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Abstracts of

14TH INDIALIVE 2025

CORONARY INTERVENTIONS

INTERVENTIONS FOR STRUCTURAL HEART DISEASE AND HEART FAILURE

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CORONARY INTERVENTIONS

Development and Validation of a Novel Machine – Learning derived Nomogram to Predict Improved Left Ventricular Ejection Fraction in Patients presenting with LV Dysfunction during Index Primary PCI

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Background: Heart failure with improved left ventricular ejection fraction (HFiEF) after successful primary percutaneous coronary intervention (PCI) for acute coronary syndrome is linked to a good clinical outcome.

Aims: The purpose of this study was to create an easy-to-use model to predict the occurrence of HFiEF (LVEF> 40%) in patients with LV dysfunction during index PCI, at least 1 year after successful (PCI).

Methods: Patients admitted with acute coronary syndromes with LV dysfunction (index LVEF < 35% for this study, mean LVEF was 32% for this cohort) who successfully underwent primary PCI between January 2019 and December 2023 were included. We excluded patients with severe residual non-intervened stenosis as quantitatively measured by a residual Syntax score (rSS) of >8 to mitigate the effect of residual stenosis on positive improvement of LVEF.

Results: A total of 165 patients were included in this study, and 64 (38 %) patients demonstrated HFiEF 1 year after successful primary PCI. According to the LASSO regression and MV logistic regression analyses, Nine variables were selected for the final prediction model as per Machine Learning technique using SHAP (Shapley) weightage as NEGATIVE predictors for HFiEF : Revascularisation beyond day 7 in STEMI odds ratio (OR): 2.69; 95% confidence interval (CI): 1.652–4.918; p = 0.021],MBG grade 2 and below in PPCI:(OR): 1.845; 95% {CI: 1.212–3.88; p = 0.019],NLR> 4.2 : (OR): 2.769; 95% CI: 1.652–5.818; p = 0.027], Vasotrope-Inotrope score> 36 :(OR): 2.24; 95% CI: 1.562–4.338; p = 0.031],Admission HBA1c> 8.5 OR: 1.93; 95% CI: 1.602–3.818; p = 0.035], female gender :OR: 1.733; 95% CI: 1.160–3.985 p = 0.028], Multivessel disease on angiogram or Residual SS> 11 :OR: 2.72; 95% CI: 1.57–6.79; p = 0.038), LV end-diastolic dimension> 43mm :OR: 1.57; 95% CI: 1.22–3.472; p =0.033), and Medical therapy using Sodium glucose- cotransporter two inhibitors :OR: 4.634; 95% CI: 1.756–8.82, p = 0.004). A nomogram-construct to evaluate the results yielded Harrell's C-index of 0.776 (95% CI, 0.513–0.819) and 0.756 in Forward Validation, confirming that the calibration curve derived from the nomogram accurately predicted the actual observations and thus a lack of improvement seen in HFrEF seen over next 12 months following index PPCI.

Conclusions: Through this study, we developed a simple and effective nomogram for predicting the failure of HFiEF to occur (i.e. improvement in LVEF to > 40% at least 1 year after successful PPCI) in patients with LV dysfunction during index PPCI. This is the first such validated nomogram in Indian population to our knowledge.

CORONARY INTERVENTIONS

Delayed Primary PCI in Killip's class III Patients

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Background: Primary PCI is recommended treatment for STEMI patients presenting within six hours of onset of symptoms. The recommended time of intervention is extended to 12 hours in those with on-going symptoms and up to 48 hours & beyond in those with cardiogenic shock.

Aims: Some patients present with severe symptomatic LV dysfunction, clinical Killip's class III, beyond window period for primary PCI. They pose a dilemma for deciding best management options.

Methods: Five consecutive patients presenting more than 24 hours after onset of symptoms of acute ST elevation myocardial infarction (STEMI) and left ventricular failure, Killip class III, were treated by primary PCI on intention to treat basis. Total revascularisation was done in those who had significant stenosis in artery other than culprit vessel.

Results: On retrospective review, all of them were found to have successful revascularisation and uneventful recovery. All of them were taken for PCI directly from emergency room and none of them were on mechanical circulatory support or invasive ventilation during or after PCI. At six months clinical follow up all of them were in NYHA functional class II.

Conclusions: Patient presenting beyond 24 hours after STEMI with severe LV systolic dysfunction, clinical Killip's class III, benefit from primary PCI in terms of survival and functional class.

CORONARY INTERVENTIONS

A study to assess the difference between newer generation oct Ultreon software vs conventional coronary angiography

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Background: Role of intra vascular imaging is to facilitate procedural outcomes during and after PCI. OCT newer generation AI driven software Ultreon 1.0 is such latest offering from Abbott. Ultreon 1.0 software is different in terms of older generation of OCT software that it has automated algorithms for detection of intravascular calcium, EEL to EEL measurements for real time stent deployments and automatically detection of stent expansion and stent apposition by AI.

Aims: (1) To identify the demographic factors and risk factors leading to PCI. (2) To identify mean MLA and MLD of each coronary vessel. (3) To identify the role of coronary calcium in stent under-expansion. (4) To assess the role of OCT in detection and quantification of OCT compared to CAG. (5) To assess if stent under-expansion is associated with in-hospital MACE or not.

Methods: This was an observational study done during the period Jan 2023 to August 2024. Total 57 patients were enrolled, and no randomisation was done. OCT was done with help of Ultreon 1.0 software pre and post PCI. Patients were divided into 2 groups: (i) Stent Expansion <90% and (ii) Stent Expansion >90%.

Results: The male to female ratio in our study was 3.75:1. The commonest risk factor in our study was smoking and hypertension 52.4% in each. Mean MLA of LAD, LCX, RCA, LM shaft was 5.9,6.76,6.6 and 10.36 in mm^2 respectively. Presence of coronary calcium was in 24.5% of patients. OCT was non-superior in detection of coronary calcium compared to CAG alone (p value=0.243). Presence of coronary calcium was significantly associated with stent expansion <90% (p value=0.000305). Stent expansion <90% was seen in 24.5 % of patients. Stent expansion <90% was not significantly associated with in-hospital MACE (p value=0.7168).

Conclusions: AI in interventions especially in diagnostic modalities is coming in a big way. ULTREON 1.0 is one such software by Abbott. Recently Abbott has announced launch of ULTREON 2.0 software which even has advanced features like 3D OCT, dynamic angio, in built physiology

CORONARY INTERVENTIONS

Correlation of Mitral E/E' with Syntax Score in Acute Coronary Syndrome as a Prognostic Indicator

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Background: The prognosis of patients hospitalized with acute coronary syndrome which includes unstable angina, non-ST elevation myocardial infarction and ST elevation myocardial infarction is usually determined by the existence and severity of myocardial necrosis and left ventricular remodelling.

Aims: The aim of our study was to assess the association between E/e' ratio and acute coronary atherosclerosis severity which is measured by the SYNTAX score in patients with acute coronary syndrome.

Methods: This study was conducted prospectively on patients with acute coronary syndrome. All patients underwent an 2D echocardiography to calculate the left ventricular ejection fraction, the pulsed-wave Doppler-derived transmitral early (E) and late(A) diastolic velocities, and the tissue Doppler-derived mitral annular early diastolic(e') velocities. Followed by a coronary angiography was performed and the SYNTAX score was calculated.

Results: The patients were divided into two groups based on patients with an E/e' ratio ≥ 15 and SYNTAX score ≥ 22 and those with an E/e' ratio < 15 with SYNTAX score < 22. The results revealed that the patients with a high E/e' ratio ≥ 15 and high SYNTAX score of ≥22 had a lower left ventricular ejection fraction, elevated LV filling pressures as a result of large area of left ventricular myocardium that has been damaged. This in turn predicted poorer patient outcome with greatly increased mortality rates.

Conclusions: The study results showed that the patients admitted with acute coronary syndrome and in whom the E/e' ratio ≥15 and the SYNTAX score ≥ 22 had worse clinical and echocardiographic profile, and more complex coronary artery lesions than those with a lower E/e' ratio and the SYNTAX score.

INDIALIVE2025 CORONARY INTERVENTIONS

The Comparison of the Newer Generation of Zotarolimus-Eluting Stents and Everolimus-Eluting Stents in the Setting of Routine Clinical Practice: Results from the Single-Centre Registry

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Background: There is a scarcity of Indian data about the effectiveness and safety of resolute Onyx zotarolimus-eluting stents (R-ZES) and Xience Sierra everolimus-eluting stents (XS-EES) in regular clinical practice.

Aims: The authors aimed to compare the clinical results of the R-ZES and XS-EES in patients who underwent percutaneous coronary intervention in real-world clinical settings.

Methods: We conducted a retrospective analysis at a single institution, comparing 140 patients with R-ZES (n = 90) and XS-EES (n = 50) between January 2023 and December 2023. The main outcome measure was target vessel failure (TVF), which was defined as a combination of cardiac mortality, target vessel myocardial infarction, and target vessel revascularization during a one-year period. The adjusted outcome was compared using propensity score matching.

Results: After 1 year of observation, there was no significant difference in the risk of target vessel failure (TVF) between the R-ZES group and the XS-EES group (2.5% vs. 2.6%; hazard ratio [HR]: 1.104; 95% confidence interval [CI]: 0.99 to 1.301; p = 0.357). Following propensity score matching, the 1-year rate of TVF was adjusted (adjusted HR: 1.003; 95% CI: 0.89 to 1.234; p = 0.912) and found to be similar in both groups. No notable interactions were seen in the major subgroup analysis.

Conclusions: For patients who had percutaneous coronary intervention, the outcomes of using the newer R-ZES were not significantly different from those of using the XS-EES.

INDIALIVE2025 CORONARY INTERVENTIONS

Impact of Society for Cardiovascular Angiography and Intervention stage and use of mechanical circulatory support on mortality in acute myocardial infarction cardiogenic shock: Results from Gulf Cardiogenic Shock registry

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Background: Mechanical circulatory support (MCS) is widely used in many countries for acute myocardial infarction cardiogenic shock (AMICS) with variable outcomes.

Aims: The aim of this analysis was to find out impact of use of MCS according to SCAI stages in AMICS patients and its outcome on mortality.

Methods: The Gulf-CS registry is a multicentre international retrospective cohort study of AMI-CS diagnosed between January 2020 and December 2022.

Results: The in-hospital mortality was 45.5%.A total of 1,513 patients from the Gulf-CS registry, were included with 470 patients (31.1%) inSCAI stages B and Cand1043 patients (68.9%) inSCAI stages D and E. Survival rates in SCAI stages B and C was 87%, 72%, 56%, and 48% at 6, 12, 18, and 24 months, respectively, while in SCAI stages D and E exhibited survival rates of 66%, 29%, 14%, and 4% over the same periods. Multivariable Cox regression analysis identified higher SCAI stages D and E having a more than threefold higher risk of mortality (hazard ratio, 3.13; 95% confidence interval: 2.40-4.07; p<0.001). Overall, 90.02% underwent revascularization. 820 patients did not receive MCS, and 693 received MCS, predominantly via an IABP. In the no-MCS group, 46.9% were classified as SCAI stages D and E. In contrast, 95% of the MCS group was in Stages D and E. In-hospital mortality was significantly greater in the MCS group (61%) than in the non-MCS group (32.2%). Survival in the MCS group was 36% at 1 year and 10% at 2 years, whereas survival rates were 59% and 33% in the non-MCS group, respectively.

Conclusions: Advanced SCAI stages D and E determine short and long-term mortality in patients with AMICS irrespective of MCS use. The use of MCS at advanced stages of shock (Stages D and E), was associated with high in-hospital mortality. This calls for new guidelines and criteria for MCS use among patients with stages D and E to optimize outcomes.

CORONARY INTERVENTIONS

Study of Short and Mid Term Outcomes in Patients Undergoing PCI for Left Main Coronary Artery Disease

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Background: Patients with left main coronary artery (LMCA) disease face poor prognosis due to extensive myocardial risk. Revascularization via percutaneous coronary intervention (PCI) or coronary artery bypass grafting (CABG) improves survival compared to medical therapy alone.

Aims: Evaluate in-hospital, short-term (1-month), and mid-term (6-month) outcomes post-PCI for LMCA disease. Given limited Indian studies on this topic, this research aims to provide local insights.

Methods: Study included all LMCA-PCI patients from December 2019 to July 2021, followed for 6 months. Major adverse cardiac events (MACE) included recurrent hospitalization, non-fatal MI, target lesion revascularization (TLR), stroke, and death.

Results: 74 patients underwent LMCA-PCI; mean age 61 years, 75% male. Acute coronary syndrome was the most common presentation (70% anterior wall MI). Almost half patients had normal ejection fraction; LM with double vessel disease was the most common finding in coronary angiography. PCI was often chosen over CABG by patient preference (60%). 75% had Syntax score ≤22. Imaging-guided procedures included IVUS (23) and OCT (2). Debulking strategies were used for calcific lesions (Cutting balloon in 3, IVL in 2, Rota in 1 patient). Bifurcation techniques included TAP (3), Mini crush (2), DK crush (1), and Culotte (2). MACE rate was 14.8% with 3 recurrent hospitalizations, one in-hospital TLR, 4 non-fatal MI (2 in hospital and 2 at 6 months), and 4 deaths (3 in hospital and 1 at 1 month).

Conclusions: Presentation at admission significantly influences outcomes; low ejection fraction and cardiogenic shock correlate with poor prognosis despite procedural success. Distal bifurcation lesions show higher mortality than ostial lesions. Syntax score showed limited correlation with outcomes in this short-term study; longer follow-up may clarify this in high-score patients. Imaging modalities aid stent apposition and prevent restenosis. While CABG remains preferred for LM lesions, LM-PCI is safe and effective for acute cases, low-to-intermediate syntax scores, high surgical risk patients, and patient preference.

CORONARY INTERVENTIONS

OCT stent expansion indices in left main coronary artery PCI to predict clinical outcomes: a retrospective analysis

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Background: A technique for creating tomography pictures of human organs based on light coherence is called optical coherence tomography. An optical counterpart of IVUS, OCT is utilized in cardiology to assess the coronary arteries. Although OCT has ten times the resolution of IVUS, it has a lower maximum depth of penetration.

Methods: We conducted a hospital-based retrospective observational study among 50 patients undergoing left main coronary artery stenting. Among the patients who have undergone left main coronary artery PCI under OCT examination using the ILUMIEN OTIS M system and stent expansion indices were calculated. The subjects were followed up after 2 years of angioplasty by their clinical visits to assess the primary outcomes including cardiac death, myocardial infarction, target vessel revascularisation and secondary clinical outcomes like stroke.

Results: The age distribution showed that around 68% belonged to age group 61 and above, 72% of our study participants were males. The majority of cases involved LM-LAD crossover techniques, accounting for 74%. For predicting MI, MSA (cut-off ≥ 5.91) had a sensitivity of 75%, specificity of 56.4%, and an Area Under the Curve (AUC) of 0.654, while Conventional Stent Expansion (cut-off ≥ 67.4) showed similar sensitivity (75%), higher specificity (60.8%), and a slightly better AUC (0.682). For stroke prediction, both parameters had poor performance, with MSA (cut-off ≥ 4.8) showing an AUC of 0.197 and Conventional Stent Expansion (cut-off ≥ 60.68) with an AUC of 0.229. For predicting distal half revascularization, MSA (cut-off ≥ 8.02) had moderate specificity (89.6%) and an AUC of 0.609, while Conventional Stent Expansion (cut-off ≥ 51.7) had low specificity (18.7%) and a very low AUC of 0.166.

Conclusions: In conclusion, this study highlights the critical role of OCT stent expansion indices in predicting clinical outcomes following LMCA PCI. Our findings demonstrate that optimal stent expansion, as measured by OCT-derived parameters such as MSA and conventional stent expansion, is associated with favourable clinical outcomes, including a lower risk of MI, restenosis, and stent thrombosis.

CORONARY INTERVENTIONS

The Aslanger Pattern: The Piper at the Gates of Dawn

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Background: Occlusive inferior myocardial infarction may not conform to the conventional ST Elevation Myocardial Infarction criteria.

Aims: This report emphasises the importance of recognising the Aslanger pattern and its implications for the clinical management of patients with this characteristic ECG pattern.

Methods: We studied a cohort of twenty patients who presented with anginal chest pain of varying durations and displayed the distinctive Aslanger pattern on ECG. These cases underwent an emergent trans-thoracic echocardiography, coronary angiography (CAG) and mandated revascularisation.

Results: ECG of all twenty cases revealed the Aslanger pattern: (i) ST Elevation in lead III but not in other inferior leads, (ii)ST depression in any of leads V4 to V6 but not in V2, (iii)ST elevation in lead V1. Echocardiography reflected a spectrum of Left ventricular ejection fraction. On immediate CAG, the Left main coronary artery was involved in seven cases, out of which six patients had associated triple vessel disease and one patient had associated double vessel involvement. The LAD was involved in twelve patients, with the majority having the involvement of the proximal LAD. The LCX was affected in eleven subjects, with most cases portraying proximal involvement. Ten patients had affection of the RCA, majority showing lesions of the mid-RCA. Post CAG, fourteen patients proceeded with angioplasty. Six cases required CABG due to a high SYNTAX score.

Conclusions: The Aslanger pattern originally pertained to an occlusive inferior myocardial infarction secondary to involvement of the RCA or LCX. In our study, the majority of cases had multivessel disease with the left main coronary artery involvement in 35 percent of cases. This brings to light the vitality of recognising this pattern for urgent angiographic assessment and indicated revascularisation.

CORONARY INTERVENTIONS

Short-term Outcomes of Rotational Atherectomy in patients with Reduced Left Ventricular Ejection Fraction: A Retrospective Review from a Tertiary Referral Centre

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Background: Rotational atherectomy (RA), a commonly used technique for the percutaneous intervention of calcific coronary lesions, produces micro-debris which cause downstream microvascular obstruction, slow flow, and myocardial stunning leading to adverse outcomes in patients with left ventricular (LV) systolic dysfunction. Hence, the presence of LV dysfunction was considered a relative contraindication for RA.

Aims: We aimed to assess the safety of RA in patients with severe LV dysfunction, defined as LVEF ≤ 35%, as assessed by Simpson's method on 2-D echocardiogram.

Methods: This is a retrospective review of all consecutive patients who underwent RA at a tertiary referral centre over a 6-year period (2018 to 2023). All medical records, procedural details, and in-hospital outcomes were recorded. The primary outcome of the study was in-hospital mortality.

Results: 504 patients who underwent RA during the study duration were divided into two groups: Group 1 (n=209) with left ventricular ejection fraction (LVEF) ≤ 35% and group 2 (n=295) with moderately reduced or preserved LVEF (>35%). There was no significant difference in the baseline demographic characteristics, risk factors, angiographic profile, stent length, contrast volume, and procedure time between the two groups. The in-hospital mortality was not different between the two groups (2.3% vs 0.7% p=0.63). LVEF was not found to be an independent predictor of mortality in patients undergoing RA.

Conclusions: The in-hospital mortality of patients undergoing PCI with RA was not affected by the presence of LV dysfunction. Additional studies with a longer follow-up duration and a larger sample or a meta-analysis incorporating our study are needed to confirm these results.

CORONARY INTERVENTIONS

Long-Term Results of Left Main Percutaneous Coronary Intervention Based on Stenting Method: 5-Year Practical Experience with a Single Centre

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Background: The choice of stent approach can impact the result of percutaneous coronary intervention (PCI) for the left main coronary artery (LMCA).

Aims: The objective of this study was to evaluate the long-term results of PCI for the LMCA using either a single-stent technique or a double-stent strategy.

Methods: This retrospective study included all patients with left main disease who underwent PCI between January 2019 and December 2023 in a single high-volume centre. Cases were divided into 2 groups according to stent strategy.

Results: This study included 394 left main disease patients. Of them, 290 (73.6%) patients underwent PCI by single-stent strategy and 104 (26.4%) patients by double-stent strategy. In the latter, 72% patients underwent PCI by TAP technique, 20% by culotte, and 8% by DK-Crush. The mean age of the patients was 46.7 ± 21.3 years and 47.0 ± 20.5 years, respectively (P = 0.16). Female gender (18.9% vs. 16.4%; P = 0.234), dyslipidaemia (65% vs. 60.6%; P = 0.125), and history of previous CABG (3.2% vs. 3.4%; P = 0.098) were prevalent in the single-stent strategy group, and hypertension (66.4% vs. 67.7%; P = 0.134) was prevalent in the double-stent strategy group. Most of the patients were with chronic coronary syndrome in both groups (38.5% vs 36.5%; p = 0.144). The mean duration of follow-up was 41.3 ± 20.7 months. Overall, mortality (1.2% vs. 1.9%; P < 0.01; HR: 1.27 [0.92-1.68]) was prevalent in the double-stent strategy group.

Conclusions: This study, conducted at a single centre and based on real-world data, clearly shows that using a single stent in left main PCI resulted in better long-term outcomes compared to using two stents.

CORONARY INTERVENTIONS

Long-Term Outcomes After Percutaneous Coronary Intervention with the 48mm Long-Length Xience Expedition Everolimus-Eluting Stent in the Setting of Chronic Total Occlusion

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Background: The Xience ExpeditionTM everolimus-eluting stent (XE-EES; Abbot Vascular Inc.) shows positive results in treating coronary lesions in patients with varying levels of chronic total occlusion (CTO) interventions. Nevertheless, there is a scarcity of comprehensive long-term evidence about the management of long lesions stenting in the setting of CTO, which is common in the Indian subset of cases due to advanced atherosclerosis.

Aims: We retrospectively included patients who received a 48-mm-long XE-EES to treat *de novo* lesions in native coronary arteries following successful CTO intervention.

Methods: We conducted a retrospective analysis of patients who underwent CTO intervention selected from our electronic medical records for an observational study conducted at a single centre. The study spanned from June 2020 to June 2023 and was nonrandomized. In our analysis, patients who were part of these investigations were treated with at least one 48-mm XE-EES in a lesion that was 40 mm or less in length and had a reference vessel diameter between 3.0- and 4.2-mm. Target lesion failure (TLF) was defined as the combination of cardiac death, target vessel myocardial infarction (TVMI), or clinically indicated target lesion revascularization (TLR).

Results: A total of 93 patients were evaluated. The mean lesion length was 35.2 ± 8.8 mm. One-year follow-up was available in 99.5% of patients, demonstrating a low incidence of adverse clinical events. The average age was 65 ± 12.4 years. 68.3% of the patients were male. Prior PCI was observed in 27.4% of the patients. Diabetes mellitus was present in 37.8% of the individuals. Multivessel disease was found in 43.3% of the subjects. The lesions were found in the left anterior descending artery in 56.2% of cases. Additionally, 83.5% of the lesions were classified as B2/C lesions. The main objective was achieved, showing a 12-month target lesion failure rate of 3.4%. Rates of cardiac death, TVMI, and TLR at 12 months were 0.5%, 2.3%, and 1.4%, respectively. The incidence of early stent thrombosis, occurring within 30 days, was 0.4%, and no instances of stent thrombosis were observed after this period.

Conclusions: The 48-mm-long XE-EES was associated with excellent and sustained clinical outcomes for CTO interventions during long-term follow-up, but clinical events remained similar other than for TLF.

INDIALIVE2025 CORONARY INTERVENTIONS

A novel technique of "Soft Balloon Angiography Imaging system"

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Background: Iodinated contrast of angiography is the cause of Contrast Induced Nephropathy (CIN), aggravation of heart failure, especially with low EF, high risk patients. Imaging is useful in evaluation of stent deployment, but not commonly used in routine practice.

Aims: To evaluate Soft Balloon angiography imaging technique, suitability for high-risk patients of nephropathy or congestive heart failure (CHF). In addition, to assessing adequate stent deployment.

Methods: A novel system of balloon angiography has been developed, with a soft highly compliant polyurethane balloon, where angiography is conducted with iodine contrast in the balloon only, which is placed with in the vessel. Safety was assessed at bench tests, before clinical application.

Results: Bench tests were performed in nine (9) tubes of different shapes, where the soft balloon was placed filled with contrast and angiograms were recorded. In 23 patients, 25 stenotic segments were chosen, all coronaries except two. Mild <25%, Moderate 25-74% and severe >75% stenosis were comparable to control angiograms in all with 100% match. Under-expanded stent was detected by Soft balloon angiography Imaging (SBAI) prior to post dilatation.

Conclusion: Soft Balloon angiography Imaging (SBAI) usage during initial experience, confirmed its diagnostic capabilities, which were comparable to routine angiography, protecting from renal impairment and heart failure, by hardly injecting any contrast in system. Additionally, this imaging was useful in detecting under expanded stents. The novel technique is useful, safe and effective in diagnostic and therapeutic vascular interventional procedures.

INDIALIVE2025 CORONARY INTERVENTIONS

Outcomes of 'Resolute Onyx' Drug-Eluting Stent on Three-Month Dual Antiplatelet Therapy Following Percutaneous Coronary Intervention: One-Year Data from a Single Institution

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Background: The duration of dual antiplatelet therapy (DAPT) in patients undergoing percutaneous coronary intervention (PCI) varies based on the presence of ischemia and high bleeding risk (HBR) variables.

Aims: To evaluate if there was an association between 3 months of DAPT and significant bleeding, we retrospectively examined all PCI patients who were classified as HBR and had Resolute Onyx zotarolimus-eluting stents (ZES) placed.

Methods: A study was undertaken at a single medical centre to assess the safety and effectiveness of a 3-month DAPT in patients with high bleeding risk (HBR) who were treated with ZES. The trial included patients diagnosed with coronary artery disease who met at least one high-bleeding-risk criterion. The patients received DAPT consisting of ticagrelor 90 mg two times a day and aspirin 75 mg for three months after getting a ZES implant. Afterward, they were transitioned to single antiplatelet medicine (SAPT), specifically ticagrelor 90 mg twice a day, until the completion of one year. During the period of three months to one year, the main result measured was a combination of either cardiac death or myocardial infarction (MI).

Results: During the period of June 2023 to June 2024, a cohort of 150 patients was examined. The mean age was 75.5 years; 42.3% were of the female gender; 33.5% had type 2 diabetes; 46.4% had undergone previous revascularization; and 58.3% had experienced acute coronary syndrome. The study included patients who met an average of 1.9 HBR criteria, and 54.6% met 2 HBR criteria. Of all the lesions, 60.8% showed a significant amount of calcification, ranging from moderate to severe. Additionally, 88.2% of the lesions were classified as B2/C lesions. After one year, 91.1% of patients continued to receive SAPT, while 9.9% were only prescribed oral anticoagulants. During the period of 3 months to 1 year, the combined occurrence of cardiac death or MI was 5.7%, with a rate of 2.3% for cardiac death and 3.4% for MI, specifically 7.9%, being classified as non-ST elevation myocardial infarctions.

The rates of other secondary endpoints were as follows: 0.3% for definite or probable stent thrombosis, 3.0% for target-lesion failure, 1.7% for clinically driven target-lesion revascularization, and 0.6% for stroke. None of the patients experienced occurrences of haemorrhage categorized as Bleeding Academic Research Consortium (BARC) 3–5, while 2.1% had episodes of bleeding classified as BARC 1-3.

Conclusions: After 3 months, patients with HBR who were treated with Resolute Onyx ZES and SAPT experienced acceptable rates of ischemic events within a year, despite the ongoing possibility of minor bleeding.

14TH INDIALIVE2025 INTERVENTIONAL CARDIOLOGY FOUNDATION OF INDIA CORONARY INTERVENTIONS

Myocardial Foot Print from Regular 2D Echocardiography - A novel resource for LV architectural evaluation

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Background: Dynamic state of the heart, highly complex 3-Dimensional Myocardial syncytium and Lack of consensus on existing knowledge results in complex imaging analysis of Myocardial architecture.

Aims: Creating "Myocardial Foot Print" (MFP) and its analysis.

Methods: After 2D Echo examination, Apical cluster (2C, 3C & 4C) clips were separated. 2D LVED and LVES stills were created. From each still, LV Cavity will be isolated and surface elevated - resulted in respective 3D models. First, all LVED 3D models were intersected at specific angle, results in one single LVED 3D model. Similarly, LVES 3D model created. Apply morphing between these models, results in single LV Cavity 3D model. Dynamic paint (from inbuilt) applied with this animated 3D model (as Brush) and a new Plane mesh object across the model, creates MFP's graphical patterns with customized colours.

Results: Extent and specific MFP patterns may represent but not limited to assessment of LV chamber quantification, myocardial architecture, segmental Kinetics (Displacement & Deformation), Systolic function assessment (like GLS) and many more.

Conclusions: MFP will be the simplest way of studying the complex Myocardial architecture noninvasively. It is novel, a unique and offline method. MFP patterns will be studied extensively from early diagnostic to therapeutic monitoring in a feasible way. Limited by Diffusion Tensor Imaging from Cardiac MRI (because of nonavailability) - an experimental tool.

14TH INDIALIVE2025 INTERVENTIONAL CARDIOLOGY FOUNDATION OF INDIA CORONARY INTERVENTIONS

A relook into the angiographic risk predictors of side branch compromise in a provisional bifurcation angioplasty

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Harshit Khare

Background: Side branch occlusions (SBO) continue to complicate bifurcation angioplasty at an unpredictable rate. Their accurate delineation has remained elusive, and current practices remain uncertain.

Aims: We studied the angiographic determinants of SBO in a provisional bifurcation angioplasty.

Methods: 65 consecutive patients undergoing bifurcation angioplasty with significant-sized SB were enrolled and their coronary angiograms were studied for SBO determinants. The primary outcome was more than 50% diameter loss in the SB during the intervention.

Results: The binary logistic regression revealed that decreasing the bifurcation angle increased the risk of SBO [p-value 0.026]. The plaque burden at bifurcation reflected by the ratio of diameter stenosis in the main vessel (MV) and SB also showed a significant association with SBO [p-value 0.037]. Other variables including SB ostial stenosis, SB diseased segment length, the SB maximum diameter stenosis, and the ratio of diameter stenosis b/w proximal MV and distal MV were not found significant. Two more novel variables namely the area covered by the bifurcation sector, and the bifurcation triangle also showed no significant association with SBO.

Conclusions: The cardinal angiographic determinants of SBO include the bifurcation angle and the ratio of diameter stenosis in proximal MV and SB and can be simply estimated visually obviating the need for more complex quantitative scoring systems.

CORONARY INTERVENTIONS

CTO in People Living with HIV: Navigating Complexities in Interventional Challenges

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Background: Coronary chronic total occlusions (CTOs) present a unique challenge in coronary artery disease, particularly among individuals living with HIV (PLWH). Successful percutaneous coronary intervention for CTOs is essential for improving angina and left ventricular function. PLWH faces an increased risk of adverse cardiovascular events due to complex interactions between traditional risk factors and the ongoing endothelial dysfunction, immune activation, inflammation, and heightened thrombosis risk associated with HIV infection.

Aims: This prospective observational study aimed to evaluate PCI's procedural success and complications for CTOs in PLWH.

Methods: From August 2015 to September 2024, we enrolled 25 consecutive PLWHs with CTOs in a comprehensive study. Each patient underwent coronary angiography, and clinical presentations were meticulously evaluated. All participants underwent PCI, with clinical follow-up for 5 years.

Results: The study demonstrated a 100% procedural success rate with an uneventful in-hospital course. The mean age was 48 years, and HIV duration was 4.1 years. CTO distribution included 15 patients with 100% LAD occlusion, 5 with 100% RCA occlusion, 1 with 100% LMCA and LAD occlusion, and 4 with 100% LCX occlusion. Various vessels were targeted during PCI, with an average stent size of 3x30mm. The fluoroscopy time averaged 2-3 hours. Three deaths occurred during the 5-year follow-up, unrelated to PCI. No major adverse cardiovascular events were reported, and patients experienced significant symptom relief post-PCI.

Conclusions: PLWH face an increased risk of coronary CTO lesions at a younger age, predominantly during the initial HIV infection phase. PCI emerges as an effective and safe coronary revascularization strategy, providing sustained symptomatic and prognostic benefits. HIV status and highly active antiretroviral therapy did not hinder procedural success or impact clinical outcomes.

CORONARY INTERVENTIONS

Relationship between Myocardial Performance Index and Severity of Coronary Artery Disease Assessed with Gensini Score in Acute coronary syndrome

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Background: The Gensini scoring system, based on angiographic findings, is a valuable method for estimating the severity of coronary artery disease. The severity of coronary artery lesions, as assessed by the Gensini score (GS), is associated with long-term mortality and major adverse cardiac event rates. Doppler-derived myocardial performance index (MPI), also known as the Tei index, is a new diagnostic method and an alternative to ejection fraction (EF) measurements. This index reflects combined systolic and diastolic function and can be defined as the sum of the isovolumic contraction time and isovolumic relaxation time, divided by the ejection time. MPI has been identified as a powerful independent predictor of death from all causes in patients with a recent acute coronary syndrome (ACS).

Aims: We aimed to investigate the relationship between MPI and severity of coronary artery disease, as assessed by the GS, in patients ACS

Methods: The study was a prospective, single-centre analysis of 150 consecutive patients with an initial diagnosis of ACS. Patients who had valvular heart disease, cardiomyopathy, congestive heart failure, previous cardiac surgery, history of percutaneous coronary intervention, chronic kidney disease, hepatic dysfunction, acute respiratory illness, acute infection, chronic inflammatory disease, or complex congenital heart disease were excluded from the study. Patients who were diagnosed with peripheral arterial disease or a coronary artery disease (CAD) equivalent were also excluded.

Transthoracic echocardiography was performed within the first 24 hours of initial diagnosis. All patients underwent selective coronary angiography. The severity of coronary artery lesions was scored using a modified Gensini scoring system

Results: The study population consisted of female (33.0%) and male (67.0%) with mean age (58±6.0). There is statistically significant positive correlation between MPI and GS in patients with obstructive CAD (P-value < 0.001). They were divided into tertiles according to the GS: low GS <19; mid GS > 19 and ≤ 96; and high GS > 96. The high-GS group had a significantly lower ejection fraction and ejection time ($p = 0.01$ and $p < 0.001$, respectively). MPI was positively correlated with the GS ($r = 0.47$, $p < 0.001$), and multivariate regression analysis showed that MPI was an independent predictor of the GS ($p < 0.001$).

Conclusions: MPI was an independent predictor of GS in patients with ACS. Patients with ACS who are at high risk may be identified by a simple MPI measurement, which can be useful in the decision-making process for treatment selection and risk stratification.

CORONARY INTERVENTIONS

Early Cardiac Rupture in the Era of Pharmaco-invasive Approach – A Retrospective Cohort Study

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Background: Pharmaco-invasive strategy stands as an attractive alternative for management of ST-elevation myocardial infarction when timely primary percutaneous coronary intervention is not feasible. There are also some studies which demonstrated that ST-segment–elevation myocardial infarction patients receiving pharmaco-invasive treatment, compared with primary percutaneous coronary intervention, had shorter time to reperfusion, higher culprit-vessel patency, and similar 12-month clinical outcome. However, there are many downfalls as the caveats regarding the side effects of thrombolysis are advanced. Cardiac rupture is a catastrophic risk of thrombolysis treatment in acute myocardial infarction and has been found in almost 38% of autopsies in clinical trials of thrombolytic agents. According to the literature's data and our own clinical experience, cardiac rupture is a relatively common and sometimes very early complication of streptokinase therapy in patients with acute myocardial infarction

Aims: The aim of this study was to assess the incidence and timing of cardiac rupture following streptokinase administration in patients with acute myocardial infarction.

Methods: We retrospectively analysed the clinical data of patients with acute myocardial infarction, treated in the cardiac care unit of cardiology over span of six months between March 2023 and August 2023. We selected the patients who died after thrombolysis administration with a diagnosis of "acute myocardial infarction" and "cardiac tamponade – ventricular rupture". These mechanical complications were echocardiographically verified by pericardial effusion and free-wall rupture by acute myocardial infarction with hemopericardium and ventricular wall rupture.

Results: There were 92 patients with acute myocardial infarction during the studied period. Out of 92 patients, 58 patients presented with ST elevation myocardial infarction, of which 43 patients underwent pharmaco-invasive approach (74.1%). Out of 43 patients, 38(88%) were treated with streptokinase (1.5 million U, in 30 min as an intravenous infusion) and 2 were treated with Reteplase and 3 were treated with Tenecteplase. There were 20 male (52%) and 18 female (48%). Median age was 60±12 years. Out of 38 patients who underwent thrombolysis with streptokinase, 8(21%) had mechanical complication (7 patients had free wall rupture and 1 patient had ventricular septal rupture) within 18 hours of thrombolysis. Unfortunately, all of free wall rupture succumbed to death. 3 had free wall rupture within 4 hours of thrombolysis and 3 had between 4-6 hours and 1 had between 6-8 hours. Ventricular septal rupture was noted within 6 hours of thrombolysis in one case. The incidence of free wall cardiac rupture in our study was 18.42% which is significantly higher comparable to similar studies (incidence varying between 1.4% to 4.8%)

Conclusions: In the Era of pharmaco-invasive approach the catastrophic side-effects of thrombolytic agents especially streptokinase needs to consider. Though pharmaco-invasive approach is gaining the momentum, the issue of mechanical complications needs to emphasised.

CORONARY INTERVENTIONS

A Comparison between Intracoronary Thrombolysis, Primary PCI and Pharmacoinvasive Strategy at a Tertiary Care Hospital: Which Is Better? - A Pilot Study

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Background: Rapid reperfusion in STEMI is crucial, surpassing the importance of therapy type. High thrombus burden often complicates PCI leading to various complications. Intracoronary catheter-directed thrombolysis with low-dose Tenecteplase (IC TNK) combined with deferred PCI in these situations offer better reperfusion with possibility of lower stent burden.

Aims: To evaluate and compare the efficacy and safety of IC TNK, Primary PCI, and Pharmacoinvasive strategies for acute myocardial infarction (AMI) in a tertiary care setting.

Methods: Conducted between February 2023 and May 2024, the longitudinal study included 200 STEMI patients admitted within 12 hours of symptoms (or 12–24 hours with persistent pain). Groups included Primary PCI, Pharmacoinvasive therapy, and IC TNK with deferred PCI. Outcomes included stent use, clinical and angiographic assessments, 30-day follow-ups for mortality, non-fatal MI, revascularization rates, and ejection fraction improvement.

Results: The cohort (mean age 56.53, mostly male) had prevalent risk factors like smoking and hypertension. Hemodynamic instability was highest in Primary PCI (11.5%). Both mean stent length and stent number in Infarct related artery was significantly lower in IC TNK cases compared to Primary PCI and Pharmacoinvasive groups. TIMI 3 flow was achieved across strategies, with IC TNK with deferred stenting showing enhanced perfusion markers in heavy thrombus burden. Survival, revascularization, and bleeding risks were comparable.

Conclusions: All strategies are safe and effective for STEMI. IC TNK offers perfusion benefits and lower stent burden in high thrombus burden. Pharmacoinvasive therapy remains a viable option when PCI is delayed. Larger studies are needed for long-term insights.

INDIALIVE2025 CORONARY INTERVENTIONS

A Prospective Observational Study on STEMI Patients Undergoing Very Late Coronary Angiogram and Interventions Based on the Angiographic Findings

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Background: Restoration of blood flow to an infarct-related artery (IRA) within the first 12 hours from onset of symptoms via an early invasive strategy is currently considered as the best approach to treat ST-elevation myocardial infarction (STEMI). However, a large proportion of patients with STEMI present beyond the acceptable time for reperfusion. There is not enough evidence supporting PCI in STEMI patients who present >24 hours after symptom onset. Some patients present late (even after a month) due to a variety of causes. In the context of contemporary STEMI treatments, the purpose of our study is to determine the effect of the revascularisation of an infarct related artery later than 1 month from onset of symptoms (and up to 4months) and the clinical outcomes in those patients.

Aims: To study the composite outcome of re- infarction, rehospitalisation for heart failure and mortality after delayed angiography and interventions based on the angiographic findings of the infarct related artery, between 1 month to 4 months after STEMI and for a follow up period of 6 months after the procedure.

Methods: This prospective study observed STEMI patients who did not undergo primary angioplasty but underwent either an invasive strategy (coronary angiography invasive or non- invasive management strategies based on the angiogram) or non-invasive strategy (no coronary angiogram or interventions) 1 to 4 months after the index event. Both group of patients were followed up for a period of 6 months.

Results: In a total of 102 patients in invasive group and 103 patients in non-invasive group, the baseline characteristics were similar. The primary composite outcome of MACE (reinfarction, rehospitalisation for heart failure and death) occurred in 14.3%and 28.7% of the patients respectively (p=<0.001, significant).The re infarction rate was 3.9% in the invasive group and 24.3% in the non-invasive group(p=<0.001, significant).The hospital admission for heart failure symptoms occurred in 7.8 % of invasive group and 30.1% of the non-invasive group (p=<0.001, significant) and death occurred in 3.9% and 14.6% respectively (p=<0.001, significant). In the follow up of invasive and non-invasive group 75% and 47.5% showed improvement in the NYHA functional class of dyspnoea on exertion while 85.7% and 38.4 % showed improvement in the NYHA functional class of effort angina respectively.

Conclusions: Patients who did not undergo primary angioplasty or any other form of PCI within one month of the index STEMI underwent coronary angiogram and revascularisation and they were compared to a group that did not. The invasively managed group had significant reduction in the reinfarction, re hospitalisation and death compared to the non-invasive arm. More patients in the invasively managed group had improvement in dyspnoea on exertion and effort angina compared to the non-invasively managed group.

INDIALIVE2025 CORONARY INTERVENTIONS

CTO Scoring Systems: Which One is Best for Predicting Success in Chronic Total Occlusion Interventions in Indian Patients?

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Background: The effectiveness of various CTO scoring systems in predicting successful PCI outcomes remains insufficiently explored.

Aims: To compare the predictive accuracy of the J-CTO, PROGRESS CTO, CL, and CASTLE scoring systems in determining procedural success and complexity in an Indian population

Methods: This is a prospective comparative study involving consecutive patients who underwent PCI for CTO between January 2023 and December 2023.

Results: Among 212 CTO PCI patients enrolled, 159(75%) cases were successful. The study evaluated the effectiveness of four scoring systems (PROGRESS, J-CTO, CL, and CASTLE) in predicting procedural success using the Area Under the Curve (AUC) analysis. The results showed that the PROGRESS score had limited predictive value (AUC 0.613), while the J-CTO, CL, and CASTLE scores demonstrated moderate to good predictive capacity (AUC for J-CTO: 0.748; AUC for CL score: 0.752; AUC for CASTLE score: 0.775, p <0.001), with the CASTLE score performing slightly better (AUC 0.775).

Conclusions: This study concludes that CTO success scores showed poor to moderate predictive accuracy. CASTLE and CL performed best, followed by J-CTO. Procedural difficulty varies by cohort, requiring careful score selection for optimal applicability.

CORONARY INTERVENTIONS

Cross Sectional Observational Study of Lipid Modifying Therapy Usage and its Efficacy in Post Angioplasty Patients from a South Indian Tertiary Care Centre

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Background: LDL-cholesterol (LDL-C) is one of the strongest predictors for recurrent MACCE in patients following coronary angioplasty (PTCA). Guidelines recommend achieving an LDL –C level of less than 55 mg/dl for secondary prevention.

Aims: To study the impact of currently available lipid lowering therapy (LLT) in a cohort of post angioplasty patients with respect to achieving LDL-C goals based on LAI -2021 guidelines.

Methods: Data were collected at single visit including lipid lowering therapy (LLT) in past 6 months and most recent LDL- cholesterol in patients who visited for periodic follow-up between March -2023 to Jan-2024.

Results: Primary outcome was achievement of LAI 2021 LDL C goal, while on LLT. 1201 patients who had undergone PTCA were included. By definition all these patients come under very high-risk category. Among study population, 18.9% were females, 43.3% were diabetic, and 7.4% were smokers. Indication for PTCA was ACS in 79.7% cases of which 65 % were STEMI and 20.3% were stable angina patients. 5.6% patients had recurrent ACS. 13.0% cases were in extremely high-risk category. Of the total 1201 patients, 24.8% achieved recommended LDL C goal as per LAI guidelines. Overall, high intensity statin therapy was used in 1061(88.34%) cases. A combination of statin with either Ezetemibe or Bempedoic acid was used in 13 patients (1.08%). None of patients received PCS K9 inhibitor therapy.

Conclusions: In this observational study, we found that despite usage of high intensity statin therapy nearly 90% times, the recommended LDL target could be achieved in only 24.81% patients. We conclude that major gaps continue to exist, between recommended LDL cholesterol, despite usage of high dose statins or combination therapy.

CORONARY INTERVENTIONS

Novel Predictive 3-D risk model for In-stent restenosis following 2nd generation DES Implantation using Machine-Learning – Just TWO predictors matter most!!

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Background: G2-DES is a vital tool in our PCI armamentarium and despite major advances in coronary hardware, ISR continues to be the Achilles heel following stent implantation.

Aims: We sought to study demographics and clinical outcomes of stent restenosis following PCI using G2DES from our Institute and develop a predictive model for the same.

Methods: Patients who underwent PCI with G2DES who returned with clinical symptoms suggesting ISR within 4 years were compared with an age- and gender-matched cohort with no clinical ISR for determining predictors of ISR. Both Logistic regression and Machine Learning were applied to generate a predictive model with SHAP weighting. Alongside the predictors at index PCI, we also studied predictors at 12th and 24th month for ability to predict ISR.

Results: All G2DES were indigenous EES with biodegradable polymer. Of the 2142 patients studied, 5.2% patients presented with clinical restenosis or proven angiographic restenosis at mean 40 months (range 36- 48 months). Mean age of patients was 52.5 ± 5 years. Mean LVEF was 48.5 ± 5.5%. Interestingly in the study 63 % ISR patients presented as new ACS .On Logistic regression, a risk prediction model of TOTAL 15 POINTS was created with just TOP 6 predictors of ISR (at 12th and 24th month) contributing to 90% patients with an accuracy 94 % of the model: Hb A1c > 9%(scored 4), LDL –C > 140mg%(scored 3), N/L ratio > 5.5 or CRP > 10 , Triglyceride- Glucose index (TYGI) > 5.5, RCA/ LAD ostial stenting, and Mean stent diameter < 2.5 mm or stent length >32 mm if stent size was >2.75 mm (all scored 2). Patient age, LV dysfunction, PCI in SIHD v/s ACS, patient gender, vessel intervened or even instantaneous glucose level before PCI did not contribute to ISR. Observed v/s Predicted rates for ISR demonstrated excellent model fit in the Validation cohort with c-statistic of 0.87 for score above 9, and 0.94 for a score > 13.

Conclusions: G2 DES ISR is sinister and can be mostly linked to poor sugar control and lipids rather than stent type. Our simple 3- Dimensional risk model could TEMPORALLY accurately predict risk of ISR even at 4 years accurately and highlights the need to stringently follow these two parameters.

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CORONARY INTERVENTIONS

Contrast-Free Clarity: Advancing Coronary Imaging with Guide Catheter Enhanced Saline Optical Coherence Tomography for the Left Coronary System

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Background: Optical coherence tomography is essential for coronary interventions but relies on iodinated contrast, which poses risks in patients with renal or cardiac impairments. Saline-enhanced OCT offers a safer alternative, but imaging of the left coronary system is limited by its bifurcation anatomy. Guide catheter extension systems (GCEs) improve saline delivery by targeting individual coronary branches, enhancing blood displacement and imaging quality. This study evaluates combining GCEs with S-OCT to optimize left coronary imaging and improve diagnostic accuracy.

Aims: To assess the feasibility and efficacy of S-OCT with GCEs in enhancing left coronary imaging compared to conventional contrast OCT.

Methods: A prospective, single-center observational study enrolled 25 patients undergoing coronary angiography or PCI. Imaging included iodinated contrast OCT, saline OCT and saline OCT with GCEs. Minimum lumen diameter (MLD), minimum lumen area (MLA) and clarity of lumen contour (CLC) were measured. Statistical analyses included paired t-tests and ANOVA.

Results: S-OCT with GCEs showed MLD and MLA measurements comparable to contrast OCT ($p > 0.05$). Saline OCT without GCEs had significantly lower CLC ($p < 0.05$). GCEs improved saline OCT quality without complications.

Conclusions: S-OCT with GCEs is a feasible, effective imaging alternative for the left coronary system. It offers diagnostic accuracy comparable to contrast OCT, with excellent luminal clarity, ensuring improved safety and outcomes in intervention cardiology.

CORONARY INTERVENTIONS

Observational study on diagnostic accuracy of angiography based non-invasive physiological index compared to invasive physiological indices.

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Background: One of the leading causes of illness and death globally is coronary artery disease (CAD). A number of invasive and non-invasive tests have been developed recently for the anatomic and functional assessment of coronary stenosis severity, in addition to the FFR.

Aims: This study aimed to evaluate the diagnostic performance and feasibility of QFR compared to FFR and other physiological indices (iFR and RFR).

Methods: We conducted a hospital-based prospective observational study in the Department of Cardiology, Lisie Medical Institutions, Kochi among 58 Patients with intermediate lesions in routine coronary angiogram. QFR was computed based on the vessel anatomy and TIMI (Thrombolysis In Myocardial Infarction) frame counting. The reconstructed 3D vessel was divided into sub-segments from proximal to distal, and the pressure drop for the different segments of the vessel was calculated from the lumen sizing concerning the reference sizing. FFR and QFR value <=0.8 each was taken as hemodynamically significant stenosis.

Results: The diagnostic accuracy of QFR was compared with FFR and other resting indices, including the Resting Full-Cycle Ratio (RFR) and Instantaneous Wave-Free Ratio (iFR). The diagnostic performance of QFR compared to FFR showed an area under the curve (AUC) of 0.70, with a sensitivity of 70%, specificity of 91%, positive predictive value (PPV) of 69%, and negative predictive value (NPV) of 91%. The feasibility of QFR among cases undergoing FFR was noted to be 76%, major reason for non-feasibility being Ostial Lesions (47.06%), followed by poor image quality among (29.41%) and LMCA Lesions among 11% There was no statistically significant association between RFR and QFR ($p=0.07$), suggesting some discordance between these indices. However, a significant association was found between iFR and QFR ($p<0.05$), indicating that QFR closely correlates with iFR in assessing coronary stenosis. The study also found that among participants with a QFR ≤0.80, 75% had a corresponding iFR ≤0.89, supporting the clinical utility of QFR in identifying hemodynamically significant lesions.

Conclusions: The Functional evaluation by QFR showed good correlation with FFR and the Non-Hyperaemic Index iFR. However, our study failed to show a statistically significant association of QFR with RFR. The feasibility of QFR among cases undergoing FFR was 76%. By comparing QFR to the gold standard of FFR, this study seeks to contribute to the growing body of evidence supporting the use of non-invasive physiological indices in clinical practice, with the ultimate goal of enhancing the precision and safety of CAD management.

CORONARY INTERVENTIONS

Outcome of Early Intervention Strategy for Acute Coronary Syndrome (Non-St Elevation Myocardial Infarction) in a Tertiary Care Centre in New Delhi

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Background: This study examines the effectiveness of early intervention in the management of Non-ST Elevation Myocardial Infarction (NSTEMI) within a tertiary care setting in New Delhi, assessing whether early percutaneous coronary intervention (PCI) can reduce mortality and major adverse cardiac events (MACE) compared to delayed intervention.

Aims: The study aims to compare early versus late intervention strategies for managing NSTEMI, in relation to mortality and major adverse cardiac events (MACE) over 6 months.

Methods: Consecutive patients who visited cardiology OPD / emergency room with NSTEMI and fulfilled the inclusion criteria. Post procedure outcome (discharge/ death) was recorded and patients were followed up at intervals of 1- and 6-months post procedure.

Results: Patients who underwent early Percutaneous Coronary Intervention (PCI) were on average younger (mean age: 57.5 years) compared to the late PCI group (mean age: 62.9 years), and the difference was statistically significant ($p < 0.001$).

Overall, the primary outcome was better in the early PCI group than the late PCI group, as indicated by a comparatively lesser number of deaths in the early PCI groups (12.5% vs 15.7%). Myocardial rupture/ischemia was slightly more prevalent in the early PCI group (9% vs 7.9% in the late PCI group). Early PCI performed better in terms of lesser number of heart failure (39.3%) compared to the late PCI group (59.5%).

Conclusions: The study concludes that early PCI improves survival and cardiac function in high-risk NSTEMI patients. Early PCI mitigates myocardial damage and reduces the occurrence of adverse cardiac events. Key findings revealed that patients undergoing early PCI had a statistically significant improvement in survival rates and reduced incidence of adverse outcomes, with lower in-hospital and six-month mortality risks based on GRACE scores.

CORONARY INTERVENTIONS

Long-term safety and performance of Evermine50 everolimus-eluting stent system in real-world coronary artery disease patients

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Background: The advent of ultrathin strut platforms marks a significant advancement in PCI. Evermine50 Everolimus-eluting Stent (EES), with the world's thinnest struts (50 µm) and a biodegradable polymer coating, holds promise for enhanced outcomes in coronary artery disease (CAD).

Aims: This study evaluated the long-term safety and performance of Evermine50 EES in real-world patients with *de novo* coronary artery lesions.

Methods: This prospective, post-marketing, single-arm, multi-centre study was conducted across nine Indian centres. 118 patients (80.51% male; mean age: 58.16 ± 10.73 years) with *de novo* lesions were enrolled. Endpoints included major adverse cardiac events (MACE), quantitative coronary angiography (QCA) assessment at 12 months, clinically driven target lesion revascularisation (CD-TLR), ischemia-driven target lesion revascularisation (ID-TLR), ischemia-driven target vessel revascularisation (ID-TVR), procedural and device success rates.

Results: 138 lesions were treated with 100% procedural and device success. TIMI flow grade 3 was restored in 99.28% of patients post-procedure. At 12 months, QCA revealed minimal late lumen loss (LLL) (in-device: 0.17 ± 0.31 mm; in-segment: 0.12 ± 0.31 mm). 51 patients completed the 48-month follow-up, exhibiting a low MACE (1.96%) rate with 1 death (1.96%, which was cardiac). None of the patients were reported with stent thrombosis, myocardial infarction, CD-TLR, ID-TLR and ID-TVR. Four-year follow-up is ongoing for the remaining patients.

Conclusions: The Evermine50 EES demonstrated favourable long-term safety and performance in treating *de novo* coronary artery lesions, reaffirming its role in real-world practice.

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CORONARY INTERVENTIONS

Comparison of outcomes between Conventional and Delayed Pharmacoinvasive Strategy in ST segment elevation myocardial infarction patients following fibrinolysis with Tenecteplase

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Background: In STEMI patients, a pharmacoinvasive (PhI) strategy (PCI within 2-24 hours post-thrombolysis) is an alternative to primary PCI. In resource-limited settings, intervention often occurs beyond 24 hours. This study compares conventional PhI (2-24 hours) versus delayed PhI (24-48 hours) after Tenecteplase fibrinolysis.

Aims: To compare outcomes of STEMI patients undergoing conventional vs. delayed PhI strategies.

Methods: A prospective study in Bangladesh included 190 STEMI patients fibrinolysed with Tenecteplase: 97 in conventional and 93 in delayed PhI groups. Primary outcomes: MACEs (cardiac death, reinfarction, target vessel revascularization, heart failure, stroke). Secondary outcomes: cardiogenic shock, hospital stay, arrhythmia, bleeding. Analysis used SPSS 25.0.

Results: Baseline characteristics were comparable. Heart failure was significantly higher in delayed PhI (9.1% vs. 2.1%, P=0.025). Hospital stay was longer in delayed PhI (3.8 ± 1.2 vs. 2.9 ± 0.9 days, P<0.001). No in-hospital deaths; at 1-month, 1 death in conventional PhI (1.0% vs. 0%, P=0.511). Composite MACE was higher in delayed PhI (9.7% vs. 3.1%, P=0.062), but not significant.

Conclusions: Composite MACE rates were not significantly different, though trends favoured conventional PhI. Delayed PCI up to 48 hours remains a viable option in STEMI patients who have not been intervened timely.

CORONARY INTERVENTIONS

One-year outcomes of a novel sirolimus-eluting stent system - Metafor in real-world patients with symptomatic ischemic heart disease

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Background: Coronary artery disease remains the leading cause of mortality globally. The introduction of newer-generation drug-eluting stents has significantly revolutionized percutaneous coronary interventions by minimizing the rates of restenosis and repeat revascularization.

Aims: This study aimed to assess the safety and efficacy of Metafor sirolimus-eluting stent in a real-world population with symptomatic ischemic heart disease over one year.

Methods: This single-centre retrospective study included symptomatic ischemic heart disease patients treated with Metafor sirolimus-eluting stent from January 2019 to January 2023. The primary endpoint was target lesion failure (TLF) at 12 months, a composite of cardiovascular death, target vessel myocardial infarction (TV-MI), and clinically driven target lesion revascularization (CD-TLR).

Results: Of 1318 patients (mean age: 62.21±10.88 years; 71.4% male), 981 (74.4%) completed one-year follow-up. Common risk factors included hypertension (40.2%), and 99.8% presenting with unstable angina. Of 1609 lesions treated with Metafor, 1428 were *de novo* and 138 were in-stent restenosis. The mean hospital stay was 2.48±1.28 days. At one-year follow-up, cardiovascular deaths were reported in 4.18% and 3.77% experienced TV-MI. None of the patients were reported with stent thrombosis or other clinical events. These findings highlight the safety and efficacy of the Metafor stent over one-year in real-world clinical practice.

Conclusions: Metafor sirolimus-eluting stent demonstrated excellent safety and efficacy in real-world practice, even in highly comorbid patient populations, with favourable outcomes and no reported stent thrombosis during the one-year follow-up period.

CORONARY INTERVENTIONS

Correlation of Clino-etiological Profile with Angiographic Severity of Coronary Artery Disease in Premenopausal Females.

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Aims: To assess the clinical and etiological profile of premenopausal females with coronary artery disease (CAD) and its correlation with angiographic severity.

Methods: This cross-sectional observational study involving 80 premenopausal women with CAD was conducted over 22 months. Patients with irregular menstrual cycles, pregnancy, hormonal treatment, or pre-existing cardiac diseases were excluded. Data on clinical profiles, traditional and novel risk factors, and angiographic findings were collected and analysed.

Results: The mean age was 44.15 years. A sedentary lifestyle was prevalent in 55% of patients, and 76.2% of patients were overweight or obese. Atypical symptoms were reported by 51.2%, and 47.5% sought medical care after 12 hours of symptom onset. Dyslipidaemia (92.5%) and elevated hs-CRP (96.2%) were the most common risk factors among the traditional and novel categories, respectively. Single-vessel disease (SVD) was found in 43.8%, with the left anterior descending artery (LAD) being affected in 80%. Novel risk factors showed stronger correlations with CAD severity than traditional ones ($p < 0.05$).

Conclusions: Premenopausal CAD has a unique clinical profile with atypical symptoms and delayed presentation. Novel risk factors are better predictors of disease severity than traditional ones. It emphasizes the need for earlier detection by tailored screening strategies and the role of novel risk factors in it.

CORONARY INTERVENTIONS

Retrograde CTO technique with a post-procedural intramural hematoma

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Background: Chronic total occlusion (CTO) techniques are indicated in patients with chronic coronary syndrome on optimal medical therapy with residual symptoms of angina.

Aims: To present a case of a patient with stable angina and mid RCA CTO.

Results: We present a case of a 77-year-old male patient with chronic coronary syndrome, hyperlipidaemia, coronary artery disease, after percutaneous coronary intervention (PCI) of the proximal RCA. Due to his residual symptoms of angina despite optimal medical therapy a CT coronary angiography was performed that showed diffuse atherosclerotic disease with a 50-70% stenosis of the RCA. Coronary angiography was performed that resulted in the finding of a proximal RCA stenosis and mid RCA CTO with good left to right collaterals. Proximal RCA stenting was performed, after that multiple attempts of antegrade wire crossing into the distal RCA were unsuccessful. Therefore, retrograde septal artery collateral crossing with consequent pre-dilatation, stenting with three drug-eluting stents (DES) and post-dilatation was performed. Final angiographic result showed signs of septal perforation with intramural haematoma, also seen on echocardiography, without motion abnormalities, VSD or pericardial effusion. Follow-up echocardiography showed complete resolution of the haematoma and improvement in symptomatic relief.

Conclusions: Retrograde CTO approach yields a moderate success rate with a small percentage of periprocedural MACE. Septal vessel perforation followed by haematoma is a rare complication usually contained within the muscle wall, where waiting can be a reasonable treatment. In case of fast growth balloon inflation, delivery of micro-coils or fat embolization should be used.

INDIALIVE2025 CORONARY INTERVENTIONS

One-year Outcomes of Sirolimus Versus Everolimus-Eluting Stents in Acute Coronary Syndrome.

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Background: Previous randomized trials comparing everolimus-eluting stent (EES) and sirolimus-eluting stent (SES) reported differences in long-term outcomes. However, the majority have shown almost similar results.

Aims: This study compared 1-year outcomes for EES with those for SES among the Indian patients of acute coronary syndrome.

Methods: The prospective observational study was performed at two different cardiac centres in north India among acute coronary patients. 12-month follow-up was completed for 305 patients (n=158) SES group and (n=147) EES group. The primary endpoint was a composite of major adverse cardiac events (MACE), including cardiac death, myocardial infarction (MI), target vessel revascularization (TVR), and definite stent thrombosis.

Results: At 12 Months of follow-up, the MACE rate did not differ significantly in 5.0 % and 5.4% of the EES and SES groups, respectively (hazard ratio [HR], 95% confidence interval [CI] (HR: 0.96, 95% CI: 0.74 to 1.21; p = 0.03). Early stent thrombosis was similar with SES (1.26%) than with EES (1.36%; HR: 0.17, 95% CI: 0.06 to 0.37), Late stent thrombosis was also alike with EES (2.7%) than with SES (3.1%; HR: 0.17, 95% CI: 0.09 to 0.35. When censoring the patients at the time of stent thrombosis, we found no significant differences between the 2 stent groups for MACE rates (HR: 0.91, 95% CI: 0.79 to 1.07; p = 0.023), target lesion revascularization (HR: 0.92, 95% CI: 0.69 to 1.21; p = 0.05), and MI (HR: 0.94, 95% CI: 0.79 to 1.24; p = 0.02).

Conclusions: At 12 months follow-up, the MACE rate was alike with EES- than with SES-treated patients, due to a similar risk of definite stent thrombosis and analogous target lesion revascularization. (Randomized Observational Clinical Comparison of the Trackflex (Kamal Medtech) and the Xience Xpedition (Abbott) Coronary Stents in non-selected patients of acute coronary syndrome.

INDIALIVE2025 CORONARY INTERVENTIONS

IVUS guided calcific LM stenting in ACS presenting with acute thrombotic occlusion of left circumflex.

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Background: A 52-year hypertensive, smoker, non-diabetic patient presented to the ER with sudden onset acute chest pain with sweating and vomiting. His hemodynamics were stable with sinus tachycardia and bibasilar rales. EKG showed ST depression in V1-3 and ST segment elevation in I, avL, V7-9. Echo revealed and EF of around 45% with inferolateral wall hypokinesia and severe eccentric MR.

Aims: Patient stabilisation and cardiac catheterisation for probable revascularisation.

Methods: Coronary angiography revealed acute total occlusion of proximal circumflex with calcific stenosis in mid to distal LM around 50% with calcific plaque extending to osteo-proximal and mid LAD amount to 80% occlusion. Right injection was normal. Primary PCI of circumflex was done but patient hemodynamics deteriorated after stenting and post-dilation of stent, resulting in intubation and ventilation. He was recovered by the next day and again posted for complete revascularisation. IVUS run showed an MLA of around 8mm2 with 180-degree eccentric calcification at non-carinal aspect LM to osteal LAD and nodular calcium in proximal LAD. Lesion was prepared with 3.0 wolverine balloon and predilated the proximal LAD with OPN balloon at 45 ATM. DES implanted 3X29mm at mid LAD and 4.5X24 at LM to osteo-proximal LAD and post dilated adequately.

Results: Final IVUS MSA revealed 16mm2 at LM with optimal stent apposition throughout, with TIMI 3 flow all through the left system. Patent was discharged the next day.

Conclusions: Prioritising revascularisation techniques with proper instrumentation for complete revascularisation is key to successful coronary management.

INTERVENTIONS FOR STRUCTURAL HEART DISEASE AND HEART FAILURE

MASTERS – Moderate Aortic Stenosis Evaluation using Strain analysis- A First Proof-Of-Concept study calling out for re-defining "Moderate AS " and its Interventional implications

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Background: Moderate Aortic Stenosis (AS) was long considered a condition to be "waited upon" before it worsened to severe aortic stenosis and mandated surgery or intervention. Recent data showing myocardial and pulmonary involvement in late aortic stenosis however has shown it is not an innocuous disease and may actually call for earlier intervention.

Aims: To assess the (1) natural history of and (2) hemodynamics effects of dobutamine stress echocardiography with GLS testing in apparently asymptomatic patients with moderate aortic stenosis to understand the behaviour study the myocardium in AS "under stress to pick subclinical damage even in moderate AS.

Methods: Prospective cohort studying 67 with moderate AS recruited prospectively between two institutes from Jan 1, 2020, to Dec 31, 2024. Patients underwent baseline CT coronary angiogram for determining coronary anatomy status and level of Aov Calcification by Agatston units, and those with CAD were excluded from the study. Outcome measures were five echocardiographic measures of LV function studied at baseline, and at peak stress using dobutamine dose of 30 mcg/kg/min where achieved): Lateral mitral e`, E/Vp, Ar-A, Global longitudinal strain (LV) and E/e` (MV).

Results: Mean age BSA was 1.65 sq mt. in the study population, mean AVA was 1.4 mm sq and mean Aortic gradient was 35mmHg. Mean CT score for calcification of AoV was 1378. Over the study period, Mean AVA fell from 1.4 to 1.2 cm2 in 42 patients, 1.2 to 1.0cm^2 in 16 and below 1.0cm^2 in only 9 patients over the period of study. At baseline, mean GLS (-16.7%), Mean Ar-A (24 msec), mean e' -mitral (6.8 cm/sec) and E/e`(14.4) and mean S'(9.7 cm/sec)were values recorded in Moderate AS group. On peak DSE, gradient worsened to > 40 mmHg in only 21 patients but mean GLS worsened to -14.5 % (p=0.011) in 52 of the 67 patients of whom 41 patients had initial gradients > 32 mm by Youden J statistic. Mean e' worsened to < 5.5 cm/sec in 46 patients (p< 0.013) and < 5cm/sec in 16(p < 0.001) and mean S' worsened to 7.6 cm/sec(p=0.023). Similarly, Ar-A worsened to mean of 39 msec (p=0.029) and E/e' to mean of 18.6 (p=0.031) and were all significantly worsened at peak stress especially in patients with starting mean gradient > 30 mmHg v/s those with starting mean gradients< 30 mmHg (mean p< 0.025). No arrhythmias occurred during the test in any patient and no untoward events seen except transient chest pain in 3 patients and transient VPCs in 4 at peak DSE.

Conclusions: Though the attrition in mean AVA and LVEF was not significant over three years, hemodynamic stress at the myocardial level as shown by Dobutamine stress worsened both systolic and diastolic function in a population of starting mean Aov stenotic gradient > 30 mm Hg.

INTERVENTIONS FOR STRUCTURAL HEART DISEASE AND HEART FAILURE

Transcatheter Aortic Valve Implantation Results and Predictors of Adverse Outcomes in an Indian Setup

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Background: Transcatheter aortic valve implantation (TAVI) is emerging as the standard for treating severe aortic stenosis. However, Indian patients have unique anatomical features—like smaller body surface area, smaller annulus size, lower coronary ostia, and narrower iliac and femoral arteries—that can increase procedural risks and impact long-term outcomes.

Aims: This study examines TAVI outcomes in Indian patients, identifying factors associated with complications and adverse events.

Methods: All patients who underwent TAVI at our centre, from January 2016 until April 2023 were included in the study. Major adverse cardiovascular events (MACE) at one year were defined as cardiac death, stroke, and/or major vascular complications.

Results: Thirty-nine TAVI procedures were performed (10 balloon-expandable, 29 self-expandable). The mean Society of Thoracic Surgeons (STS) score and Euro Score II were 3.6±1.9% and 5.2±3.6% respectively. Six (15.4%) patients had contrast-induced nephropathy, but none required haemodialysis. Post-procedure, 10 patients (25.6%) had mild aortic regurgitation, four (10.2%) had moderate AR, and none had severe AR. Mean gradient decreased from 49 to 11 mmHg. Three patients (7.7%) required permanent pacemakers, with the rate significantly higher among those with self-expandable valves (10.3% vs. 0%, p = 0.017) compared to balloon-expandable valves. There were no significant differences in other adverse outcomes between the two valve types. MACE rate at one year was 13% (3 cardiovascular deaths, 0 stroke, 2 vascular complication), and all-cause mortality was 10.2% (2 in-hospital deaths, 1 sudden cardiac arrest after 15 days, 1 noncardiac death after 3 months). Cox regression identified renal dysfunction, congestive heart failure, pulmonary hypertension (PASP >60 mmHg), and post-procedure PR prolongation as mortality predictors.

Conclusions: We observed a low rate of adverse events after TAVI, pre-existing co-morbidities and severe pulmonary hypertension were significant predictors of mortality. Larger multicentre studies are needed to assess TAVI's impact in the Indian context.

INTERVENTIONS FOR STRUCTURAL HEART DISEASE AND HEART FAILURE

Thirty-day Incidence of stroke post TAVI- Glenfield Registry

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Background: Indications and acceptance of Trans-catheter aortic valve implantation (TAVI) is increasing worldwide. Stroke remains a major persistent complication following TAVI not only increasing mortality and health care costs but also having devastating implications on the quality of life of patients. Reported incidence ranges between 2 -7%. Benefit of cerebral protection devices and optimal antithrombotic regime remain unclear. Understanding contemporary risks and timings of stroke are important in order to tailor peri procedural stroke risk reduction strategies

Aims: To report 30-day incidence and timing of stroke and transient ischaemic attack (TIA) post TAVI in our real-world all-comers' registry

Methods: Consecutive patients undergoing TAVI (n=980) between January 2020 and February 2024 were included in this retrospective study.

A stroke diagnosis was made based on the Valve Academic Research Consortium (VARC-2), defined as a focal or global neurological deficit >24 hours or <24 hours if haemorrhage or infarct was found on neuroimaging. TIA was defined as the duration of a focal or global neurological deficit <24 hours.

Those with documented evidence of stroke or TIA were sub-divided into acute (<24 hours post procedure) and subacute (1-30 days post procedure).

Conclusions: The thirty-day incidence of stroke and TIA following TAVI in our all-comers registry between 2020 and 2024 was 3.2% with the majority occurring within 48 hours. In order to minimize stroke risk, effective strategies are needed including targeted anti-thrombotic therapies and a clearer role defined for cerebral protection devices.

INTERVENTIONS FOR STRUCTURAL HEART DISEASE AND HEART FAILURE

Echocardiographic Strain Imaging to Assess Immediate and Short-Term Effects of Successful Percutaneous Balloon Mitral Valvotomy on Left Atrial and Right Ventricular Mechanics

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Background: Strain imaging for Left atrium and Right Ventricle has been used as a novel assessment tool to evaluate LA and RV functional status. However, their implication is not fully established regarding the effect of percutaneous balloon mitral valvotomy (BMV) in patients with mitral stenosis (MS).

Aims: 1. To assess the Peak LA Longitudinal strain and Global RV Longitudinal strain in both Pre BMV and Post BMV. 2.To assess the effectiveness of Peak LA Longitudinal strain and Global RV Longitudinal strains a marker of Successful BMV.

Methods: This observational study was conducted in a tertiary health care centre of North India from the Year 2018 to 2020. 66 consecutive patients with suitable mitral valve anatomy for BMV procedure were taken, out of which 38 patients could be followed up till 3 months. Global LA strain and RV Strain parameters were being calculated at three temporal sequences.

Results: The mean age of the study population was 31.63 ± 10.15 years. Both Peak Left atrial longitudinal strain (PALS) and Global RV Longitudinal strain (GLSRV)were impaired in patients with severe MS and both significantly improved both at 24 hrs and 3 months following BMV. There was a significant positive correlation of LA strain and RV strain both at 24 hours and 3 months of follow up. (Pearson r= 0.9142).

Conclusions: Peak LA strain (PALS) and Global RV strain (GLSRV) can be considered as an indicator of respectively left atrial and right ventricular function, and its improvement may be taken as a good indicator of successful BMV.

INTERVENTIONS FOR STRUCTURAL HEART DISEASE AND HEART FAILURE

In-hospital outcome of TAVI: Initial Experience of Himalayas Aortic Stenosis

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Background: Since its first in man in 2002, TAVI has become a well-established modality for the treatment of severe AS.

Aims: This study aims to share our initial experience of TAVI at the National Heart Centre.

Methods: This was a retrospective, observational, study consisting of all TAVI patients at our centre between February 2022 and February 2024.

Results: We performed TAVI in 19 patients. Patients' age ranged from 59 years to 90 years with a mean of 75.2 years. Ten 10 (52%) were females. Four (21%) cases were treated for bicuspid Aortic valve. Severe calcification of the Aortic valve was present in seven (36.8%) cases, Moderate in three (15.7%) cases. The Mean Aortic area was 0.8cm2. The aortic valve mean pressure gradient was 52.2mmHg before TAVI. Post TAVI mean Aortic valve pressure gradient was 8.1mmHg. Two (10.5%) patients had PPI before TAVI. Three (15.7%) patients had undergone PCI before TAVI. Two (10.5%) cases were low flow low gradient Severe AS cases. The Mean hospital stay was 4.5 days. Two (10.5%) patients needed permanent pacemakers after the TAVI. Balloon-expandable valve was used in 12 (63.1%) cases and the self-expandable valve was used in 7 (36.8%) cases. Among the TAVI valves, Eleven (57.8%) were Myval, Five (26.3%) were Evolut Pro, One (5.2%) was Portico, one (5.2%) was Navitor, and one (5.2%) was Sapien 3 valve. The procedure success rate was 100%. All patients were discharged after TAVI.

Conclusions: The results of this study demonstrate that TAVI is an attractive procedure in patients with aortic stenosis.

INTERVENTIONS FOR STRUCTURAL HEART DISEASE AND HEART FAILURE

Safety and performance of the Hydra self-expanding THV: 6 months outcomes from the GENESIS-II study

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Background: The Hydra THV is the first device with an active release mechanism for deploying the supra-annular valve.

Aims: The aim of the GENESIS-II study is to assess the safety and performance of the Hydra THV at 6 months follow-up after treating severe aortic stenosis in patients at high surgical risk.

Methods: This is a prospective, multicentre, non-randomised, investigational study conducted between November 2021 and November 2023. The study enrolled a total of 40 patients exhibiting high surgical risk and symptomatic severe aortic stenosis from 19 sites across India. The primary safety endpoint of the study was cardiovascular mortality at 30 days, while the primary performance endpoint was device success as defined by VARC-2.

Results: The device success was 95%. At 6 months follow-up, there was one (2.5%) incidence of cardiovascular death. The incidences of new permanent pacemaker implantation remained unchanged from 30 days to 6 months follow-up (7.9%). There was a progressive enhancement in effective orifice area, transitioning from 0.6±0.2 cm² at baseline to 1.9±0.4 cm² at 6 months ($p<0.001$). Similarly, the mean aortic valve gradient demonstrated significant improvement from 53.1±12.5 mm Hg at baseline to 8.7±3.3 mmHg at 6 months ($p<0.001$) post-intervention. Improvement in NYHA score by at least 1 and 2 functional class from baseline to 6 months occurred in 94.6% and 43.2% of patients, respectively. No moderate or severe paravalvular leak was observed at 6 months follow-up.

Conclusions: The results of 6 months follow-up after implantation of the Hydra THV with active release mechanism in the GENESIS-II study demonstrate high device success rate with favourable safety and performance of the device.

INTERVENTIONS FOR STRUCTURAL HEART DISEASE AND HEART FAILURE

Transcatheter Closure of Perimembranous Ventricular Septal Defect Using Duct Occluders: Intermediate-term Outcomes

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Background: Transcatheter closure of perimembranous ventricular septal defects (Pm VSD) has emerged as a minimally invasive alternative to surgery.

Aims: To evaluate the intermediate-term outcomes, including changes in anthropometric data, in children following transcatheter closure of Pm VSD using duct occluders.

Methods: This prospective observational study included children with moderate-sized Pm VSD who underwent device closure at a single tertiary care centre from January 2014 to December 2019. The primary study endpoint was successful device closure with no residual shunt on TTE 24 hours after the procedure. Follow-ups were conducted at 1, 3, 6 months, 1 year, and annually thereafter, with clinical evaluations, ECGs, 2-D echo, and anthropometric measurements.

Results: Of 81 evaluated patients, 77 (Male: Female = 34:43) underwent successful device closure. Technical success was 100%, with 2 deaths and 2 cases of device embolization. Children <7 years showed significant weight gain improvement (OR = 63.00; 95% CI: 4.89–810.35; p = 0.002), as did children ≥7 years (OR = 14.86; 95% CI: 1.53–144.22; p = 0.02).

Conclusions: Transcatheter device closure of moderate-sized Pm VSD using duct occluders is safe and effective, with significant growth improvements in intermediate-term follow-up. Careful monitoring is essential to prevent thromboembolic and infective complications.

INTERVENTIONS FOR STRUCTURAL HEART DISEASE AND HEART FAILURE

Outcomes of post myocardial infarction ventricular septal rupture: Experience from an Indian tertiary cardiac centre

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Background: Post myocardial infarction ventricular septal rupture (MI-VSR) is a devastating complication after acute myocardial infarction (AMI); lacks standard treatment recommendations and carries poor outcomes.

Aims: We evaluated the outcomes of post MI-VSR and determined the predictors of survival.

Methods: All cases of VSR hospitalized in a tertiary referral cardiac care centre over 11 years were retrospectively evaluated based on the modality of treatment, either conservative, surgical or transcatheter closure.

Results: Among a total of 131 cases of VSR with a median age of 65 years, hospitalized from January 2013 to December 2023, 47(35.9%) had surgical closure, 25(19.1%) had transcatheter closure and the rest were managed conservatively. 11(8.4%) cases alone underwent primary percutaneous coronary intervention (PCI). Apex was the commonest (79.3%) site. Older patients and patients in higher stages of shock at the time of VSR diagnosis were often managed conservatively. Two-thirds of surgical patients were in SHOCK stage A or B; three-fourths of transcatheter group were in stage C or D. Overall mortality was 71% with 100% in conservatively managed cases, 68% in transcatheter closure and 36.2% in surgical group. Younger age, referral to the centre for VSR closure, longer duration from AMI to VSR, lower shock stage, lower creatinine, culprit vessel revascularization, VSR closure, and delayed closure were predictors of survival.

Conclusions: Post MI VSR outcomes were poor, based on the hemodynamic status. Closure of VSR is mandatory for survival. Surgical closure had lower mortality than transcatheter closure possibly contributed by a selection bias.

INTERVENTIONS FOR STRUCTURAL HEART DISEASE AND HEART FAILURE

Real-world outcomes of the Myval transcatheter heart valve series for pulmonary valve replacement: One-year clinical outcomes

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Background: Transcatheter pulmonary valve replacement (TPVR) is a minimally invasive approach to treat right ventricle-to-pulmonary artery (RV-PA) conduits. However, there is limited real-world evidence supporting its effectiveness and safety.

Aims: This study evaluates the real-world outcomes of the Myval transcatheter heart valve (THV) series in pulmonary valve replacement, with a focus on one-year clinical follow-up.

Methods: This retrospective, multicentre registry analysed the safety and performance of the Myval THV series in pulmonary valve replacement. Data were collected from June 30, 2017, to June 30, 2023. Patients were followed at baseline, discharge, 30 days, 6 months, and 1 year. Primary endpoints included all-cause mortality and device-related reintervention. Secondary endpoints assessed stroke, conduction disturbances, prosthetic valve regurgitation, stent fracture, right ventricular outflow tract (RVOT) surgical replacement, coronary compression, and pulmonary embolism.

Results: Thirty-two patients (mean age: 27.31±15.80 years; 53.13% male) were included. Among them, 6.25% had permanent pacemakers, and 9.38% had coronary artery bypass surgery at baseline. Eleven patients completed a one-year follow-up. There were no cases of all-cause mortality, stroke, or device-related reintervention/reoperation. Prosthetic valve regurgitation (moderate) was observed in 2 (18.18%) patients post-procedurally. Moreover, there were no valve-specific complications reported.

Conclusions: TPVR with Myval THV series demonstrated significant clinical benefits over one year in patients with pulmonary valve dysfunction. These findings suggest that Myval is a safe and effective alternative for TPVR, requiring further validation through larger, long-term follow-up studies.

INTERVENTIONS FOR STRUCTURAL HEART DISEASE AND HEART FAILURE

One-year clinical outcomes of aortic valve-in-valve intervention with Myval transcatheter heart valve series

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Background: Myval Transcatheter Heart Valve (THV) series offers a promising alternative for patients with severe aortic stenosis and failing surgical bioprosthetic valves. Valve-in-valve (ViV) procedures provide an effective option for patients unsuitable for repeat open-heart surgery.

Aims: This subset analysis of the Myval THV Registry aimed to evaluate one-year outcomes of the Myval THV series in aortic ViV interventions in real-world settings.

Methods: This retrospective, multicentre, observational registry included 46 patients from 19 centres who underwent aortic ViV procedures between June 2017 and June 2023. The study included male and female patients with symptomatic failing bioprosthetic aortic valves. The primary endpoint was a composite of all-cause mortality and device-related reintervention at 1-year.

Results: The mean age was 70.91±6.38 years, with 73.91% being male and a mean Society of Thoracic Surgeons score of 2.84±1.81%. Procedural success was 94.44%, with right femoral access in 42.42% and 23mm THV was most commonly (34.78%) implanted. The New York Heart Association Class-I patients increased from 4.55% to 57.14%, with no patients in Class-IV at one year. One-year follow-up data was available for 20 subjects and data collection is ongoing for remaining subjects. Clinical outcomes included low rates of mortality, stroke, and acute kidney injury (5% each) and no prosthetic valve regurgitation, reinterventions, endocarditis, or bleeding. New pacemaker implantation occurred in 10% of patients over one-year.

Conclusions: The Myval THV series demonstrated excellent safety, high procedural success, and significant symptomatic improvement in aortic ViV procedures, validating its effectiveness for failed surgical aortic valves in real-world settings.

INTERVENTIONS FOR STRUCTURAL HEART DISEASE AND HEART FAILURE

One-year outcomes of transcatheter pulmonary valve replacement with Myval transcatheter heart valve series for dysfunctional right ventricular outflow tract

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Background: Transcatheter pulmonary valve replacement (TPVR) is a minimally invasive approach to restore pulmonary valve function in patients with pre-stented conduits. Dysfunctional conduits, characterized by stenosis or regurgitation, lead to right ventricular dilatation, arrhythmias, and premature mortality, necessitating repeat surgical intervention.

Aims: This study aimed to assess the safety and performance of the Myval transcatheter heart valve (THV) series in patients undergoing TPVR for dysfunctional right ventricular outflow tract (RVOT) conduits in real-world settings.

Methods: This retrospective multicentre registry analysed nine patients who underwent TPVR for pre-stented RVOT dysfunction with Myval THV series. Baseline demographics, procedural details, and follow-up data were evaluated. Primary endpoints included 30-day all-cause mortality and device-related reintervention, with one-year follow-up as per Valve Academic Research Consortium-3 criteria. Specific pulmonary valve endpoints, such as stent fracture and pulmonary embolism, were also assessed.

Results: The patient cohort (mean age 32.44±16.76 years, 78% male) primarily had severe pulmonary regurgitation (71%). Two patients (22.22%) each were implanted with 23 mm, 26 mm and 27.5 mm valves. Device success was observed in 100% of patients. There was no incidence of all-cause mortality or device-related reintervention up to one-year follow-up. No patients experienced life-threatening bleeding, prosthetic valve regurgitation, myocardial infarction, endocarditis, new permanent pacemaker implantation, or bioprosthetic valve deterioration.

Conclusions: TPVR using the Myval THV series demonstrated promising results for treating RVOT dysfunction in real-world patients. Prospective studies with larger sample size are required to warrant these findings.

INTERVENTIONS FOR STRUCTURAL HEART DISEASE AND HEART FAILURE

Outcomes of next-generation Myval transcatheter heart valve series in mitral valve-in-ring implantation

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Background: Mitral valve disease, especially in patients with annuloplasty rings, presents treatment challenges. Transcatheter mitral valve-in-ring (ViR) implantation is an emerging, minimally invasive alternative to surgery. The Myval Transcatheter Heart Valve (THV) series offers precise deployment and excellent hemodynamic, but clinical data on its use in mitral valve-in-ring procedures are limited.

Aims: The Myval THV Registry aimed to assess the safety and effectiveness of the Myval THV series in patients undergoing mitral ViR implantation.

Methods: Data was collected from 2 centres in Kazakhstan, and India. A total of 10 patients underwent mitral ViR implantation with Myval THV series. Baseline demographics, procedural details, and clinical outcomes were analysed. Primary endpoint was all-cause mortality and device-related reoperation/intervention at 6 months follow-up. Follow-ups monitored mortality, stroke, valve function, and other complications.

Results: Patients had a mean age of 63.60±7.40 years, with common comorbidities including hypertension, chronic renal disease, and coronary artery disease. 6 months and 1-year follow-up data was available for 7 and 6 patients, respectively. No incidence of mortality, stroke, myocardial infarction, endocarditis, or reoperation during 1-year follow-up period. No haemorrhage, vascular issues, or reoperations confirmed valve durability. Data collection is ongoing and updated results will be presented during the conference.

Conclusions: The Myval THV series demonstrated high procedural success and excellent safety, with no major complications. With promising results, the Myval transcatheter heart valve series offers an innovative and minimally invasive option for treating mitral valve dysfunction.

INTERVENTIONS FOR STRUCTURAL HEART DISEASE AND HEART FAILURE

One-year clinical outcomes of Myval transcatheter heart valve in Mitral valve-in-valve procedures

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Background: The use of transcatheter heart valves (THV) is a promising alternative to surgical interventions for replacing degenerative mitral bioprostheses and unsuccessful mitral valve repair. The mitral valve-in-valve (ViV) and valve-in-ring procedures are currently limited but steadily expanding globally. Since limited data is available, studies are required for Myval THV series to evaluate its safety, durability, and effectiveness in this context.

Aims: The current sub-set analysis of the Myval THV registry sought to evaluate the 1-year outcomes of Myval THV series in mitral valve-in-valve procedures.

Method: This retrospective registry collected data of 72 patients from multiple centres who underwent mitral valve-in-valve procedures with Myval.

Results: The mean patient age was 62.56±13.0 years, with 69.44% being female. Diabetes and hypertension accounted for 40.28%. Other notable medical histories included CAD (27.78%), prior CABG (19.44%), and chronic obstructive pulmonary disease (11.11%). 26 mm Myval was implanted in most of the patients (36.11%) and intermediate sizes were implanted in 30.5%. One-year follow-up data was collected for 43 subjects and data collection is ongoing for the remaining subjects. All-cause mortality and device-related reintervention/reoperation were reported in 13.95% and 2.33% at 1-year. No incidence of bleeding, myocardial infarction, bioprosthetic valve dysfunction/deterioration and endocarditis. Low rates of prosthetic valve regurgitation (6.98%) and new pacemaker implantation (2.33%) were recorded.

Conclusions: The Myval THV series exhibited favourable safety and efficacy for mitral ViV procedures, with stable functional outcomes and minimal structural complications over 1-year. It offers a reliable treatment option for high-risk patients needing mitral valve replacement.

INTERVENTIONS FOR STRUCTURAL HEART DISEASE AND HEART FAILURE

Comparison of TAVI devices for severe aortic stenosis – a systematic review of randomised trials

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Background: Despite numerous clinical trials demonstrating TAVR's effectiveness and safety, comprehensive comparative evidence across different TAVR devices is lacking.

Aims: This systematic review evaluated the effectiveness and safety of various TAVR devices in the management of severe aortic stenosis (AS) by synthesizing evidence from randomized controlled trials (RCTs).

Methods: This systematic review included parallel-arm, individual or cluster RCTs evaluating the effectiveness and safety of TAVR devices using the transfemoral technique in patients with severe AS, comparing different TAVR interventions and reporting clinical endpoints within 30 days post-procedure. A comprehensive literature search was conducted across six online platforms, with the last search updated in November 2024.

Results: A total of seven studies involving 4653 participants were included. The SAPIEN 3 valve demonstrated consistently lower 30-day mortality rates, ranging from 0.8% to 2.3%, and moderate-severe PVR ranging from 1.4%-1.6%, indicating better early outcomes compared to other devices. The Myval THV series also showed favourable results, with a 2% mortality rate and a 3% stroke rate. Bleeding complications were lower with the SAPIEN 3 and Myval, with major bleeding rates of 1% to 2.5% and 3%, respectively. New permanent pacemaker implantation rates were lower for the Myval at 15.0%, significantly better than higher rates seen with the CoreValve Evolut (15.8%-37.6%).

Conclusions: The SAPIEN 3 and Myval THV series consistently demonstrated superior efficacy and safety profiles, making them preferable options for TAVR. These findings underscore the importance of careful device selection and individualized treatment planning.

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Clinical profile, conduction disturbances and incidence of permanent pacemaker implantation in patients undergoing transcatheter aortic valve replacement: a single centre study

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Background: The treatment of aortic stenosis has been transformed by Transcatheter aortic valves implantation (TAVI) reducing the need for surgical aortic valve replacement. Permanent pacemaker implantation due to conduction disorders is a significant complication of this procedure. However, the existing data on post-TAVI requirements of pacemaker use are limited and inconsistent, primarily from small population studies.

Aims: To assess the incidence of newly developed conduction disorders following TAVI and to identify the predictors and frequency of permanent pacemaker implantation (PPI) requirements post TAVI.

Methods: This prospective observational study was conducted in the Cardiology Department at NH, Bangalore. It aimed to analyse short-term complications during inpatient post-procedural periods and monitor for conduction disturbances or the need for pacemaker implantation within a 30-day follow-up.

Results: The study encompassed 151 consecutive patients who underwent transcatheter aortic valve implantation (TAVI). The cohort had an average age of 69.3 years, with females representing 32.4% of the population. About 16 patients (10.6%) required permanent pacemaker implantation (PPI) post TAVI. The PPI group had significantly higher STS (7.6 vs. 6.6, p = 0.034) and EuroSCORE II (5.3 vs. 4.4, p = 0.006) scores and a greater prevalence of COPD/asthma (p = 0.033). Pre-procedure, atrial fibrillation/flutter was notably more prevalent in the PPI group, occurring in 12.5% compared to just 3.0%. Additionally, PPI group exhibited a higher prevalence of QRS morphology abnormalities, characterized by a significantly longer QRS duration of 128.2 ms versus 102.4 ms (p = 0.001). There was no significant link between valve type and PPI (p = 0.104), although more PPI patients received self-expanding valves. A significant association was found between post-dilatation and PPI (p = 0.007), with more PPI patients undergoing this procedure. Procedure time was longer in the PPI group (174.4 min vs. 126.4 min; p < 0.001), and their average hospital stay was also longer (5.3 days vs. 3.6 days; p = 0.004). No significant differences were seen in major bleeding, vascular complications, dissection events, aortic regurgitation, or paravalvular leaks between groups (p > 0.05 for all).

Conclusions: Our findings indicate that patients with specific preoperative characteristics, such as higher STS and EuroSCORE II scores, have a greater likelihood of developing Complete Heart Block (CHB) and subsequently requiring a pacemaker after the procedure. Additionally, patients with preexisting conduction abnormalities, including atrial fibrillation, right bundle branch block, and prolonged QRS intervals, are significantly more likely to need a PPI following TAVI.

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Comparison of 30-day and 1-year outcomes following Myval and Portico/Navitor transcatheter aortic valve implantation

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Background: The Myval (Meril Life Sciences) is a latest-generation balloon-expandable transcatheter aortic valve. Direct comparisons between Myval and the intra-annular Portico/Navitor (Abbott) self-expanding valve are lacking.

Aims: We compared the outcomes following Myval and Portico/Navitor transcatheter aortic valve implantation.

Methods: This was a single-centre all-comer registry study of patients following Myval or Portico/Navitor transcatheter aortic valve implantation between October 2019 and October 2023. Patients were compared with respect to 30-day and 1-year efficacy and safety outcomes overall and after propensity score matching.

Results: 97 patients received a Myval and 47 patients a Portico/Navitor transcatheter aortic valve. Overall, there were no significant differences in 30-day mortality (Myval 2.1% vs Portico/Navitor 2.2%, p=1.000) and 1-year mortality (Myval 5.2% vs Portico/Navitor 7.0%, p=0.703), the rates of ≥ moderate paravalvular leak (moderate: Myval 1.1% vs Portico/Navitor 6.7%, no cases of severe paravalvular leak, p=0.175) or permanent pacemaker implantation (Myval 10.5% vs Portico/Navitor 11.6%, p=1.000). Overall, the mean trans-prosthetic gradient was higher following Myval implantation (Myval 11.1±5.2 mmHg vs Portico/Navitor 8.5±4.5 mmHg, p=0.010), but there was no significant difference between the matched patient cohorts (Myval 8.9±2.5 mmHg vs Portico/Navitor 8.1±4.7 mmHg, p=0.395). There were no significant differences in the incidence of access site, neurological or cardiac complications, and major or life-threatening bleeding.

Conclusion: The Myval and Portico/Navitor transcatheter aortic valves are associated with comparable short- and midterm outcomes.

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Self-expanding intra-annular transcatheter aortic valve hemodynamics in patients with small aortic annuli

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Background: Self-expanding transcatheter aortic valves have been associated with lower trans-prosthetic gradients and a lower risk for prosthesis-patient mismatch in patients with small aortic annuli.

Aims: We analysed the hemodynamics outcomes of self-expanding transcatheter aortic valves with an intra-annular leaflet position in patients with small aortic annuli.

Methods: This was a single-centre all-comer registry study of patients with an aortic annular area <430 mm2, who underwent transcatheter aortic valve implantation with a self-expanding transcatheter aortic valve with an intra-annular leaflet position. The study endpoints were the post-procedural mean trans-prosthetic gradient, the rates of prosthesis-patient mismatch and paravalvular regurgitation.

Results: In total, 37 patients with a small aortic annulus were included in the study, including 8 patients with a degenerated surgical aortic bioprosthesis. The mean age was 81.6±4.3 years, 86.5% were female. The median annular area was 379 mm2 (interquartile range 355-412 mm^2) and the median annular perimeter was 70.8 mm (interquartile range 67.3-74.1 mm). The post-procedural mean trans-prosthetic gradient was 9.0±3.5 mmHg, with no patients having a mean gradient >20 mmHg. Moderate prosthesis-patient mismatch was noted in 21%, and severe in 3% of patients. There were no patients with moderate or severe paravalvular regurgitation. However, mild paravalvular regurgitation was present in 44% of patients, and moderate valvular regurgitation in 1 patient (3%).

Conclusions: Self-expanding transcatheter aortic valves with an intra-annular leaflet position are associated with favourable hemodynamic outcomes in patients with small aortic annuli.

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Valve-in-valve transcatheter aortic valve implantation for failed Trifecta surgical bioprosthetic valves

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Background: Valve-in-valve transcatheter aortic valve implantation is associated with an increased risk for elevated gradients and coronary obstruction. The Trifecta is a non-fracturable stented surgical bioprosthetic valve with externally mounted leaflets.

Aims: To assess the short-term outcomes following valve-in-valve transcatheter aortic valve implantation for failed Trifecta valves.

Methods: This was a single-centre all-comer registry study of patients following valve-in-valve transcatheter aortic valve implantation for failed Trifecta valves from December 2019 to October 2024. The main outcomes were the post-procedural mean trans-prosthetic gradient, 30-day survival, rates of paravalvular leak and coronary obstruction.

Results: Overall, 19 patients were included. The pre-procedural mean aortic gradient was 38.1±17.3 mmHg. A supra-annular self-expanding transcatheter aortic valve was implanted in 14 patients, a balloon-expandable valve in 3 patients, and an intra-annular self-expanding valve in 2 patients. The post-procedural mean trans-prosthetic gradient was 11.4±4.0 mmHg. Supra-annular transcatheter aortic valves were associated with lower mean trans-prosthetic gradients than intra-annular valves (10.2±3.4 mmHg vs. 15.5±3.7 mmHg, p=0.015). Mild paravalvular leak was present in 7 patients (37%). There were no cases of ≥moderate paravalvular leak, acute coronary obstruction, or new permanent pacemaker implantation. 30-day survival was 100%.

Conclusions: Supra-annular self-expanding transcatheter aortic valves are associated with good hemodynamic performance in patients undergoing valve-in-valve transcatheter aortic valve implantation for failed Trifecta bioprosthetic valves.

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Valve-in-valve-in-valve of failed Perceval and transcatheter aortic valve bioprosthesis and ascending aorta pseudoaneurysm treatment.

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Background: Transcatheter aortic valve replacement (TAVR) has become a gold standard in treating severe aortic stenosis in patients not eligible for surgery. Additionally, data is emerging on the feasibility of performing TAVR in younger patients at high risk for surgical aortic valve replacement.

Aims: To present a case of a younger, complex patient with a congenital aortic stenosis, treated surgically multiple times with consequent complications and later on treated with TAVR.

Results: We present a case of a 59-year-old male patient with congenital aortic stenosis, who had his first SAVR performed in 1992. A re-SAVR and aortic graft placement was performed in 2014 due to ascending aortic aneurysm. Re-SAVR was required in 2015 due to endocarditis. Due to severe aortic regurgitation a re-SAVR with a bioprosthetic Sorin Perceval was performed in 2017, that quickly degenerated and required emergent TAVR with ECMO support in 2019 with a balloon expandable valve. At his 2-year follow-up a CT angiography showed a pseudoaneurysm of the ascending aorta that was treated with a TEVAR, that resulted in complete closure after 3 months. 4 years after the TAVR follow-up echocardiography showed signs of valve degeneration with severe stenosis and a reduced left ventricular ejection fraction. After consideration a valve-in-valve-in-valve TAVR with a self-expandable bioprosthetic valve was successfully performed. Follow-up echocardiography and CT angiography showed good positioning and function of the newly implanted valve.

Conclusions: TAVR can be an option for treatment of severe aortic stenosis in younger, extremely high-risk patients after multiple surgical procedures.

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Real-World Comparison of Transcatheter vs. Surgical Aortic Valve Replacement Using Contemporary Devices

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Aims: This study primarily aimed to compare all-cause mortality between transcatheter aortic valve replacement (TAVR) and surgical aortic valve replacement (SAVR) using current-generation devices. Secondary endpoints included ischemic stroke and intracranial haemorrhage (ICH). Safety endpoints included rates of permanent pacemaker implantation (PPI) and repeat aortic valve replacement (AVR).

Methods: This retrospective cohort study analysed 25 patients who underwent either TAVR or SAVR between January 2020 and January 2024.

To ensure comparability between the TAVR and SAVR groups, baseline characteristics were assessed. The baseline characteristics of both groups were compared using descriptive statistics.

Results: At 1 year, TAVR showed significantly lower all-cause mortality compared to SAVR (8.8% vs. 16.1%, HR: 0.55, 95% CI: 0.42–0.70, $p < 0.001$). However, the risk of ischemic stroke was not significantly different between the two groups (2.4% for TAVR vs. 3.3% for SAVR; HR: 0.72, 95% CI: 0.43–1.20, $p = 0.743$), nor was the incidence of intracranial haemorrhage (2.2% vs. 2.0%, HR: 1.10, 95% CI: 0.61–2.00, $p = 0.743$).

PPI was more common in the TAVR group (9.4% vs. 2.5%, HR: 3.95, 95% CI: 2.57–6.09, $p < 0.001$). The incidence of repeat AVR was rare and similar between the two groups (0.5% for TAVR vs. 0.3% for SAVR; HR: 1.64, 95% CI: 0.39–6.85, $p = 0.499$). These results were consistent with the 30-day follow-up. TAVR also demonstrated lower 30-day all-cause mortality compared to SAVR (3.2% vs. 7.8%, HR: 0.40, 95% CI: 0.27–0.60, $p < 0.001$). Similarly, the incidence of PPI was higher in the TAVR group (8.2% vs. 1.3%, HR: 6.28, 95% CI: 3.57–11.0, $p < 0.001$). Subgroup analysis showed no significant differences in all-cause mortality based on underlying comorbidities or demographic factors, suggesting that the treatment benefit with TAVR was consistent across different patient profiles.

Conclusions: In this real-world retrospective analysis, TAVR with contemporary devices demonstrated lower all-cause mortality at mid-term follow-up compared to SAVR in patients with severe aortic stenosis. Despite higher rates of PPI in the TAVR group, the procedure showed similar or better outcomes in terms of mortality and complication rates. While TAVR appears to offer a favourable risk profile in this cohort, further prospective studies are needed to confirm these findings and better understand the long-term impact of TAVR with current-generation devices in different ethnic populations.