pulsatility over 3 cardiac cycles, and early systolic conduit backflow. Using the protocol in 74 consecutive pts, 136 grafts to coronaries (> 70% angiographic stenosis) were imaged for PSCF. All grafts were widely patent by arterial phase angiographic criteria. PSCF was visually identified in 26% (19/72) of IMA grafts and 0% (0/64) SVG or RA grafts. Of these 19, physiologic quantitative perfusion analysis documented that 90% (17/19) had marginal perfusion improvement in the grafted regions.
Conclusion: Real-time visualization and physiologic documentation of PSCF at CABG is feasible. This should provide important new information for surgeons to better understand the short- and long-term outcomes of bypass grafts.

TCT-700

INFLUENCE OF CARDIAC CONTRACTILITY ON FUNCITONAL AND ANATOMICAL DIAGNOSTIC ENDPOINTS UNDER CONCOMITANT MICROVASCULAR DYSFUNCTION IN A PORCINE MODEL

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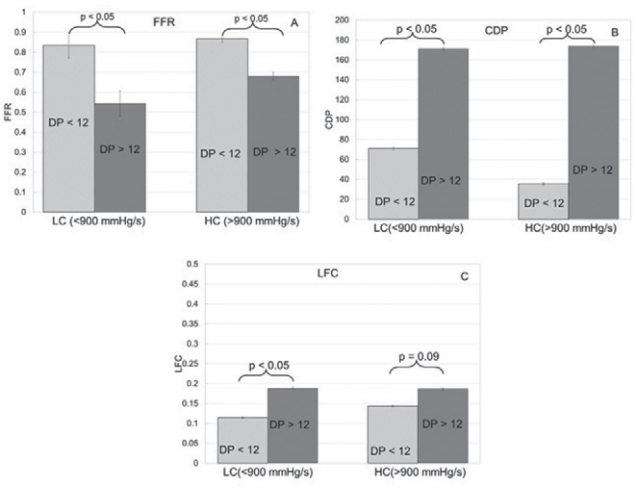
Background: The effect of changes in hemodynamic variables like contractility on the coronary diagnostic parameters in the presence of concomitant microvascular disease (MVD) needs better assessment. This study evaluates the influence of contractility on Fractional Flow Reserve (FFR), Pressure Drop Coefficient (CDP) and Lesion Flow Coefficient (LFC) in the presence of MVD.
Methods: Simultaneous pressure and distal average peak velocity (APV) were measured in 11 pigs (52±4 kg) using a dual sensor-tipped guide wire. Epicardial stenosis (ES) and MVD were created using angioplasty balloons and 90 μm polystyrene microspheres, respectively. Contractility was calculated as (dp/dt) max using left ventricular pressure measured by the Millar catheter. CDP was calculated as (DP)/ (0.5×1.05×APV^2). LFC was calculated as the ratio of %ES to the CDP at minimal constriction region. A DP cut off of 12 mmHg was obtained from Pa (51 ± 0.9 mmHg) and FFR cut-off (= 0.75). The FFR, CDP and LFC were assessed for: 'DP < 12 mmHg' and 'DP > 12 mmHg' under 'LC (<900 mmHg/s)' and 'HC (>900 mmHg/s)'. A one way repeated measure mixed model ANOVA was performed with p<0.05 considered statistically significant.
Results: Under MVD, for DP < 12 mmHg and DP > 12 mmHg, the mean values of FFR (0.83 ± 0.06, 0.54 ± 0.06; 0.87 ± 0.02, 0.68 ± 0.02) and CDP (71.04 ± 1.26, 171.28 ± 1.27; 35.51 ± 1.28, 173.66 ± 1.31) were significantly different for both LC and HC. The LFC (0.11 ± 0.002, 0.19 ± 0.003) values were significantly different under LC while they were (0.14 ± 0.002, 0.19 ± 0.003) marginally significant (p = 0.09) under HC.



Bar plots comparing the effect of DP groups under LC and HC conditions for A) FFR B) CDP C) LFC

Conclusion: FFR and CDP could significantly differentiate between levels of DP under LC and HC. While LFC followed similar trend for levels of DP under LC it remained marginally significant under HC.

TCT-701

Assessment of Lesion Length on Fractional Flow Reserve in Intermediate Coronary Lesions

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Background: Assessment of the functional significance of angiographically intermediate coronary lesions is necessary to clarify requiring revascularization. Although we recognized diameter stenosis (DS) could not discriminate functional severity, it was not well-discussed whether the difference of lesion length could affect functional severity in intermediate coronary lesions. Therefore, we assessed the impact of lesion length on fractional flow reserve (FFR) in intermediate coronary lesions.
Methods: The study included 109 consecutive patients with 124 intermediate lesions (40-60% DS on quantitative coronary angiography). All intermediate lesions were classified according to lesion length (focal: <10mm, tubular: 10-20mm, and diffuse: >20mm) and assessed the FFR value.
Results: In 124 intermediate lesions, mean DS was 50.9±5.5% and mean FFR was 0.80±0.11. Lesion length had an inverse correlation with FFR (r=-0.409, p<0.001), although DS has no correlation with FFR (r=-0.066, p=0.468) in all subjects. Among three groups (focal: n=27, tubular: n=49, diffuse: n=48), there was a significant difference in the FFR value (0.86±0.10, 0.81±0.10, 0.75±0.11, respectively, p<0.001), although we did not find a difference in DS (51.2±5.7%, 51.4±5.2%, 50.1±5.8%, respectively, p=0.484). Functional significance defined as the FFR value <0.75 were observed only 14.8% in focal lesion, 24.5% in tubular lesion, and 50.0% in diffuse lesion. There was a significant difference among 3 groups (p=0.002). Using a receiver operating characteristics curve analysis, the best cutoff value of lesion length with FFR <0.75 was 17.5mm (75% sensitivity, 65% specificity, and area under the curve=0.722, p<0.001).
Conclusion: This study demonstrates that lesion length has a significant impact on the functional significance of intermediate coronary lesions. We have to take account of lesion length when we perform revascularization therapy in intermediate coronary lesions.

TCT-702

A comparative study between intravenous and intracoronary administration of high doses adenosine for fractional flow reserve measurements, in the "FAME" era

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Background: Since the publication of the "FAME" study, the use of the pressure wire has increased. Intravenous adenosine (IV) is considered the standard method to measure the fractional flow reserve (FFR).
Methods: A comparative study between two methods: Different incremental doses of intracoronary adenosine (50, 150, 300, and 500 μg as bolus) vs. a standard intravenous infusion of 140 μg /kg/min. Maximal hyperemia was defined as the lowest FFR measured between the two methods.
Results: FFR was assessed in 34 patients with 41 lesions during cardiac catheterization. FFR decreased significatively (p<0.05) with increasing intracoronary adenosine doses(IC): Bolus means FFR: 0.86±0.06 (50μg), 0.85±0.06 (150μg), and 0.84±0.06 (300 μg). There were no differences between 300 and 500 μg boluses. There were significant differences between the FFR IV and FFR IC with 300 pg: 0.86±0.06 vs.0.84±0.06, p=0.01. The 50 μg bolus IC failed to diagnose 4 out of 41 (9.75%) significant stenoses. The IV failed to diagnose 2 out of 40 (5%) significant stenosis. The agreement between the two sets of measurements (300 pg IC vs. IV) was high, and the Kappa index value was 0.85 (p = 0.05). AV blocks was associated with de incremental IC bolus doses: 50 pg (0%), 150 pg (7.3%), 300 pg (19.5%) and 500 pg (31.7%). IC boluses were well tolerated, with fewer systemic adverse effects (only 1 patient present with symptomatic AV block), than intravenous adenosine (11p, 26.8% presented dysphea). One patient in the IV group, had severe side effects (bronchospasm and severe nausea), FFR could not be measured in this patient. The procedures were shorter in the IC group, with fewer minutes of test (2.80±0.7 IC vs. 6.3±1.4 IV; p=0.001).
Conclusion: The administration of very high intracoronary adenosine bolus is safe and well tolerated, and shortens the procedure. Furthermore intracoronary administration of 300 pg adenosine produced a more pronounced hyperemia than intravenous adenosine and may be the preferred mode of application for the assessment of FFR.

TCT-703

Functional Assessment of Jailed Side Branches in Coronary Bifurcation Lesions Using Fractional Flow Reserve

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Background: Little is known about the functional significance of side branches after stent implantation in main vessels in coronary bifurcation lesions.We assessed the functional significance of side branches after stent implantation in main vessels using fractional flow reserve (FFR).
Methods: Between May 2007 and January 2011, 230 side branches in 230 patients after stent implantation in main vessels were assessed by FFR and were consecutively enrolled.
Results: Mean FFR at side branch was 0.87±0.10, with only 41 (17.8%) side branches being functionally significant after stent implantation in main vessel. Among 67 side

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