RESULTS Sixty-six patients were included, 20 in the fusion image group, 46 in the control group. There were no significant differences between the 2 groups in general data and procedures characteristics. There are more women on the fusion group. The search time of CAGB was significantly shorter in the fusion group (respectively 7.2 min ± 4.5 min vs 16.04 min ± 13.2 min, p = 0.002), as well as the procedure duration (20.1 min ± 7.2 min vs 31.5 min ± 15.2 min, p = 0.002), fluoroscopy time (9.2 min ± 3.7 min vs 16.4 min ± 7.8 min, p = 0.01), total radiation time (11.1 min ± 4.4 min vs 14.76 min ± 8.3 min, p = 0.06), Air KERMA (546 mGy ± 227 mGy vs 823 mGy ± 475 mGy, p = 0.02), Dose Area Product (4467.8 GY.cm² ± 2030.5 GY.cm² vs 6542.1 GY.cm² ± 3769 mGy, p = 0.02) and volume of iodinated contrast product (87 cc ± 26 cc vs 121 cc ± 43.5 cc, p = 0.002).

CONCLUSIONS 3D reconstruction of CAGB from CT with real-time fusion on coronary angiography images reduce the length of time necessary to find CAGB, procedure time duration, X-Ray exposure and quantity of iodinated contrast compared to standard coronary angiography for diagnostic purposes in patients with CAGB.

CATEGORIES IMAGING: Cath Lab of the Future

KEYWORDS Coronary angiography, Imaging technology, Three-dimensional

TCT-280 Impact of Diabetes Mellitus on Graft Patency following Coronary Artery Bypass Graft Surgery: a Propensity Score Analysis

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BACKGROUND There is limited data on impact of diabetes mellitus (DM) on graft occlusion rates after coronary artery bypass graft surgery (CABG). We sought to evaluate the association of DM to graft patency following CABG.

METHODS Patients who underwent CABG between January 1995 through September 2014 and had at least one follow up coronary angiogram were included for analysis. Outcomes assessed were graft (venous and arterial) stenosis and graft occlusion. Graft stenosis was defined as 70% occlusion on visual assessment on follow-up coronary angiogram while graft occlusion referred to total (100%) occlusion of the graft. Baseline demographic, clinical, echocardiographic and surgical data were collected. We used logistic regression analysis to estimate the odds ratio of graft stenosis and occlusion for DM (p < 0.05). Results were analyzed using Unmatched McNemar test and matched McNemar tests.

RESULTS We found 294 matched pairs who had at least one venous graft and 293 matched pairs who had at least one arterial graft. In both venous and arterial graft matched cohorts the age (venous(mean age in years: DM 61.6, non-DM 63.3), arterial(mean age in years: DM 60.7, non-DM 61.9)) and gender (venous(males: DM 71%, non-DM 72.4%), arterial( males: 70.9% DM, non-DM 73%) distribution were similar among DM and non-DM groups. Mean follow up period was 10.7 years. DM was associated with higher venous graft stenosis (50% Vs 41.8% McNemar chi-square 3.6, p = 0.05) and occlusion (40.8% Vs 32.9% McNemar chi-square 3.9, p = 0.04) compared to non-DM. On the other hand, arterial graft stenosis (12.9% Vs 15% McNemar chi-square 0.49, p = 0.48) and occlusion (8.8% Vs 11.6% McNemar chi-square 1.1, p = 0.26) rates were similar between DM and non-DM.

CONCLUSIONS Diabetes is associated with lower vein graft patency but similar arterial graft patency in comparison to non-diabetics.

CATEGORIES CORONARY: Diabetes

TCT-281 Real-Time Radiation Monitoring Reduces Patient Peak Skin Dose During Coronary Angiography

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BACKGROUND Exposure to ionizing radiation during coronary angiography can have dose related effects including skin damage. Angiography systems providing a real-time pictorial display of patient skin dose are now available. Hypothesis: The use of a real-time radiation skin dose monitor displaying a color pictorial reduces patient peak skin dose (PSD) during coronary angiography or intervention.

METHODS Consecutive patients undergoing coronary angiography or interventional coronary intervention (PCI) at a single center were prospectively enrolled. Total and PSD were collected using the Dose Tracking System (DTS) (Toshiba Medical Systems, Japan). The DTS displays cumulative dose values in real-time using a color map on a 3D graphic of the patient adjacent to the fluoroscopy image. Two patient groups were collected sequentially for comparison; i) control group representing standard clinical practice with the DTS recording procedural variables without the pictorial feedback displayed for the operator and ii) “DTS” group subsequently collected with the DTS displayed dose for operator visualization. High-risk dose thresholds for skin injury were defined as: fluoroscopy time (FT) > 30 mins, refer to air kerma (Kar) > 3 Gy and PSD > 2 Gy.

RESULTS Over an 11-month period a total of 1077 consecutive patients were enrolled by 16 proceduralists. Coronary angiography alone was performed in 617 with angiography and PCI in 460. Comparison between control (n = 589) and the DTS group (n = 488) revealed no difference in BMI, age, prior CABG, contrast volume or progression to PCI. Radial access was more common in the DTS group (p = 0.001). Institution of the DTS resulted in a significant 15.5% reduction in PSD compared with control (900 vs 343 mGy, p < 0.001). Similar reductions were also noted in Kar (DAP:13.9%, p < 0.001) and Kar (19.5%, p < 0.001) were seen with no change in fluoroscopy time (p = 0.379) or number of cine acquisitions (p = 0.753). The most profound reductions were in those undergoing PCI; in the DTS group the PSD was reduced by 46.3% (p < 0.001), DAP by 35% (p < 0.001) and Kar by 41.4% (p < 0.001). No patients were placed at risk of skin damage by exceeding the PSD high-risk threshold (control 2.7% vs DTS 0.7%, p = 0.012). There was no change in the frequency of FT (p = 0.7) or Kar (p = 0.1) high-risk exposure. The benefit of the DTS was seen irrespective of access site (radial or femoral). In the radial group, the PSD (248 vs 296mGy, p = 0.042)DAP (5740 vs 6510mGy.cm2, p = 0.014) and Kar (407 vs 574mGy.cm2, p = 0.002) were all reduced by the DTS compared with control. Additional subgroups that derived reduction in PSD with the DTS compared with control included those with prior CABG those with PCI and obese patients undergoing PCI (BMI > 31mGy p < 0.001, n = 148).

CONCLUSIONS Real-time PSD radiation monitoring using a color pictorial on a 3D graphic of the patient results in substantial reductions in radiation dose during coronary angiography and PCI.

CATEGORIES IMAGING: Cath Lab of the Future

KEYWORDS PCI - Percutaneous Coronary Intervention, Radiation dose, Skin dose

TCT-282 The combination of high Syntax Score and moderate to severe Coronary Artery Calcification is a strong predictor of thrombotic events after an Acute Coronary Syndrome

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BACKGROUND The Syntax Score (SS) and Coronary Artery Calcification (CAC) are two variables related with the extent and severity of the coronary artery disease (CAD). Our purpose was to investigate the relationship of complexity and extent of CAD assessed by the SS and the CAC, with acute atherothrombotic events (AAE) during follow up.

METHODS We studied 270 patients with ACS admission who underwent coronary angiography (CA). Clinical variables were recorded and CA were reviewed by two experienced operators, calculating SS and CAC grade (none; 0 to severe). AAE were defined as: ACS or stroke/TIA. Patients were divided into three groups, depending on SS and CAC: Group 0 (SS below the median of 7.9 and 0 CAC); Group 1 (SS > median of 7.9 or CAC grade 1); Group 2 (SS > median of 7.9 and CAC grade 2). We studied the combination of high SS and CAC for the risk of AAE during follow up. The combination of high SS and CAC was associated with a higher AAE rate (p = 0.032)

CATEGORIES IMAGING: Cath Lab of the Future

KEYWORDS PCI - Percutaneous Coronary Intervention, Radiation dose, Skin dose
global cohort and CAC 0-1), Group 1 (SS above or equal to the median or CAC 2-3) and Group 2 (SS above or equal to the median and CAC 2-3). After discharge patients were followed in an outpatient basis, recording major events and focusing in AAE. Survival-free of AAE curves were calculated with the Kaplan-Maier method. In order to avoid the potential bias of confision variables, we used a multivariate proportional hazards Cox model, including all variables with a p < 0.2 at univariate analysis. Final results were presented as hazard ratio (HR) for AAE with its 95% confidence interval (95% CI).

RESULTS Median follow up was 1.79 years (RIC 0.94-2.86). Median SS was 14 (RIC 7-23).Clinical variables are listed in Table 1. During follow up a total of 27 AAE were recorded. Group 0: 8 events (6.6%), Group 1: 9 events (8.5%), and Group 2: 10 events (23.8%). The Kaplan-Maier curves are shown in Figure 1. After multivariate Cox analysis, adjusted HR was 4.31 (CI95%: [1.69-11.03], p = 0.002) (comparison of group 2 vs. group 0); HR 3.28 (CI95%: [1.28-8.38], p = 0.013) (group 2 vs. group 1) and HR 1.3 (CI95%: [0.49-3.52], p = 0.013) (group 1 vs. group 0).

CONCLUSIONS According to our data the combination of SS (>14) and high CAC (2-3) is a strong predictor of AAE, in patients admitted with an ACS. Further studies are needed to test our results.