to PTCA (n=63) or CABG (n=64). The primary end point of this study was to compare freedom from combined coronary cardiac events (death, myocardial infarction, repeat revascularization procedures and angina) and late cost between both groups of patients at 1.3 and 5 years follow up. Results: At five years freedom from combined cardiac events was significantly greater in CABG patients than in PTCA patients (95 vs. 87%, p< 0.05). Differences in survival were maintained at follow-up periods of 9 years and 15 years. In contrast to previous studies, however, there was no significant differential effect of diabetes on outcome in patients treated with either PTCA or CABG (p>0.3). Conclusion: While diabetes was a risk factor for worse long-term outcome in patients with multivessel coronary artery disease, the effect was similar in the PTCA and CABG groups. These results do not support earlier conclusions that diabetes status should determine the choice of revascularization strategy.

The Choice of Repeat CABG or PTCA in Diabetics Who Have had Previous CABG

Emory University, Atlanta GA USA

Outcome in 1041 diabetics with previous CABG was studied after repeat CABG (n=438) or PTCA (n=603). The PTCA group had more women (26% vs 21%), lower prior MI's (55 vs 68, less 0 vs left main disease 65 vs 81%) and higher EF's (51 vs 49). The groups were otherwise similar. Hospital Q wave MI's occurred more often after (p CABG (4.9% vs 2.2%), as did death (7.5% vs 2.0%). 5 & 10 year survival was 63% & 41% for PTCA & 68% & 34% for CABG (left figure, p<NS). 5 & 10 year freedom from (FF) MI was 71% & 59% & PTCA & 85% & 60% p CABG (p<0.01). 5 & 10 year FF CABG was 70% & 50% & PTCA & 96% & 79% p CABG (p<0.001). 5 & 10 year FF CABG or PTCA was 46% & 23% & PTCA & 91% & 47% & CABG (right figure, p<0.001). Any survival difference between groups could be accounted for by the covarates age (OR 1.04 per year), ejection fraction (OR 0.89 per % increase), time into prior CABG (OR 1.05 per year), heart failure (OR 1.71), hypereension (OR 1.46) and emergent or urgent procedure (OR 1.45 and 2.9). Characteristics, 6-hospital and followup results and covariates in 1553 CABG and 501 PTCA in patients with diabetes are similar. This study reveals that both long term death and non-fatal MI rates are higher with either PTCA or repeat CABG. Thus, revascularization choice in diabetics with previous CABG must be made without data to support a survival advantage for either therapy, but neither on clinical, angiographic and patient preference grounds.

The Association Between a History of Diabetes and Outcome in Patients Undergoing Percutaneous Interventions

Duke University, Durham NC USA, Univ of Southern California, Los Angeles CA USA

To study the relative importance of diabetes compared with other risk factors for adverse outcomes (death, MI, repeat PTCA or repeat CABG) after percutaneous intervention (PCI) we pooled data from 7 multicenter trials. A total of 6338 pts with 6 to 9 mo clinical and angiographic follow-up were included. Diabetics were older (median age 62 vs 59, less often male (63 vs 78%), smokers were (64 vs 74%), had more hypertension (68 vs 63%), 3-vessel disease (11 vs 6%), prior MI (48 vs 45%), prior PTCA (20 vs 15%), and prior CABG (23 vs 14%). Diabetics and non-diabetics had similar pre-procedure stenosis (69 vs 68%) and TIMI 3 flow (71 vs 75%). Angiographic success (CCA < 50%) and abrupt closure rates were similar between groups. Diabetics had higher 6 mo restenosis rates (46 vs 44% p=0.04). Outcomes are shown in the table. Multivariable regression revealed that a history of diabetes was associated with higher 9 mo composite outcomes after adjusting for baseline variables (x2=4.05 vs 0.05) but prior MI, pre-procedure stenosis, and a diseased vessels were more predictive (x2 =69 p<0.001). Conclusion: Intermediate outcomes after PCI are best predicted by # diseased vessels, prior MI, and pre-procedure stenosis. Although diabetes predicts composite outcomes, the effect is mild and mostly due to higher restenosis rates.

Clinical Cardiology:
Coronary Angiography and Diagnostic Imaging

Tuesday Afternoon

Ballroom D2
Abstracts 2548–2557

After Successful Thrombolysis for Acute Myocardial Infarction: Culprit Lesion Morphology Does Not Predict Early and Long-term Outcome.

Gerrit Veen, Carol C de Cock, Freek WA Verheugt.
Free University Hospital, Amsterdam The Netherlands, University Hospital Radboud, Nijmegen The Netherlands

In the APRICOT-study we performed coronary angiography in 294 patients (n) within 48 hours after successful thrombolysis for acute myocardial infarction (AMI). Culpit lesion morphology was scored as complex or smooth. At 3 months a second angiography was performed.
Fusion of Intracoronary Ultrasound and Biplane Angiography Images for Accurate 3D Reconstruction of Coronary Arteries

Robert M Colthorn, Raj Shekhar, D G Vince, J F Carmeli. Cleveland Clinic Foundation, Cleveland OH USA, Ohio State University, Columbus OH USA

3D visualization of coronary morphology using intravascular ultrasound (IVUS) may aid in evaluating atheroma progression and treatment efficacy. A method for accurate reconstruction of coronary anatomy using IVUS and biplane fluoroscopy has been developed which depicts true arterial curvature and orientation. The IVUS transducer was tracked in time by back-projection of biplane fluoroscopy during unrestricted patency in perfused non-atherosclerotic LADs in vivo.

The luminal borders from simultaneously acquired IVUS images were placed perpendicular to the transducer path at each time point. Retinalional orientation was determined by minimizing the mismatch between vessel outlines in angiograms and the reconstruction projected into that plane. The result was a non-symmetrical rendered for visualization or planimetry. Vessel curvature, lumen shape, and branch ostia could be easily visualized. Simulated angiograms were created by projecting 3D reconstructions to 2D planes compared well with actual angiograms, with up to 71% overlap in lumen area, indicating the accuracy of the 3D representation. This technique does not depend upon automated patency and constant velocity transducer movement, and does not assume the catheter to be straight, torsion-free, or centered in the lumen. This project will be extended to visualize luminal and adventitial surfaces in atherosclerotic arteries, and gated to visualize the vessel during the full cardiac cycle.

A 3D Coronary Processing Tool to Optimize Visualization Strategy in the Cardiac Catheterization Laboratory

Shuh-Yung J. Chen, Kenneth R. Hofman, John D. Carroll. University of Chicago, Chicago IL USA, University of Colorado, Denver CO USA

Due to vessel overlap and foreshortening, multiple projections are necessary to adequately evaluate the coronary tree with arteriography. The traditional trial-and-error method provides views in which overlap and foreshortening are subjectively minimized in two dimension. A method has been developed for reconstructing a 3D coronary tree based on two views acquired from routine angiograms at arbitrary orientation. A computer simulation confirmed the accuracy of 3D vessel centerline reconstruction to within 2% error. Based on any coronary stenosis, a plane of complex lesions was selected. To date 3D reconstruction has been performed in 20 RCA, 16 LCA, and 3 bypass grafts. With 3D coronary reconstruction, it is now possible to virtually determine ideal coronary positions. The assessment of lesion length and diameter narrowing can be optimized for both coronary intervention and studies of progression and regression.

Assessment of Coronary Artery morphology by Three-Dimensional Echocardiography

Binhard Kolbsch, Susanna Mohr-Kalicky, Thomas Mezuel, Stephan Wagner, Beate Kolthaus, Thomas A. Fischer, Uwe Nixdorf, Jargeu Meyer. Johannes Gutenberg- Universität, Mainz Germany

The aim of the study was the quantitative assessment of left main coronary artery (LMCA), left circumflex artery (LCX) and left anterior descending coronary artery (LAD) morphology by threedimensional echocardiography. Results were compared to quantitative angiography. Method: The