

influence of operator experience and PCI volume on adherence to transfemoral access best practices has not been studied. This international survey aimed to examine the influence of operator experience on TFA practices and fill important gaps to improve the quality of care in the cardiac catheterization laboratory.

**METHODS** A survey instrument was developed and distributed via email from professional societies to interventional cardiologists worldwide between March and December 2016.

**RESULTS** A total of 988 physicians from 88 countries responded to the survey. TFA is the preferred approach for patients with cardiogenic shock, left main or bifurcation PCI, and procedures with mechanical circulatory support. Older (<50 years: 56.4%; ≥50 years: 66.8%,  $p < 0.0039$ ) and high PCI volume operators (<100 PCI: 57.3%; 100-299 PCI: 58.7%; ≥300 PCI: 64.3%,  $p < 0.134$ ) utilize palpation alone without imaging (fluoroscopy or ultrasound) for TFA (Figure). Most respondents do not use micropuncture needle to gain arterial access regardless of age or experience. Older operators (<50 years: 71.5%; ≥50 years: 64.4%,  $p < 0.04$ ) and high PCI volume operators (<100 PCI: 67.9%; 100-299 PCI: 72.6%; ≥300 PCI: 64.1%,  $p < 0.072$ ) are less likely to perform a femoral angiogram (FA) during PCI. Of those performing FA, the majority (67%) does so at the end of the procedure.

**CONCLUSION** Despite best-practice guideline recommendations, older and high PCI volume interventional cardiologists prefer not to use imaging (fluoroscopy or ultrasound) for femoral access or to perform femoral angiography during TF PCI. Future studies should investigate whether the lack of adoption of best practices in TFA is associated with adverse events.

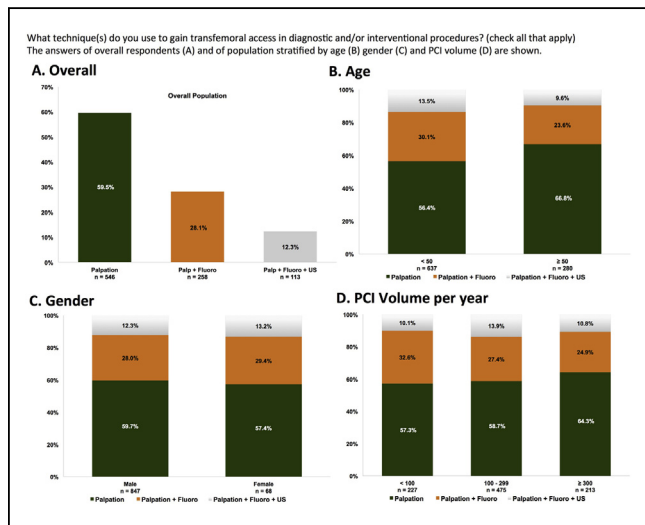
2016 retrospectively. Anatomic localization of FA and fluoroscopic marking of femoral head were utilized in all cases. VCs were defined as any hematoma >3cm, major bleeding requiring PRBCs or Hb drop > 2gm, retroperitoneal bleed, pseudoaneurysm, AV fistula, arterial thrombosis, distal embolism, dissection, transient limb ischemia, and access site infection. Chi-Square and Fisher's exact test with  $p < 0.05$ , as well as multiple logistic regression analysis were utilized.

**RESULTS** A total of 647 patients (M 357, F 290; MPT 333) were included in the analysis. MPT as compared to regular 18-gauge needle access did not demonstrate a reduction in VC rate (2.4% vs. 2.2%;  $p=1.0$ ). On multivariate analysis, the only variable that was associated with a reduction in VCs is the utilization of VCDs, when adjusted for parameters listed in Table 1. Manual compression (MC) for hemostasis is associated with 4.1 times the odds of VCs as compared to VCD use (95% CI 1.111-15.574).

**CONCLUSION** Utilization of MPT did not contribute to statistically significant reduction in VC rate. The only factor that correlated with reduction in VC rate is the utilization of VCDs. Further large randomized studies are required to demonstrate benefit if any, in utilizing MPT on a routine basis.

Contributors to Vascular Complications

Multivariate Variables	Odds Ratio	95% Wald CI Lower limit	95% Wald CI Upper limit
Race, Age, Gender, BMI, Sheath size, CAG vs. PCI, h/o HTN, HLD, DM, CKD, Smoking, CAD, PCI, CABG, PAD, intra/peri-procedural use of Aspirin, Clopidogrel, Brilinta, Heparin, Bivalirudin (Not Significant)	Not Significant		
18-gauge vs. Micropuncture technique	1.18	0.37	3.71
Manual Hemostasis vs. Vascular Closure Device	4.15	1.11	15.57



**CRT-200.26**  
Does Micropuncture Technique Really Help Reduce Vascular Complications?

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**BACKGROUND** Femoral arterial access (FAA) in Coronary Angiography (CAG), and Percutaneous Coronary Interventional (PCI) is associated with 2-6% vascular complication (VC) rate. FEMORIS randomized study comparing 21-gauge Micropuncture technique (MPT) with 18-gauge failed to demonstrate statistical superiority in reducing VCs. We initiated a quality improvement project in our cardiac catheterization laboratory to reduce the FA access site complications via utilization of MPT.

**METHODS** We utilized MPT on all of our FAA non-emergent cases starting in September 2016 in addition to collecting data since April

**CRT-200.27**  
Are We Closing The Gender Gap In 2017? Vascular Complications Following Common Femoral Arterial Access: Then and Now

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**BACKGROUND** Femoral arterial access (FAA) in diagnostic (DA) and interventional (PCI) coronary and peripheral procedures is associated with 2-6% vascular complication (VC) rate. FEMORIS randomized study comparing 21-gauge Micropuncture technique (MPT) with 18-gauge failed to demonstrate statistical superiority in reducing VCs.

**METHODS** Two thousand six hundred seventeen patients who underwent DA and PCI via FAA were retrospectively separated into Period 1 (2005 to 2008; 1970 patients; M 1045; F 925) and Period 2 (2016-2017; 647 patients; M 357; F 290; MPT in 333). FAA was preceded by anatomic FA localization during Period 1 vs. additional fluoroscopic marking of femoral head during Period 2. VCs were defined as hematoma >3cm, major bleeding requiring PRBCs or Hb drop > 2gm, retroperitoneal bleed, pseudoaneurysm, AV fistula, arterial thrombosis, distal embolism, dissection, transient limb ischemia, and access site infection. Chi-Square and Fisher's exact test with  $p < 0.05$ , as well as multiple logistic regression analysis were utilized for analysis.

**RESULTS** The rate of VCs remain unchanged from Period 1 to 2 (2.44% vs. 2.32%,  $p=1.0$ ). An elevated rate of VCs experienced by women of Period 1 (F 3.68% vs. M 1.34%,  $p < 0.05$ ) is no longer noted in Period 2 (F 2.07% vs. M 2.52%,  $p=0.79$ ). Multivariate analysis limited to Period 1 has revealed OR for VCs of 4.623 (95% CI: 2.14-9.97) in women, 0.1 (95% CI: 0.03-0.34) for DA vs. PCI, and 3.7 (95% CI: 1.7-7.6) for MC vs. VCD. Age, Race, BMI, h/o HTN, HLD, DM, Smoking, CABG, PCI, PAD, intra/peri-procedural use of Heparin, Bivalirudin, Clopidogrel, did not contribute to VCs. Multivariate analysis limited to Period 2 has revealed that the only variable that contributed to VCs was utilization of MC over VCDs (OR 4.15; 95% CI: 1.11-15.57). Age, Race, Gender, BMI, h/o HTN, HLD, DM, CKD, Smoking, CAD, PCI, CABG, PAD, PCI vs DA, intra/peri-procedural use of Heparin,

Bivalirudin, Aspirin, Clopidogrel, Brilinta, and MP use, did not contribute to VCs.

**CONCLUSION** Risk of VCs in women from FAA has reduced to that of men in contemporary era in the setting of unchanged total VC rate a decade ago. VCD use continues to reduce the incidence of VCs. The use of fluoroscopic marking prior to access, smaller sheath size, and being a high femoral volume center may have contributed to the reduced incidence of VCs in women.

**CRT-200.28**

**The Use of the Perclose ProGlide Suture Mediated Closure (SMC) Device for Vein Artery Access Site Closure Up To 24F Sheaths**



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**BACKGROUND** Evaluate the safety and performance of ProGlide in closure of venous access site in subjects with a large-caliber femoral vein sheath (24F).

**MATERIALS AND METHODS** This was a prospective analysis of retrospective data from the EVEREST II REALISM (REALISM) MitraClip study population who had received either ProGlide or manual compression (MC) as the intended method for venous access-site closure. Seven (7) high frequency vessel closure device usage sites from the REALISM study were selected as the study sites. The primary analysis cohort (ProGlide group) was defined as subjects who received at least one (1) ProGlide as the intended femoral vein access-site closure device. The primary analysis was the evaluation of ProGlide against an acceptance criterion of ≥90% for the rate of freedom from major femoral vein access-site related complications at 30 days post-procedure.

**RESULTS** A total of 159 subjects from five of the seven high-frequency VCD sites were included in this analysis. Two high-frequency VCD sites did not use any ProGlide for the femoral vein access site closure. The subjects enrolled were elderly with a mean age of 76 years, 53% were male with multiple comorbidities. The largest venous sheath for the MitraClip access site was 24 French (F). The primary endpoint of the rate of freedom from major femoral vein access-site related complication at 30 days was 98.1% (95% CI [94.6%, 99.6%]), meeting the predefined acceptance safety criterion of 90%. Of the 159 cases in which ProGlide was used, 144 used 2 ProGlides and 15 used 1 ProGlide. In the ProGlide cohort, 69.2% (110/159) of the subjects received ProGlide only as the intended hemostasis method; 17.6% achieved hemostasis with ProGlide plus MC, and 12.6% used secondary closure methods (subcutaneous stitch) along with ProGlide. Hemostasis at the time of the index procedure using ProGlide was achieved in an average time of 5.92 ± 6.19 minutes.

**CONCLUSION** The study results have demonstrated that the safety assessment of ProGlide met the predefined acceptance safety criterion. The use of ProGlide in venous closure of 24F was associated with a low 30-day major complication rate.

**CRT-200.29**

**Carotid Artery Endarterectomy vs. Carotid Artery Stenting For Restenosis After Carotid Artery Endarterectomy: A Systematic Review and Meta-analysis**



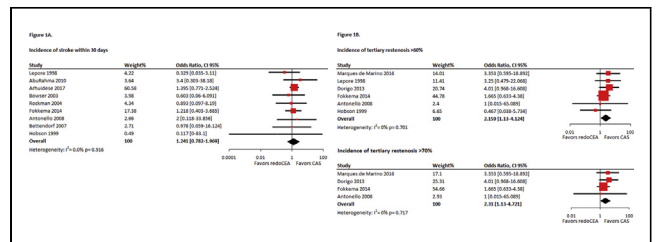
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**OBJECTIVE** Carotid artery restenosis may occur after ipsilateral carotid endarterectomy (CEA). It remains unclear whether carotid artery stenting (CAS) or a repeat CEA (redoCEA) is the best treatment strategy for carotid artery restenosis.

**MATERIALS & METHODS** This study was performed according to the PRISMA and MOOSE guidelines. Eligible studies were identified through a comprehensive search of PubMed, Scopus and Cochrane Central until July 20, 2017. A meta-analysis was conducted with the use of random effects modeling. I-square was used to assess for heterogeneity.

**RESULTS** Thirteen studies involving 4163 patients were included. Peri-procedural (within 30 days) stroke, transient ischemic attack (TIA), myocardial infarction (MI), and death rates were similar between the two revascularization approaches. However, the risk for cranial nerve (CN) injuries was higher in the redoCEA group (OR: 9.84; 95% CI: 3.73 - 25.94; I2 = 0%). CAS was associated with significantly lower risk for long-term recurrent carotid restenosis, when defined as stenosis >60% (OR: 2.15; 95% CI: 1.13 - 4.12; I2 = 0%) or as stenosis >70% (OR: 2.31; 95% CI: 1.13 - 4.72; I2 = 0%). No difference was identified in long-term target lesion revascularization rates between redoCEA and CAS.

**CONCLUSIONS** Patients with carotid restenosis after CEA can safely undergo both CAS and CEA with similar risks of peri-procedural stroke, TIA, MI and death. However, patients treated with CAS have a lower risk for a new restenosis and peri-procedural CN injury.



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