achieved at the expense of radius, and therefore, wall tension, in the ovine model with induced ischemic cardiomyopathy.

TCT-83
What Amount of Intravenous Fluid Produces Maximum Hemodynamic Benefit in Tamponade Patients
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Background: In patients of tamponade, interim measures may occasionally be needed when facilities for pericardial fluid drainage are not immediately available. Intravascular volume expansion is the most commonly advocated measure but with limited scientific data. This study was undertaken to ascertain an optimum amount of fluid that can produce the maximum benefit in tamponade patients.

Methods: Patients ≥ 16 years of age with large circumferential pericardial effusion, and showing echocardiographic evidence of cardiac tamponade were included. Hemodynamically unstable patients; those with structural heart diseases; pregnant females and showing echocardiographic evidence of cardiac tamponade were included. He- 

Results: A total of 28 patients constituted the study group; all of whom exhibited an improvement in hemodynamic parameters (SBP, CO) with volume expansion. Significant (p < 0.05) increase in SBP, DBP, CO and CI values occurred upto 250-500 ml bracket; above which the significance was lost.

Conclusions: Rapid infusion of as little as 250 ml of intravenous normal saline may improve the cardiac hemodynamics in a significant proportion of tamponade patients.

Angiography and QCA
Washington Convention Center, Lower Level, Hall A
Saturday, September 13, 2014, 5:00 PM–7:00 PM
Abstract nos: 84-93

TCT-84
Prospective, Online, Interactive Survey Comparing Visual Lesion Estimation To Quantitative Coronary Angiography
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Background: Inaccurate lesion measurement and inappropriate stent length selection can negatively affect clinical outcomes following coronary stent deployment. Measurement errors resulting in longitudinal geographic miss or the use of inappropriately long stents have been associated with restenosis and the need for target lesion revascularization. This study evaluated interventional cardiologists’ (IC) ability to measure lesions and select stent lengths.

Methods: This evaluation was conducted as a prospective, online, interactive survey of 25 matched orthogonal angiographic images that were pre-scored using quantitative coronary angiography (QCA). Participants provided estimates of lesion length and stent length selection. These estimates were compared to the maximum QCA value. A 2-4 mm stent overlap of both the proximal and distal lesion edges was considered to be optimal. Based on this, lesion lengths measurements >1 mm below and >4 mm above and stent lengths that were less than 4 mm and >8 mm from the QCA value were considered to be short and long, respectively. Five of the 25 images were repeated to assess intra-rater variability.

Results: Forty ICs participated. The results are summarized in Table 1. Accurate lesion length measurement and stent length selection occurred in only 30.4% and 22.3% of the cases, respectively. Stent length misses that would fail to cover the entire lesion comprised 23.8% of the cases. Analysis of repeated images showed a >3mm difference in 38.5% and 37.5% of length measurements and stent length selections, respectively.

Table 1. Evaluatior Lesion Measurement and Stent Length Selection Relative to QCA

<table>
<thead>
<tr>
<th>Lesion Length Measurement</th>
<th>Short</th>
<th>Accurate</th>
<th>Long</th>
</tr>
</thead>
<tbody>
<tr>
<td>409 (51.1%)</td>
<td>243 (30.4%)</td>
<td>152 (19.0%)</td>
<td></td>
</tr>
<tr>
<td>47.6%, 64.6%</td>
<td>27.2%, 33.7%</td>
<td>16.3%, 21.9%</td>
<td></td>
</tr>
<tr>
<td>Stent Length Selection</td>
<td>440 (55.0%)</td>
<td>178 (22.3%)</td>
<td>182 (22.8%)</td>
</tr>
<tr>
<td>51.5%, 58.9%</td>
<td>19.4%, 25.3%</td>
<td>19.9%, 25.8%</td>
<td></td>
</tr>
</tbody>
</table>

N (percent of total) 95% confidence interval

Conclusions: Manual assessment of the coronary lesion length has a high degree of inter- and intra-rater variability, which may lead to inadequate stent selection and lesion treatment. Employing methodology to improve the accuracy of lesion measurement may improve patient outcomes.

TCT-85
Factors Influencing Stent Recoil and Underexpansion In Vivo Independent of Atherosclerosis: A Multimodality Imaging Study in Normal Porcine Coronary Arteries
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Background: Stent underexpansion and malapposition continue to be important factors in suboptimal outcomes of stent treatment of obstructive coronary disease. It is well established that stents rarely achieve intended post-implant diameters that would be expected from the maximum applied pressure and the stent pressure-diameter characteristics provided by the manufacturer. In human arteries, the restrictive forces preventing the stent from fully expanding are attributed to the rigidity and heterogeneous composition of atherosclerotic and damaged wall, calcifications in particular. We sought to examine the true in-vivo stent recoil in response to elastic forces posed by healthy porcine arteries.

Methods: One hundred fifty eight stents were implanted in coronary arteries in swine model aiming at an 120% overstretch ratio. Final minimum stent diameter (MSD) immediately post-deployment was measured by QCA (XIENCE=39, RESOLUTE=41, OMEGA=42), intravascular ultrasound (IVUS) (LIBERTE=23, PROMUS=16) and optical coherence tomography (OCT) (XIENCE=12). In 122 stents examined by QCA, minimum balloon diameter (MBD) during stent deployment was also measured. For each stent, MSD was compared to the projected diameter (PD) that the stent was to achieve per compliance chart at the pressure used.

Results: The average MSD by QCA was 7.9±8.3% lower than the PD expected from the compliance chart at the pressure used. IVUS and OCT demonstrated similar deficit of MSD in comparison to PD (7.1±5.7% by IVUS and 9.4±4.8% by OCT). MBD was only 2.5±6.4% lower than PD, thus accounting for ~1/3 of the deficit, while ~2/3 was due to true recoil. Stent type, coronary branch location (RCA, LAD or LCX), baseline artery size (reference diameter), tapering of the stented segment and the actual overstretch ratio had no evident impact on the magnitude of deficit/recoil.

Conclusions: Elastic resistance of normal porcine coronary arteries is sufficient to impede stent recoil significantly beyond the typical manufacturer’s claim of less than 3% based on bench testing in air with no external resistance. As a consequence, stents consistently achieve 7-10% less than the predicted diameter, even in complete absence of atherosclerosis.

TCT-86
Quantification and Impact of the Proportion of Coronary Disease Burden Treated by Percutaneous Coronary Intervention: The SYNTAX Revascularization Index
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Background: The extent of coronary artery disease (CAD), as quantified by the baseline SYNTAX Score (bSS) and the residual SS (rSS) after PCI, have been shown to be associated with adverse ischemic outcomes in various studies. We sought to quantify the proportion of CAD burden treated by PCI and to evaluate its impact on 1-year adverse ischemic events, using a newly developed index (the SYNTAX Revascularization Index; SRI).

Methods: The bSS and rSS from 2,681 angiograms from patients enrolled in the prospective ACUTY (Acute Catheterization and Urgent Intervention Triage Strategy) trial were determined. The SRI was then calculated for each patient by the following formula [1-(rSS/bSS)] x 100. Patients were then stratified and outcomes examined according to the proportion of revascularized myocardium (SRI=100% (complete revascularization), 50-99% and < 50%).

Results: The mean bSS was 12.8 ± 6.7, and after PCI the mean rSS was 5.6 ± 2.2. The SRI was 100% in 1079 patients (40.2%) 50-99% in 908 patients (33.9%), and < 50% in 694 patients (25.9%). One-year adverse outcomes, including death, were inversely proportional to the SRI (Table). By multivariable analysis, SRI was found to be an independent predictor of 1-year mortality (hazard ratio HR=0.84 [95% CI 0.24, 0.95], P=0.03). An SRI cutoff of < 80% (present in 1287 (48.0%) of patients after PCI) had the best prognostic accuracy for risk prediction of death (AUC 0.60, [95% CI 0.53, 0.67] p=0.004).

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