PCI OUTCOMES

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TCT-438
Radial Versus Femoral Access for Primary Percutaneous Interventions in Elderly Patients. A Systematic Review and Meta-Analysis
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BACKGROUND Transradial access (TRA) for percutaneous coronary intervention (PCI) reduces complications compared to transfemoral access (TFA). Elderly patients have a higher rate of complications and adverse outcomes after PCI, yet only a few studies have compared the outcomes between both approaches and results have been inconsistent. We aimed to evaluate the efficacy and safety between TRA and TFA in elderly patients ≥ 75 year old undergoing PCI.

METHODS We conducted electronic literature search of PubMed Central, EMBASE, The Cochrane Register of Controlled Trials, Google Scholar databases and the scientific session abstracts. The primary efficacy endpoint was major adverse cardiovascular events (MACE), all-cause mortality, new myocardial infarction (MI), and length of stay. Safety endpoints included vascular complications, major bleeding, procedure failure, and target vessel revascularization (TVR). Odds ratios (OR) and 95% confidence intervals (CI) were computed using the Mantel-Haenszel (MH) method. Fixed-effect model was used; if heterogeneity (I²) >40, effects were obtained using a random model.

RESULTS Ten studies were included, with a total of 4,235 patients. There was a significant difference favoring TRA for MACE [OR 0.7, 95% CI 0.58-0.88; p < 0.01] and length of stay [Standardized mean difference 0.16, CI 0.05-0.26, p < 0.01] compared to TFA. Though there was a marginal effect towards TRA, no difference was seen for the incidence of new MI [OR 0.94 95% CI 0.58-1.52; p 0.81] and all-cause mortality [OR 0.5, 95% CI 0.25-1.03; p 0.06] between both approaches. For safety endpoints we found a significant difference favoring TRA compared to TFA for vascular complications [OR 0.29 95% CI 0.24-0.45; p < 0.01] and major bleeding [OR 0.29 95% CI 0.18-0.47; p < 0.01]. No difference was seen between TFA and TRA for procedure failure [OR 0.65 95% CI 0.39-1.08; p 0.09] and TVR [OR 0.18 95% CI 0.01-3.1; p 0.24].

CONCLUSIONS Our meta-analysis showed that TRA is associated with favorable outcomes and fewer complications compared to TFA. TRA should be considered as a feasible and safe approach in the elderly population undergoing PCI.

CATEGORIES CORONARY: PCI Outcomes
KEYWORDS Elderly, Meta-analysis, Percutaneous coronary intervention

TCT-439
The beneficial effect of percutaneous coronary intervention over optimal medical therapy in elderly patients with angina pectoris; a prospective randomized trial
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BACKGROUND Compared to medical treatment, clinical benefit of percutaneous coronary intervention (PCI) has not been clearly established in elderly patients with angina pectoris because of increased risk of complications or adverse cardiac events after PCI in elderly patients with higher incidence of multiple comorbidities and fragile physical performance.

METHODS we evaluated the efficacy of elective PCI versus optimal medical treatment (OMT) in elderly patients (age between 75 and 84 years old) with angina pectoris. One-hundred seventy-seven patients were randomized into OMT group and PCI group after random assignment to either the PCI group (n=90) or the OMT group (n=87). The primary outcome was a composite of major adverse events which consisted of cardiovascular death, nonfatal myocardial infarction, coronary revascularization or stroke for 1 year follow-up.

RESULTS Major adverse events occurred in 5 patients (5.6%) of the PCI group and 17 patients (19.5%) of the OMT group (p=0.015). There were no significant differences between the PCI group and the OMT group in cardiac death [hazard ratio (HR) for the PCI group 0.454; 95% confidence interval (CI) 0.041-5.019, p=0.952], myocardial infarction (HR 0.359; 95% CI, 0.09-1.550; p=0.473) and stroke (HR 0.919; 95% CI 0.057-14.709, p=0.952). However, the PCI group showed preventive effect for the coronary revascularization (HR 0.157; 95% CI 0.035- 0.703, p=0.016) and a composite of major adverse events (HR 0.288; 95% CI 0.106-0.785, p=0.015).

CONCLUSIONS In conclusion, compared to OMT, elective PCI reduced major adverse events and is an effective treatment modality in elderly patients with angina pectoris and significant coronary artery stenosis.

CATEGORIES CORONARY: PCI Outcomes
KEYWORDS Age, Coronary artery disease, Percutaneous coronary intervention

TCT-440
The Incidence and Economic burden of Angina and Chest Pain following Percutaneous Coronary Intervention: An Analysis of English Routinely Held Administrative Secondary Care Data
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BACKGROUND The economic and human burden of Coronary Artery Disease (CAD) is substantial. Although Percutaneous Coronary Intervention (PCI) can reduce the morbidity and mortality associated with CAD, recent clinical trial data indicate that up to a third of patients experience angina in the year after PCI. Given the selective inclusion criteria of most trials, results cannot always be extrapolated to all patients treated. This study aimed to use real-world data to explore the incidence of post PCI angina and chest pain and subsequent costs to secondary care providers in England.

METHODS Hospital Episode Statistic (HES) data were used to identify adults who had undergone PCI between March 1st 2011 – December 31st 2011 (index event) in England. Patients with 3 years of post-index event data were included in the analysis. Clinically significant outcomes were defined as presentation to hospital departments with angina and chest pain. Patients were identified from data extracted from HES for inpatient admissions, outpatient consultations and accident and emergency visits associated with relevant World Health Organisation International Disease Codes (WHO
RESULTS
32,492 met study inclusion criteria (mean age 64 years [SD 11.8], 74% male). The cumulative incidence of angina/chest pain was 23% (n = 7,473) at 12 months, 31% (n = 10,199) at 24 months and 37% (n = 11,940) at 36 months following PCI. It is estimated that bootstrapped cumulative mean costs to the secondary care provider were significantly higher at 12 months in those with angina/chest pain at £ 10,215, 95% CI [510,083, 110,348] vs. £ 65,552, 95% CI [16,50], £ 66,601 for those without. Significant cost differences persisted to 36 months post PCI £ 14,754, 95% CI [14,571, £ 14,936] for those with angina vs. £ 8,407, 95% CI [£ 8,324, £ 8,489] for those without.

CONCLUSIONS
Our analysis, using real-world data, suggests that angina and chest pain are common following PCI. Moreover, incidence increased over time, to the extent that at 36 months over a third of patients experienced angina/chest pain. This is important because angina and chest pain have a detrimental impact on patients health related quality of life. In addition our analysis indicates that resource consumption is considerably greater in those affected. As angina/chest pain following PCI are associated with a human and economic burden, therapeutic strategies, or interventions resulting in a lower incidence of angina and chest pain post PCI, would have the potential to reduce the financial burden on the NHS.

CATEGORIES CORONARY: PCI Outcomes

KEYWORDS
Angina, Complication, Percutaneous coronary intervention

TCT-441
3-Years Quality-of-Life Benefits after Percutaneous Coronary Intervention for Chronic Total Occlusions
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BACKGROUND
Long-term health-related-quality-of-life (HRQoL) benefits of percutaneous coronary intervention (PCI) for chronic total occlusions (CTO) are not well established.

METHODS
Consecutive patients undergoing PCI at our institution from September 2009 to January 2011 were evaluated. EuroQol-5D (EQ-5D) health survey was used to assess HRQoL at baseline, 6-, 12-, 24- and 36-months. Utility score improvement of 0.11 was considered minimal clinically important difference (MCID). Changes in quality-adjusted-life-years (QALY) were compared between patients who underwent successful single-vessel CTO (S-CTO) with failed CTO (F-CTO) and non-CTO lesion.

RESULTS
Of 453 patients who underwent single-vessel PCI, 10.6% (n=48) were CTO and 89.4% (n=405) were non-CTO lesions. PCI was successful in 72.9% (n=35/48) CTOS and 98.8% (n=400/405) non-CTO. Mean utility scores improved after S-CTO from 0.67±0.20 to 0.85±0.16 at 36-months, 0.56±0.23 to 0.85±0.16 after S-NCTO and 0.69±0.17 to 0.89±0.12 after F-CTO (all p<0.01). 3-year QALY gained was highest after S-CTO (0.82±0.79) compared to S-NCTO (0.53±0.75) and F-CTO (0.47±0.76, p<0.01). Baseline utility score was inversely proportional to QALY gained after S-CTO where the lowest baseline utility score quartile (<0.47) had the largest QALY gain (1.69) compared to the highest quartile (≥0.71) with the smallest gain (0.16, p<0.01). Proportion of patients who experienced MCID improvement at 36-months was lower after S-CTO (64.0%) compared with S-NCTO (82.6%).

CONCLUSIONS
Successful CTO PCI was associated with modest long-term HRQoL improvement which was significantly less than after non-CTO intervention. About forty percent of patients did not achieve minimal clinically important improvement in HRQoL 36-month after successful CTO PCI. High baseline health status was associated with minimal QALY gain after CTO intervention. Further studies are warranted to identify which CTO patients are most likely to benefit after PCI.

CATEGORIES CORONARY: PCI Outcomes

KEYWORDS
Chronic total occlusion, Percutaneous coronary intervention, Quality of life

TCT-442
Early Coverage of Drug Eluting Stents and Bioresorbable Scaffolds Analyzed By Optical Coherence Tomography: Evidence of the Impact of Stent Apposition and Strut Characteristic on the Neointimal Healing Process
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BACKGROUND
Several clinical and pathological studies have suggested an association between incomplete stent apposition (ISA) and delayed neointimal healing and adverse events (sten thrombosis). The aim of this study was to evaluate the impact of stent apposition and stent design on progression of stent neointimal coverage.

METHODS
To evaluate the impact of ISA on the progression of neointimal coverage, we developed an in-vivo model of ISA and studied follow-up response and coverage characteristics of well-apposed and malapposed segments for a series of Drug Eluting Stents (DES) (Cypher, PROMUS Element and Orsiro) and Biodegradable Vascular Scaffolds (ABSORB BVS). Optical Coherence Tomography (OCT) was sequentially performed at baseline, 1 week and 4 weeks of follow-up. In addition, evidences were provided by histological analysis performed at 4 weeks follow-up and Computer Fluid Dynamic (CFD) simulations describing the shear stress characteristics around apposed versus non-apposed struts.

RESULTS
A total of 225 cross sections and 3166 struts were analyzed. After implantation, stents had an average of 16.1% of struts that were malapposed or non-apposed side branch (NASB). Malapposition extent decreased over time as a result of neointimal healing (from 10.9% at baseline to 0% at 4 weeks; p<0.03). At 1 week, 8.5% of struts in well apposed segments were still uncovered versus 14.5% of struts in malapposed cross-sections and 66.7% of NASB struts (p<0.0001). At 4 weeks follow up, 0% of struts were uncovered in well apposed cross-sections vs. 0.4% in malapposed cross-sections and 50% of NASB struts (p<0.0001). Comparison of the impact of stent design on well-apposed segments revealed that thin strut Orsiro had only 1.1% of uncovered struts at 1 week while Promus Element, Cypher and BVS had 7%, 48.4% and 18.2% of struts still uncovered respectively (p<0.0001).