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Impact of Percutaneous Coronary Intervention on 12-month Chronic Total Occlusion Outcomes in Patients with New Onset Heart Failure

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Background: Heart failure is known to be associated with increased adverse clinical outcomes in coronary artery diseases. The impact of percutaneous coronary intervention (PCI) for chronic total occlusion (CTO) in patients (pts) with new onset heart failure is not clear. We compared the 12-month clinical outcomes of pts treated by PCI with optimal medical therapy (OMT) for CTO lesions in pts with new onset heart failure.
Methods: A total of 458 consecutive CTO pts newly diagnosed with heart failure or showing symptoms of heart failure (NYHA ≥class 2 or CCS ≥class 2) were divided into 2 groups; one group underwent PCI (PCI group; n=246) and the other group was treated with OMT (OMT group; n=212). Major clinical outcomes were compared between the two groups up to 12 months.
Results: At baseline, the OMT group had a higher prevalence of elderly, cerebrovascular accidents, de novo lesion, left main disease, multivessel disease, multivessel CTO, RCA-CTO, and abundant collaterals (≥grade 2), whereas the PCI group had a higher prevalence of male gender, prior MI, prior PTCA and LAD-CTO lesions. Clinical outcomes at 12 months were similar between the 2 groups except lower mortality in the PCI group (Table). After baseline adjustment by multivariate analysis, however, there was no difference between the 2 groups.
Conclusion: In our study, mechanical revascularization by PCI for CTO lesions in pts with new onset heart failure as compared with OMT seems to have no benefit in reducing 12-month mortality. Long-term follow up with a larger study population will be necessary for further determination.

Table. 12-month clinical outcomes

Variable, n (%)	PCI group (n=244)	OMT group (n=182)	P Value (Unadjusted)	P Value (Adjusted)	OR (95%CI)
Mortality	7 (2.8)	15 (8.2)	0.013	0.491	0.65 (0.19-2.17)
Cardiac death	5 (2)	8 (4.3)	0.164	NS	-
Non cardiac death	2 (0.8)	6 (3.2)	0.062	NS	-
Myocardial infarction; MI	5 (2)	7 (3.8)	0.267	0.620	0.69 (0.16-2.93)
Q wave MI	4 (1.6)	4 (2.1)	0.674	NS	-
Non Q wave MI	1 (0.4)	3 (1.6)	0.190	NS	-
Revascularization	25 (10.2)	15 (8.2)	0.483	0.675	0.84 (0.38-1.887)
TLR	21 (8.6)	3 (1.6)	0.002	0.086	3.21 (0.84-12.21)
TVR	25 (10.2)	13 (7.1)	0.266	NS	-
Non TVR	1 (0.4)	3 (1.6)	0.190	NS	-
All MACE	32 (13.1)	29 (15.9)	0.411	0.643	0.85 (0.43-1.67)
TLR MACE	26 (10.6)	13 (7.1)	0.214	NS	-
TVR MACE	32 (13.1)	27 (14.8)	0.611	NS	-

Adjusted by gender, age, myocardial infarction, hypertension, diabetes, chronic kidney disease, current smoker, multivessel disease, collateral vessels(≥grade 2), and failed CTO

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Comparison in Cardiac Remodeling Between Surgical Treatment and Device Closure of Atrial Septal Defect

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Background: Atrial septal defect (ASD) is the 2nd most common congenital heart anomaly in adults. As treatment options, there are operative ASD closure (Surgery) and percutaneous device closure (Device). The aim of this study was to elucidate the cardiac remodeling after ASD closure and to compare the effects of Surgery and Device in similar ASD size.
Methods: Among patients who underwent ASD closure in Catholic medical school, St. Vincent's Hospital from January 2004 to December 2012, 28 patients were enrolled. Transthoracic echocardiography (TTE) was performed before and after correction of the ASD in both Surgery and Device groups.
Results: Although there were significant differences in age and ASD size in both groups, after closing ASD, LV dimension increased in both groups, on the other hand, decrease in right atrium volume (RAVol) and maximum regurgitation velocity of tricuspid valve (TR Vmax) was noted. Aortic diameter and LV ejection fraction increased in Surgery group. Further subgroup analysis with ASD size of 13 to 24mm was analyzed to compare differences in cardiac remodeling between the two groups. There were coherent results of increase of LV dimension and reduction of TR Vmax and RAVol in both subgroups. However, RAVol reduction was more remarkable in Surgery than Device subgroup.
Conclusion: Although there was difference in baseline parameters between two groups, which may have affected the choice of treatment option, the parameters measured by TTE showed significant change in structural cardiac remodeling. By subgroup analysis regarding to ASD size, showed consistent improvements in cardiac geometry without significant difference between the groups. In conclusion, in selected cases of ASD, it is reasonable to treat percutaneously considering complication occurrence, post-procedural recovery, and hospital stay.

Drug-eluting Stents
(TCTAP A-166 to TCTAP A-171)

TCTAP A-166

Angiographic Characteristics and Clinical Outcomes of the Use of Dual Therapy Stent

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Background: A novel dual therapy stent (DTS) may improve clinical outcome due to a combination of sirolimus drug elution and endothelial progenitor cell technology for reduced restenosis and accelerated endothelisation. However clinical data remains limited on the use of this novel technology. We aim to report on the use of a novel DTS device in our centre.
Methods: All patients who underwent PCI with the Combo^{R} DTS in our centre were enrolled. All patients underwent diagnostic angiograms and PCI according to guideline recommended indications and techniques. Baseline clinical and angiographic characteristics were collected. Clinical outcomes for MACE at 6 and 12 months were studied.
Results: Fifty three patients (83% male) of mean age 61.42 +/- 11.63 years were studied. 15.1% (n= 8), 24.5% (n= 13) and 60.4% (n= 32) were admitted for STEMI, ACS and Stable angina respectively. The prevalence of hypertension, hyperlipidaemia and diabetes mellitus were 88.7% (n=47), 75.5% (n= 40) and 50.9% (n= 27) respectively. 12.7% (n= 7) had left main disease and 41.8% (n= 23) had triple vessel disease. 69 Combo^{R} DTS with a mean diameter of 3.06 +/- 0.35 mm and a mean length of 22.07 +/- 5.55 mm were implanted. 50.7% (n= 35), 11.6% (n= 8) and 39.0% (n= 20) were implanted in the LAD, LCx and RCA respectively. 4.3% (n= 3) were deployed in the left main artery and in bypass grafts respectively. There were 10.1% (n=9), 69.6% (n=48) and 20.3% (n= 14) ACC/ AHA angiographic type A, B and C lesions. 6 (8.7%) and 7 (10.1%) were CTO and bifurcation lesions respectively. Angiographic success rate was 100%. There were no cases of stent thrombosis or inhospital mortality.
Conclusion: The use of Combo^{R} DTS was associated with excellent angiographic and short term clinical outcome in this study. We plan to report on 6 month clinical outcomes at the time of presentation.

TCTAP A-167

Bioabsorbable Vascular Scaffolds (BVS) Eluting with Everolimus: for Percutaneous Coronary Intervention (PCI) of Patients with De-novo Coronary Artery Lesion: Our Experiences at Apollo Hospitals Dhaka

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Background: Aim of the study was to evaluate the primary procedural success of percutaneous coronary intervention (PCI) of *de-novo* coronary artery lesion by using BVS Absorb stents eluting with Everolimus.
Methods: Total 16 patients were enrolled in this very preliminary study of BVS absorb. Among them, Male: 11 and Female: 5. Total 20 stents were deployed. Mean age were for Male: 56 yrs, for Female: 60 yrs. Associated CAD risk factors were Dyslipidemia, High Blood pressure, Diabetes Mellitus, Positive FH for CAD and Smoking (all male).
Results: Among the study group; 13 (81%) were Dyslipidemic, 10(62.5%) were hypertensive; 6 (37.5%) patients were Diabetic, FH 3(18.75%), and 2(18%) were all male smoker. Female patients were more obese (BMI M 25: F 27) and developed CAD in advance age. A common stented territory was for LAD: 6 (37.5%), LCX 5 (25%), RCA 6(37.5%). One patient had both LCX and LAD stenting. Total 3 patients had double/overlapping stent in RCA lesion. Territory wise distributions of BVS Absorb stent were for LAD 6(30%), RCA 9 (45%), and LCX 5 (25%).

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Conclusion: BVS absorb Everolimus eluting vascular scaffold showed favorable clinical outcome without any major cardiac events (acute or late stent thrombosis, MI or death) over a period of 9 month. Thus, BVS absorb would be favorable alternative to other available drug eluting metallic stents.

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Five-year Clinical Follow-up of Long Paclitaxel Drug Eluting Stents

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Background: With increasing complex PCI's, long stents have been increasingly used. However the long-term clinical outcomes of these stents have not been well studied.
Methods: A retrospective analysis of 586 consecutive patients who underwent PCI using paclitaxel DES (Taxus Liberté) during the period December 2005 to August 2007 was done. 90.1% were followed up for a median duration of 60 months (12- 86 months). Long stents were defined as ≥28mm (group A)-178 patients (33.7%) were compared to relative short stents ≤24mm (group B)-350 patients (66.3%).
Results: The study population was a high risk group with 43.3% diabetics in group A and 46.3% in group B (p-0.524). other baseline characteristics were also well matched except for inducible ischemia on treadmill which were more in group A 42.7% vs group B 31.9% (p-0.012), patients in group A requiried more than one stent 50.6% vs group B 37.7%(p –0.004) and patients in group A had more RCA interventions than group B – 38.2% vs 25.7% (p-0.002). Mean no of stents implanted per patient was 1.5. MACCE at hospital discharge was 0% in group A vs. 0.7% in group B (p – 0.557), at 1 year was 4.4% vs 4.3% (p-0.984), at 5 years was 12.8% vs 13.6% (p-0.871).TLR at discharge was 0% in group A and 0.2% in group B (p-1.0), at 1 year was 3.1% vs 1.1% (p-0.138), at 5 years was significantly higher in group A 4.9% vs 1.6% (p-0.025).There is no difference in stent thrombosis at discharge 0% in group A vs.0.2% group B (p-0.681), at 1 year 0.6% vs.1.6% (p-0.681), at 5 years was 0.6% vs 2.1% (p-0.290). At 5 years, Definite ST was 0.6% in group A vs 0.3% group B (p-0.513), Probable ST 0% vs 0.3% (p-1.0), Possible ST 0.6% vs 2.7% (p- 0.186). There was no in hospital mortality in either groups, mortality at 1 year was 0% in group A vs 1.6% in group B (p-0.185), at 5 years 2.5% vs 5.3% (p-0.175). The overall event-free survival at 5 years was comparable in both the groups (87.2%vs.86.4%).
Conclusion: Clinical outcomes of long paclitaxel drug eluting stents (≥ 28 mm) were comparable to relatively short stents (≤ 24mm) at 5 years.

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Two-year Clinical Outcomes of Patients with Drug Eluting Stents in Diffuse Long Lesions; Comparison of 1st Generation Sirolimus Eluting Stent Versus 2nd Generation Everolimus Eluting Stent

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Background: The aim of this study is to compare clinical outcomes between 1st generation sirolimus eluting stent and 2nd generation everolimus eluting stent in patients with diffuse long lesions for 2 years.
Methods: A total 381 Patients with diffuse long lesion treated with ≥ 50 mm stent segment in de novo lesions from Jan 2006 to Aug 2011 were enrolled. The patients were divided into two groups as sirolimus eluting stent (SES, n=265) group and everolimus eluting stent (EES, n=116) group. Study end-points were major adverse cardiac events (MACE) including all death, myocardial infarction (MI), and ischemic driven target vessel revascularization (Id-TVR).
Results: Baseline characteristics were similar. Stent length was 61.7±11.0 in SES and 62.8±13.7 in EES (p=0.593). For 2 years clinical follow-up, the rate of cumulative MACE was 10.7% in SES and 7.4% in EES (p=0.346). The rate of all death was observed 5.7% in SES and 6.3% in EES group (p=0.840). The rate of MI was observed 2.3% in SES and 5.3% in EES (p=0.153). The rate of Id-TVR was observed 7.7% in SES and 6.3% in EES (p=0.666).
Conclusion: The clinical outcomes between SES and EES in patients with diffuse long lesions were not different for 2 years. Further longer term follow-up and larger population study will be needed for better evaluation.
Key word: Sirolimus-Eluting stent, Everolimus-Eluting stent, Diffuse long lesion.

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Efficacy of Everolimus-eluting Stent Implantation in Patients with Small Coronary(≦2.5mm) Arteries: Outcomes of 2-year Clinical Follow-up

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Background: Previous studies have demonstrated that patients with small coronary artery lesions (SCAL) are at increased risk for late cardiac events after percutaneous coronary intervention (PCI). It remains uncertain whether second-generation drug-eluting stents have an advantage first-generation drug-eluting stents (DES) in patients with SCAL. This study aimed to evaluate the long-term efficacy of everolimus-eluting stent(EES) and sirolimus-eluting stents(SES) on SCAL.
Methods: Consecutive 353 patients with 400 SCAL, who were treated with EES (153 patients, 180 lesions) and SES (203 patients, 220 lesions) were enrolled. SCAL was defined the lesions with reference vessel diameter(RVD) <2.5 mm. Within ten months angiographic follow-up results and 2-year clinical follow-up outcomes were compared between EES and SES groups.
Results: The prevalence of diabetes was higher and the stent length was longer (22.9±7.0 vs. 20.1±7.0, p<0.05) in EES group than in SES group. Initial success rate was similar in both groups. There was no difference in 2-year %binary restenosis, TLR (1.7vs. 4.7%), and MACE (3.3%vs 6.4%) rates between 2 groups. This similar major adverse cardiovascular events rate remained after adjustment. However, the rate of stent thrombosis was 0% in the EES group and 1.8% in the SES group (p = 0.12).
Conclusion: EES demonstrated comparable clinical outcomes to those of SES in SCAL. The absence of stent thrombosis among patients treated with EESs suggests a good safety profile for this second-generation drug-eluting stent, which should be carefully studied in a larger series of patients with SCAL.

TCTAP A-171

Sirolimus Eluting Stent Shows Better Patency with Reduced ISR Development for a Period of 3.4 yrs in Bangladeshi Stent Era: Our Experiences in Apollo Hospitals Dhaka

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Background: Nature of Coronary artery disease (CAD) in Bangladeshi population is diffuse with small caliber arteries. Now a days, these are treated, by PCI with stent deployment. However, long term data on In-stent re-stenosis (ISR) in these patients are not yet available. Therefore, the aim of our present study was to assess long-term outcome of stent patency or the development of ISR of varieties stent in single vessel territory.
Methods: Patients were selected retrospectively, who underwent coronary angiogram at our hospital for further evaluation of their previous PTCA in the 3->36 months preceding the study for the quantifying period of 2006-2012. Total 577 patients (male: 474, Female: 103) were included in this study. Average age was Male: 56; Female: 59. Average study period was 3.4.
Results: Our result shows that among the total studied population 82.1% (474) were male and 17.9% (103) were female. Female were more obese than male BMI (27 vs 26). Total 864 stent were deployed in 785 vessels. Common stented territories were in LAD 366 (46.6%), RCA 236 (30.1%) and LCX 183 (23.3%). Stent used were BMS 105(30.8%), DES 236 (69.2). Territory wise total number of deployed stent in LAD 396 (45.8%), RCA 272 (31.5%) and LCX 196 (22.7%. Single artery stent were done in 442 (76.6%), double artery stent in 128 (22.2%) and Triple artery in 7 (1.2%) patient. Total 94 (16.3%) patient had double/multiple stent in a single vessel territory. Re-look Coronary Angiogram (CAG) revealed that the patency of stents in BMS 210 (56.5%) and DES 308 (73.5%) treated vessel. Significant ISR (ISR>60%) developed in BMS 97(26.1%) and DES 74 (17.6%). Among the different DES; patency in Sirolimus 75.2% (157), Everolimus 70.7% (51), Paclitaxel 65.4% (71) and in Biolimus-A9 88.2% (15). Among the different DES the development of significant ISR were in Paclitaxel 20.4% (22), Sirolimus 18.6%(39), Everolimus 15.7%(11). Although the other Biolimus
Conclusion: In our present prospective cohort, Sirolimus Eluting Stent shows better patency with reduced ISR for an average period of 3.4 years.

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