Initial Clinical Experience With an Intravascular Ultrasound-Guided Transmembrane Puncture Device to Facilitate Recanalization of Total Femoral Artery Occlusions

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Purpose: Failure to recanalize chronic superficial femoral artery occlusions is caused in the majority of the cases by subintimal passage of the occlusion with inability to re-enter the true lumen with the guide-wire. The present study details our initial experience with the CrossPoint TransAccess crossing device (Transcatheter Inc.) to facilitate recanalization of total femoral artery occlusions.

Methods: 14 consecutive patients (11 male, mean age 63 years) who failed recanalization attempts of chronic superficial femoral artery occlusions (mean occlusion length 12.7 cm) with standard techniques were re-scheduled for a secondary recanalization procedure. The CrossPoint device is a 0.014" rapid exchange catheter, which tracks over a 0.014"-wire. A 20MHz phased array IVUS transducer is integrated into the tip of the catheter allowing visualization of the vessel morphology. Using the guidance of the IVUS crosssectional image supported by colour-flow imaging the true lumen is punctured with an integrated 24G needle allowing delivery of a second 0.014"-wire.

Results: Re-entry into the true lumen was successfully accomplished in all cases without complications. In 4 cases with severe calcification predilatation of the false channel was necessary to allow advancement of the CrossPoint device. Furthermore, in patients with severe calcification predilatation attempts were necessary to penetrate the dissection membrane. A procedural success (<25% residual stenosis) could be achieved in all cases after predilatation and stenting of the occlusion with selfexpanding nitinol stents.

Conclusion: The CrossPoint device is an effective and safe tool to facilitate true lumen re-entry during recanalization of total superficial femoral artery occlusions.

Patent Foramen Ovale Closure Using a Blind Transapical Technique Is Safe

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Background: Percutaneous closure of patent foramen ovale (PFO) is an alternative to surgical treatment of this defect. Transseptal echocardiography (TEE) or intracardiac echocardiography (ICE) guidance is used for percutaneous placement of closure devices. The use of general anesthesia during TEE or the use of ICE significantly increases the cost of this procedure. We report our experience of PFO closure with CardioSEAL using transapical puncture without TEE or ICE guidance. Methods: We report 29 consecutive patients (men 18, age 52±13, ejection fraction 60±3%) with cerebral embolic event and associated PFO treated with percutaneous CardioSEAL device. Previous data from 33 consecutive patients using TEE or ICE guidance for PFO closure was used as a control group. The CardioSEAL device was used in all patients. Procedural success was defined as successful placement of the device. Follow-up transthoracic echocardiography (TTE) with bubble study at 3 month was performed in all but one patient. Results: Twenty-eight patients in the transeptal group presented with a cerebral embolic event and 3 patients experienced extracranial embolic events. The CardioSEAL device was successfully deployed in all 29 patients. There was no in-hospital mortality or thromboembolic event. All patients were discharged within 24 hours of the procedure. The average device size was 29±9 mm. There was a significant difference between the study group and the control in fluoroscopy time (9±5 vs 9.4±5 min, p<NS) and amount of contrast used (130±60 vs 193±68 ml, p=NS). At a mean follow up of 69±58 days one patient had atrial fibrillation, device associated thrombus, and a transient ischemic neurologic event. Another patient committed suicide prior to follow-up. Four patients had intracardiac shunt detected by TTE with bubble contrast. Conclusion: PFO closure using a blind transapical technique without use of general anesthesia, TEE, or ICE guidance is a safe procedure without additional risks and cost. A large randomized trial and longer follow-up is needed to determine if a blind transapical technique is comparable to echo guided techniques.
Atherosclerotic Plaque Can Be Quantified Using Angioscopic Findings in Patients With Non-ST Elevation The Relation Between the Statin’s Effects on Coronary Angiography & Interventional Cardiology

Background: Many large trials reported that statins could reduce coronary events in primary and secondary prevention as well as plasma low-density lipoprotein cholesterol (LDL) levels. Intravascular ultrasound radio-frequency signal (IVUS-RF) parameters such as integrated backscatter (IB) have been shown to be useful in discriminating histological components in human coronary plaques. We already reported that administration of statin for 6 months could clinically increase IB in human coronary plaques. In this study, we sought to evaluate the relation between the plasma LDL levels and coronary plaque composition in a manner clinically detectable by IVUS-RF analysis.

Methods: Consecutive 20 patients undergoing percutaneous coronary intervention (PCI) with plaque normal cholesterol (TC) level between 180 and 300 mg/dl were investigated. We searched for echo-lucent plaques in non-PCI-influenced coronary regions using a 40 MHz IVUS catheter after PCI and acquired IVUS-RF signals. The patients began to take atorvastatin 10 mg / day after PCI procedure. At 6-month follow-up, plasma lipid levels were measured in all patients and IVUS-RF signals were sampled at the same plaque sites. Several regions of interest (ROIs) were placed on each plaque. IB was measured in all ROIs blindly to the LDL data. Total of 148 ROIs were analyzed and %LDL change (baseline LDL – follow-up LDL / baseline LDL x 100%) was calculated in each patient.

Results: Plasma LDL level was significantly reduced from 133 ± 87 to 29 mg/dl (p < 0.0001) during the 6-month follow-up. IB was substantially increased from –33.8 ± 4.5 to –51.4 ± 9.8 db (p < 0.0001). Interestingly, %total lipid segment core decreased with increasing HLD (r=0.44, p=0.0063), but there was no correlation with LDL (Figure). Conclusions: VH affords real-time assessment of plaque histopathology (not just grey scale images) that has been correlated to human necropsy specimens. This information will reveal important correlations with clinical disease states.