TCT-328
C-arm angiography (Dyna-CT) for 3D Coronary Reconstruction and Myocardial Perfusion Assessment
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Background: A three dimensional reconstruction of the coronary tree is nowadays usually performed using multiprojector computed tomographic angiography whereas myocardial perfusion deficits are assessed by SPECT, cardiac MRI or MSCT. A combination of a precise reconstruction of the coronary arteries in combination with an information about the perfusion situation in the supplied myocardium might also be desired to facilitate complex coronary interventions. The aim of our study was to prove the feasibility of a new C-arm based three-dimensional reconstruction algorithm of the coronary arteries in combination with myocardial perfusion assessment.

Methods: In 20 Patients, referred for PCI, a rotational coronary angiography using a monoplane C-arm system (Arts see; Siemens, Erlangen, Germany) was performed. During the 5s run 133 projections were acquired along a 198° arc (99° right anterior oblique to 99° left anterior oblique view). A recently developed 3D-reconstruction technique was applied:and an initial reference 3D image at the desired cardiac phase was reconstructed from 20 projection images selected by ECC gating showing the coarse structure of the coronary tree. The intermediate 3D images are registered to the reference 3D image and accumulated yielding a tomographic 3D image. The perfusion assessment was done during the myocardial phase of the contrast transit. The resulting dataset was reconstructed and analyzed using short axis and long axis maximum intensity projections (MIP) with 5mm slice thickness. After this a fusion of the 3D-reconstructed coronary tree with the perfusion image was performed in 20 patients (mean age71±9.9 yrs., 3 females). In all 20 cases the LCA was contrasted. This was feasible in all patients with a good imaging of the whole coronary tree and the perfusion situation of the myocardium.

Results: After this a fusion of the coronary tree with the perfusion image was performed in 20 patients (mean age71±9.9 yrs). This was feasible in all patients with a good imaging of the whole coronary tree and the perfusion situation of the myocardium.

Conclusions: These data suggest, that simultaneous motion corrected C-arm-CT reconstruction of coronary arteries and perfusion imaging is feasible.

TCT-329
Effectiveness of Fluoroscopy-Save versus Cinematography at Reducing Radiation Exposure at Coronary Diagnostic Angiography: A Randomized Controlled Trial
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Background: Coronary angiography is the gold standard for defining coronary artery disease. However, radiation exposure remains an unwanted hazard. There is a need to minimize radiation exposure in this era of complex and repeat procedures.

Methods: Patients referred for coronary angiography with abdominal circumference < 40 inches and glomerular filtration rate >60 ml/min were randomized 1:1 to either the fluoroscopy-save group (FS) (n=21) or cinematography group (Cine) (n=24). The trial was powered for superiority of SF versus Cine. Patients in the FS group underwent coronary angiography under fluoroscopy with repeat injection under cinematography only when needed, significantly reducing radiation exposure to both patients and operators and appears safe when compared with routine cinematography alone.

Conclusions: The use of fluoroscopy-save function to perform elective coronary angiography with repeat injection under cinematography only when needed, significantly reduces radiation exposure to both patients and operators and appears safe when compared with routine cinematography alone.

TCT-330
The Effect of Automated Contrast Injection Systems on Contrast Volume Use During Diagnostic Coronary Angiography And Percutaneous Coronary Interventions
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Background: Contrast-induced nephropathy (CIN) is an important cause of iatrogenic morbidity and mortality. The amount of contrast delivered is dependent on the complexity of the procedure and operator technique, and has a major impact on the incidence of CIN. It is unclear whether the use of automatic systems can reduce contrast volumes when low volumes are routinely used.

Methods: An automatic injector was introduced to one of our three cardiac catheterization labs in January 2011. From January 31 to May 31, 2011, 1358 consecutive patients undergoing diagnostic catheterizations and percutaneous coronary interventions (PCI) were randomly allocated to one of the three labs. Manual stopcock-manifold contrast injection was used in 1052 patients and automated contrast injection in 306 patients.

Results: Baseline and procedural characteristics in both groups were similar. There was no significant difference in contrast volume between manual and automated contrast injection systems. (Figure) The incidence of CIN following PCI was 9.8% in the manual group and 7.4% with automatic injector (p<0.43). Use of automated contrast injector was associated with a decrease in contrast use only among operators that routinely use large-caliber (7F) catheters (Manual 206.5mL vs Automated 161.4mL, p<0.005).

Conclusions: The use of automated contrast injection for coronary angiography and PCI is not associated with reduced contrast volume as compared to manual injection. Beneficial effect may be seen when higher contrast volumes or large-caliber catheters are routinely used.

TCT-331
Experience Is Associated with Shorter Procedure Time And Reduced Radiation With Robotic-Enhanced Coronary Intervention – Results From The PRECISE Multi-Center Study
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Background: The PRECISE multi-center study demonstrated the safety and feasibility of robotic-enhanced coronary intervention (PCI). Robotic remote-control procedures were technically and clinically comparable to traditional manual operation, and operator exposure to radiation was 95% lower. We studied the learning curve experience with robotic PCI.

Methods: The CorPath 200 robotic system was used in patient with clinical indication for PCI. The system consists of a remote intervention cockpit and a bedside single-use cassette that enables the operator to advance, retract, and rotate guidewires and rapid-exchange balloons and stents. The first 3 cases of each operator were considered as roll-in cases. We compared the procedure efficiency, patient radiation exposure, and outcomes in the roll-in patients as compared to the later cases. MACE was the composite of cardiac death, myocardial infarction (Q and non-Q) and target vessel revascularization.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Fluoro-save</th>
<th>Cinematography</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient’s peak skin dose, mGy</td>
<td>151±69</td>
<td>260±125</td>
<td>0.001</td>
</tr>
<tr>
<td>Dose area product, uGy/m²</td>
<td>1351 [826-1722]</td>
<td>3445 [2464-4637]</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Operator dose, uR</td>
<td>240 [174-656]</td>
<td>605 [322-897]</td>
<td>0.046</td>
</tr>
<tr>
<td>Contrast use, mL</td>
<td>56 [50-71]</td>
<td>52 [47-69]</td>
<td>0.60</td>
</tr>
<tr>
<td>Proportion of cases needing repeat injection under cinematography, %</td>
<td>35.0</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>