angioplasty**

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Background: This study retrospectively compares in-hospital outcomes for patients undergoing High-Speed Rotational Atherectomy (HSRA) facilitated percutaneous coronary intervention (PCI) using either the radial or femoral artery approach.

Methods: From September 2008 to February 2013, 135 consecutive patients (75 femoral, 60 radial) underwent HSRA in our centre. A comparison of in-hospital outcomes was been performed. For radial approach, a 7.5F Sheathless Guiding Catheter (SGC) was used.

Results: The sizing of the deployed burrs were similar [1.75 (0.75-2.00) vs 1.75 (1.20-3.00) mm, p=0.68]) with no difference in screening time [15.5 [12.2-19.5] vs 19

[14–26] min, $p=0.068$), major access site bleeding complications (0.0% vs 1.3%, $p>0.99$) and procedural success (91% vs 100%, $p=0.22$) in the radial and the femoral group respectively. However, in-hospital stay [1 (0–5) vs 1 (0–20) days, $p=0.04$] was slightly higher following femoral approach. A temporary wire was placed in 10% of femoral patients. No in-hospital death was observed.

Conclusions: This study shows that the radial artery approach with the 7.5F SGC is at least as safe and effective as the conventional femoral approach for performing HSRA facilitated PCI.

TCT-269

RAS Registry, Real world incidence of Spasm in Trans radial Intervention

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Background: To report the incidence and predictors of moderate/severe radial artery spasm (RAS) in patients undergoing cardiovascular percutaneous procedures through a transradial approach (TRA) in center with TRA expertise. Data regarding the actual rate of clinically meaningful RAS are limited due to difference in study designs and operator expertise.

Methods: The RAS registry, an international (14 centers from Argentina, Chile, India, Indonesia, Macedonia, The Netherlands and United States of America) registry that included 1868 patients undergoing TRA cardiovascular procedures (63.5% diagnostic and 56.5% therapeutic). All selected centers used TRA as default strategy in the cardiac catheterization laboratory. Throughout 2012, each center included all consecutive TRA cases (during a two-month period) into a dedicated database covering clinical characteristics as well as procedural topics related to RAS patterns and RAS occurrence.

Results: The incidence of moderate/severe RAS was 2.7%. Only 0.7% of patients required crossover (8 to transfemoral and 5 to contralateral TRA). Patients with moderately/severe spasm were more frequently females, had a history of dyslipidemia, received more often a 7F sheath and more puncture attempts than patients without spasm. By multivariate analysis, the need for more than one attempt and the use of a 7 F sheath were independent predictors of the development of moderate/severe RAS.

Conclusions: The incidence of moderate/severe RAS is low in centers with a default TRA. Its development appears to be strongly related to the numbers of puncture attempts and the use of large sheaths.

TCT-270

Non-Cocktail Strategy for Transradial Procedures. A Sub-Analysis of an International Multicenter Registry

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Background: Radial artery spasm (RAS) is the most common complication during transradial procedures (TRP). Different spasmolytic drugs are used alone or in combination to avoid this complication. Radial hydrophilic sheaths offer less traumatic vascular access, and dedicated transradial catheters help avoid the use of larger French catheters and multiple exchanges, commonly associated with RAS. All these improvements, added to an ample learning curve in TRP, transformed a RAS into a less frequent complication. Because there is not enough evidence to support the non-use of spasmolytic drugs for TRP in daily practice, known as non-cocktail strategy, we assessed the hypothesis that the use of dedicated transradial devices by highly experienced operators makes spasmolytic cocktails unnecessary.

Methods: Throughout 2012 a multicenter transradial registry (RAS Registry) was created including prospectively and consecutively all TRP (diagnostic and therapeutic) in 14 highly experienced hospitals in 7 countries. We sub-analyzed the incidence of RAS in those patients who had received one or more spasmolytic drugs (group 1) compared to those without any spasmolytic drug (non-cocktail strategy) (group 2). Incidence of RAS was classified as mild (minimal local pain), moderate (significant local pain with possibility of moving the catheter to complete the procedure), and severe (cross-over to another access due to local pain during catheter movements compelling operator to stop the procedure or catheter trapping that does not allow proper handling).

Results: A total of 1,926 patients were analyzed. 1,552 (80.6%) belonged to group 1 and 374 (19.4%) belonged to group 2. There were no statistical differences in patient and procedural characteristics between the two groups. RAS (mild/moderate/severe) incidence was: group 1: 10.9% and group 2: 9.9% ($p=0.64$) and RAS (severe only) incidence was: group 1: 0.83% and group 2: 1.06% ($p=0.92$).

Conclusions: Provided procedures are performed by highly experienced operators, a non-cocktail strategy for TRP can be performed safely and without an increase of RAS incidence if compared with patients on spasmolytic drugs, with the possibility of avoiding the side effects of these drugs.

TCT-271

Use of the sheathless guide catheter for transradial approach in primary percutaneous coronary intervention for acute ST-segment elevation myocardial infarction

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Background: Transradial approach (TRA) is effective treatment of primary percutaneous coronary intervention (PPCI) for acute ST-segment elevation myocardial infarction (STEMI). Its safety and effectiveness are comparable to the transfemoral approach in PPCI. We routinely conduct PPCI via TRA with sheathless guide catheter for patients with STEMI. Using the sheathless guide catheter makes it possible to perform PCI without an introducer sheath. The sheathless catheter has a larger lumen without increasing an external diameter, as compared with conventional guide catheter. Due to this advantage, use of the sheathless catheter may contribute to further expanding the type of cases performed PCI via TRA. We evaluated the safety and effectiveness of use of sheathless catheter for TRA in PPCI for STEMI.

Methods: We conducted PPCI in 635 patients presenting STEMI between September 2010 and May 2013. We excluded 94 patients from this study due to use of conventional guide catheter ($n=16$), transfemoral approach ($n=78$). We analyzed data of the other 541 patients to evaluate safety and effectiveness of TRA with sheathless catheters. Primary endpoints of this study comprised crossover rates to another vascular access site, and acute procedural success rates. Secondary endpoints were total procedure duration, fluoroscopy times and contrast use. Acute procedural success was defined as a thrombolysis in myocardial infarction (TIMI) flow grade 3 or an improvement of the TIMI flow of 2 grades and 30% or less stenosis in the culprit lesion at the end of the procedure.

Baseline and procedural characteristics in patients who required cross-over												
Patient	CO	Age	Gender	RAS		Allen's Test	Procedure	Puncture attempts	Cocktail	Sheath size	Total catheter	Largest catheter
				Severity	onset							
1	F	86	Male	Grade 4	DA	abnormal	PCI	1	NTG,VP	5	3	6
2	F	69	Female	Grade 3	DA	Not done	PCI	1	None	6	1	6
3	F	72	Male	Grade 3	1st catheter	Not done	CA	1	None	6	1	5
4*	F	80	Female	No	---	Not done	PCI	1	None	6	2	6
5*	F	81	Female	No	---	Not done	PCI	>1	None	6	3	6
6	F	59	Male	Grade 3	3rd catheter	Normal	CA	1	NTG	5	3	5
7	F	52	Female	Grade 4	Puncture	Not done	CA	>3	None	5	1	4
8**	F	89	Female	Grade 3	Puncture	Not done	CA	1	NTG,VP	5	1	5
9	R	53	Male	Grade 4	Puncture	Not done	CA	1	VP	6	2	6
10*	R	70	Male	Grade 4	4th catheter	Not done	CA	>3	Nicardipine	5	4	5
11**	R	80	Male	Grade 3	Puncture	Normal	PCI	>3	NTG	6	2	6
12	R	88	Female	Grade 2	1st catheter	Normal	CA	2	NTG	5	2	5
13	R	52	Male	Grade 3	Puncture	Not done	PCI	>3	Not done	---	---	---

CO: indicates cross-over, R: radial CO, F: femoral CO; DA: data unavailable; PCI: percutaneous coronary intervention, CA: coronary angiogram. NTG: nitroglycerine, VP: verapamil.
 *Presence of severe tortuosity of supra-aortic vessels.
 **Left radial access.