30 A CASE CONTROL STUDY OF PERCUTANEOUS CORONARY INTERVENTION IN SPONTANEOUS CORONARY ARTERY DISSECTION

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Background Spontaneous Coronary Artery Dissection (SCAD) has emerged as an important cause of acute coronary syndrome (ACS) particularly in young-middle aged women. The mechanism of coronary obstruction, acute vessel response to percutaneous coronary intervention (PCI) and natural course of conservatively managed lesions differs significantly in SCAD when compared with atherosclerotic ACS. Revascularization is challenging due to an underlying disrupted and friable coronary vessel wall leading to widely reported worse outcomes than for atherosclerotic coronary disease. Therefore, a conservative approach where possible is favoured however in some cases haemodynamic instability, ongoing ischaemia and reduced distal flow mandates consideration of revascularization.

Purpose To compare SCAD survivors managed with PCI or conservatively in terms of presentation characteristics, complications and long-term outcomes.

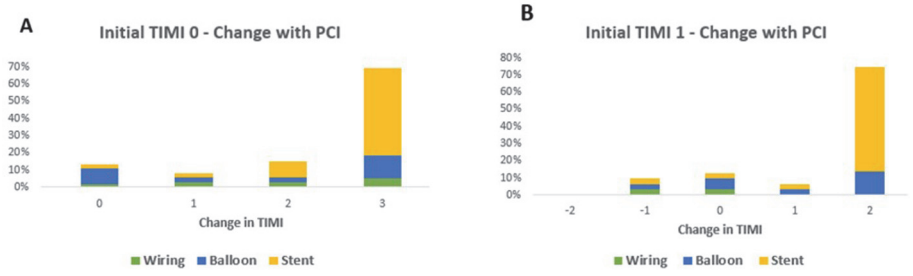
Methodology and Results Two hundred and twenty-five angiographically confirmed SCAD survivors (95% female, 47±9.7yrs) who underwent PCI were compared in a case control study with two hundred and twenty-five angiographically confirmed SCAD survivors (92% female, 49 ±9.9yrs) who were conservatively managed. Patients were recruited from UK, Spanish and Dutch SCAD registries and both groups were well matched in terms of baseline demographics.

Those treated with PCI were more likely to present with proximal SCAD (30.8% vs 7.6% P<0.01) and ST elevation myocardial infarction (STEMI) or cardiac arrest with reduced flow (32.3% vs 6.3% P<0.01). Intervention was performed with stents in 72.4%, plain old balloon angioplasty in 21.1% and wiring in 6.4% of cases and more often for multi-segment disease (40.8% vs 26.3% P<0.01). In cases with initial reduced flow undergoing PCI an improvement in flow was seen in 83%.

Analysis of all cases reveal complications in 85 (38.8%). SCAD lesion length was associated with presence of complications (P=0.025). However, when assessed for the clinical significance of that complication (defined by a reduction in flow in a proximal/mid vessel, stent extension into left main stem, iatrogenic dissection requiring PCI and CABG as a consequence of PCI), only 26 cases (11.6%) met seriousness criteria

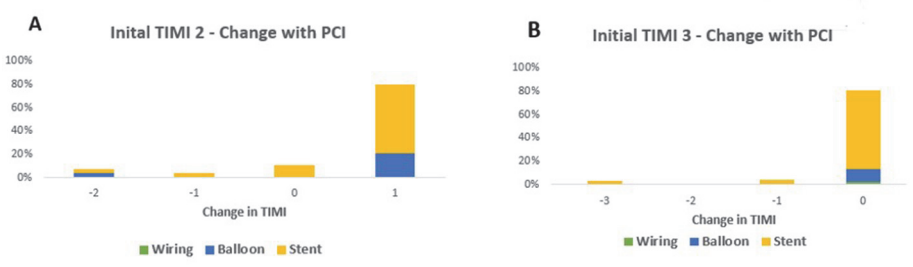
Abstract 30 Table 1

Baseline Demographics	PCI (n=225)	Conservative (n=225)
Age	47 ± 9.7	49 ± 9.9
Female	214 (95%)	225 (92%)
P-SCAD	21 (9%)	25 (11%)
Hypertension	53 (24%)	60 (27%)
Hyperlipidaemia	30 (13%)	38 (17%)
Diabetes Mellitus	3 (1%)	4 (2%)
Current/Ex Smoker	74 (33%)	81 (36%)



Change in TIMI following PCI in cases with A) initial TIMI 0 and B) Initial TIMI 1

Abstract 30 Figure 1



Change in TIMI following PCI in cases with A) Initial TIMI 2 and B) Initial TIMI 3

Abstract 30 Figure 2

with iatrogenic dissection accounting for nearly half (44.6%). There was a non-significant trend towards major adverse cardiovascular events (MACE) occurring more frequently in those undergoing PCI (18 % vs 11% P=0.067) driven by revascularisation (5% vs 1% P=0.036). Median follow up was 2.7 years.

Conclusions PCI in SCAD is most often performed in higher risk cases. Whilst overall complication rates were similar to those widely reported, clinically significant complications were uncommon and most interventions in this context were associated with improved angiographic endpoints.

Conflict of Interest NA

31 TETRAMETHOXYSTILBENE-LOADED LIPOSOMES POTENTIATE SMALL CORONARY ARTERIAL DILATOR FUNCTION, IN AN ACUTE HYPERTENSION MURINE MODEL, EX VIVO

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Introduction The methylated analogue of the polyphenol Resveratrol (RV), 2, 3', 4, 5'-Tetramethoxystilbene (TMS), displays significantly more antioxidant effects than RV and is a potent inhibitor of CYP1B1, shown to contribute to the development of hypertension. While TMS bioavailability is low1, liposomes are a promising modality for TMS encapsulation and delivery to improve uptake into tissues2. The objective of this study was to determine the effect of TMS, delivered via liposomes, on endothelial cell viability and vasodilator responses of isolated coronary arteries, after acute pressure elevation, ex vivo, and assess mechanisms involved.

Methods Liposomes were synthesised using a thin-lipid film process and characterised using UV-Vis and fluorescence spectroscopy, Dynamic Light Scattering and Fourier-transform infrared spectroscopy. The effect of TMS-loaded liposomes on human coronary artery endothelial cell viability was determined in vitro using Alamar Blue assay. Small coronary arteries were isolated from male Wistar rats (in accordance with Home office guidelines and institutional ethics approval) and their function assessed at 60mmHg and following acute pressure elevation (150 mmHg, 30 minutes) to mimic a hypertensive environment. Endothelial-dependent (acetylcholine, ACh 1.0 nM – 1.0 mM) and independent (Sodium nitroprusside -SNP, 100 μM, Papaverine –PAPA, 100 μM) responses were measured in the presence/absence of TMS and TMS-loaded liposomes, using pressure myography. Data are expressed as mean percent dilation ± SEM.

Results TMS-loaded liposomes (157 ± 6 nm diameter; zeta potential -13.13 ± 0.67 mV) maintained cell viability without toxicity, following 48h incubation. Acute pressure elevation significantly reduced endothelial-dependent dilator responses but did not affect endothelial-independent vasodilation. Co-incubation with TMS liposomes significantly improved endothelial-dependent vasodilation (@ ACh 100 μM: 86.06 ± 5.63% and 89.84 ± 3.05% for TMS liposomes and TMS solution respectively, compared to control PSS 38.52 ± 6.34; n = 5; p ≤ 0.01). The potentiated dilator response was sustained over a longer period (4h) with TMS liposomes, when compared to TMS solution (@ ACh 100 μM: 77.32 ± 8.70% vs 41.70 ± 8.70%; n = 4; p ≤ 0.05).

Conclusion TMS-loaded liposomes have the potential to restore attenuated coronary endothelial-dependent dilator responses in an acute hypertensive environment. Our findings will help establish whether TMS-loaded liposomes are a valid therapeutic drug-delivery strategy in hypertension.

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Conflict of Interest None

32 DOES 'REAL-WORLD' MECHANICAL CIRCULATORY SUPPORT MATCH RANDOMISED CONTROLLED TRIALS? THE UNITED KINGDOM IMPELLA (UKPELLA) REGISTRY

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Background Impella utilisation is increasing but reimbursement and usage patterns vary significantly around the world. The National Institute for Health and Care Excellence (NICE) recently approved the use of Impella for high-risk percutaneous coronary intervention (PCI) in centres with specific expertise in the use of mechanical circulatory support and with specific arrangements for governance, audit and consent in place.

Hypothesis: In the United Kingdom (UK), due to increased selection, Impel is used in higher-risk cases than in randomised controlled trials (RCT).

Methods All patients undergoing Impella implants between 2008 - 2019 in the four highest volume UK Impella centres (St. Thomas' Hospital and King's College Hospital, London; Queen Elizabeth Hospital, Birmingham; Manchester Royal Infirmary, Manchester) were included. Demographic, clinical, procedural and outcome data were extracted from electronic health records. Patients were stratified by the presence of cardiogenic shock at presentation. Pre-procedural characteristics and outcomes (30-day and 1-year all-cause mortality) were compared to the BCIS-1, PROTECT-2 and IABP-SHOCK2 trial cohorts respectively. Multivariate logistic regression analysis was used to identify independent predictors of complications. Continuous data are presented as mean ± SD or median (IQR) depending on normality.

Results Two-hundred and thirty-four patients were included. The indication was cardiogenic shock in 83 (35.5%) and high-risk PCI in 146 (62.4%); of the latter 58.9% had acute coronary syndromes and 41.1% were elective) and bailout in 2.1%. PCI was performed via femoral access in 55.6%. Patients undergoing high-risk PCI were older than those with cardiogenic shock (73.3 ± 10.8 years vs. 59.9 ± 14.0 years, p<0.001), as well as being more likely to have a history of previous myocardial infarction (52.1% vs. 26.3%, p<0.001), chronic kidney disease (24.7% vs. 13.9%, p=0.005) and peripheral vascular disease (17.1% vs. 6.3%, p=0.005).

High-risk PCI patients in UKpella had a higher BCIS-Jeopardy Score, more left main disease and underwent more calcium modification but had a higher left ventricular ejection