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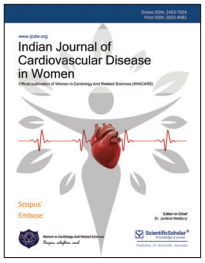

WCC Conference Abstracts

ABSTRACT 1

The Effect of Median Nerve Block on Radial Artery Diameter in Patients undergoing Elective Coronary Angiography/Angioplasty

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Objectives: The trans-radial approach (TRA) is now the preferred route for coronary angiography and percutaneous coronary intervention, as it has been shown to be associated with better survival and better quality of life However, the small caliber and the associated spasm-prone nature of the radial artery is often hinderance for such TRA especially in females. The sympathetic innervation of the radial artery through the median nerve suggests that a median nerve block may induce sustained vasodilation and reduce radial spasm. We aimed to evaluate the effect of a median nerve block on radial artery diameter and procedural comfort in patients undergoing elective coronary angiography or angioplasty.

Materials and Methods: Our study is an investigator-initiated, randomized, single-blinded, controlled clinical trial that included 100 adult patients (American Society of Anesthesiologists II–III, aged 40–65 years) scheduled for elective coronary angiography or angioplasty. Participants were randomized into two groups: Group M (n = 50): Received ultrasound-guided median nerve block and lateral cutaneous nerve blocks using a mixture of 2% lignocaine and 0.5% bupivacaine, and Group L (n = 50): Received local anesthetic infiltration at the radial puncture site. The primary outcomes of the study were the mean diameter of the radial artery at 30 min after the median nerve block. Radial artery diameter (horizontal, vertical, and cross-sectional area) was also measured using a high-frequency linear ultrasound probe at baseline and at 5, 10, 15, and 30 min post intervention. Pain was assessed using the Visual Analog Scale.

Results: The mean diameter of the radial artery was significantly larger in group M as compared to group L. Both vertical and horizontal diameters were significantly larger in Group M at all-time points after the block. The mean cross-sectional area of the radial artery increased by approximately 30% in Group M (8.14 ± 2.26 mm^2) compared to Group L (5.80 ± 1.24 mm^2; $p < 0.0001$). Pain scores during sheath insertion and post-procedure were significantly lower in Group M with a median 2, compared to a median 4 in Group L $p < 0.0001$). The requirement for additional sedation was also lower in Group M (4%) than in Group L (24%; $p = 0.008$). No major complications were reported.

Conclusion: Ultrasound-guided median nerve block significantly increases radial artery diameter and reduces procedural pain, improving the safety and comfort of trans radial coronary interventions.

Keywords: Coronary angiography, Local anesthesia, Median nerve block, Radial artery diameter, Trans- radial access

ABSTRACT 2

Assessment of Vascular Dysfunction of Brachial and Radial Artery after Transradial Coronary Intervention by High-Resolution Ultrasound and Flow Mediated Vasodilation: Is there any Sex Difference

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Objectives: The transradial approach is widely recommended for coronary angiography and intervention because of its lower access-site complications and improved patient comfort compared with the transfemoral route. However, radial artery occlusion (RAO) and access-related endothelial dysfunction remain important limitations, particularly as they may preclude future radial access or surgical conduit use. Data evaluating structural and functional vascular changes after transradial intervention (TRI), especially with sex-based comparisons in the Indian population, are limited. This study aimed to evaluate the incidence of RAO, ultrasound-based morphological changes of the radial artery, and early and late endothelial dysfunction of both the radial and upstream brachial arteries following transradial intervention, with specific assessment of sex-related differences and associated clinical and procedural factors.

Materials and Methods: This prospective, single-center study enrolled 100 patients undergoing coronary angiography or angioplasty via the transradial route over 12 months. Doppler ultrasound was used to assess radial artery patency and vascular parameters at 24 h and 3 months post-procedure. Endothelial function of the radial artery and brachial artery was evaluated using flow-mediated vasodilation (FMD) at baseline, day 1, and 3 months after transradial intervention (TRI). Associations between RAO and demographic variables, comorbidities, procedural characteristics, antiplatelet therapy, and sex were analyzed.

Results: The mean age of the cohort was 56.81 ± 13.24 years, with males comprising 71% of participants. RAO was observed in 21% of patients at 24 h, which declined to 6% at 3 months, indicating substantial spontaneous

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recanalization. No significant sex-based difference was observed in radial artery patency: at 24 h, RAO occurred in 22.54% of males and 17.24% of females, while at 3 months, persistent RAO was seen in 5.63% and 6.89%, respectively. Age, diabetes, hypertension, and number of catheters used did not significantly influence RAO. Prior antiplatelet therapy was associated with a significantly lower incidence of RAO ($p = 0.004$). Even among patients with patent radial arteries, a small but statistically significant reduction in radial artery internal diameter was noted over time. FMD of both the Radial artery (RA) and brachial artery (BA) showed a significant decline at day 1 post-TRI, followed by meaningful recovery at 3 months, with a similar pattern observed in both sexes [Table 1].

Table 1: Descriptive statistics of individual variables.

Parameters	Mean±SD
RAID	2.54±0.58
RAID D1	2.31±0.71
RAID M3	2.38±0.60
RAID/SOD	1.33±0.27
PSV	56.90±15.52
PSV D1	48.40±18.28
PSV M3	51.19±16.05
PDV	12.85±5.03
PDV D1	10.18±4.76
PDV M3	10.21±4.44
MV	16.40±6.10
MV D1	13.75±6.13
MV M3	14.43±8.50
FV	0.034±0.011
FV D1	0.030±0.014
FV M3	0.031±0.012
TIME (in minutes)	41.40±28.60
FMD BA	7.35±1.67
FMD BA D1	4.39±1.33
FMD BA M3	6.52±1.41
FMD RA	8.36±1.93
FMD RA D1	5.60±1.75
FMD RA M3	7.14±1.90

RAID: Radial artery internal diameter (in Fr). SOD: Sheath outer diameter, PSV: Peak systolic velocity (in cm/sec), PDV: Peak diastolic velocity (in cm/sec), MV: Mean velocity (in cm/sec), FV: Flow volume (in L/min), TIME: Time for indwelling sheath. FMD: Flow-mediated dilatation, RA: Radial artery, BA: Brachial artery, D1: Day 1, D3: Day 3, M1: Month 1, M3: Month 3, SD: Standard deviation

Conclusion: Transradial intervention results in transient, reversible endothelial dysfunction of both the radial and brachial arteries and a modest but significant reduction in radial artery lumen diameter, even in the absence of permanent occlusion. Most of the cases of RAO recanalize over time, and prior antiplatelet therapy appears protective. Importantly, sex did not influence radial artery patency or endothelial recovery, supporting the safe and effective use of the transradial approach in both male and female patients.

Keywords: Flow- mediated vasodilation, Radial artery occulsion, Transradial intervention

ABSTRACT 3

Heart Rate Variability and Cognitive-Motor Performance in Anemic Women with Hypothyroidism: A Cross-sectional Study

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Objectives: Hypothyroidism is associated with alterations in heart rate variability (HRV) and delayed neural processing. Co-existing anemia may further impair cerebral oxygen delivery, potentially aggravating cognitive-motor slowing. HRV is a non-invasive marker of cardiac autonomic modulation, while reaction time reflects neural processing speed and sensorimotor integration. Studying their relationship in anemic women with hypothyroidism may provide insight into the combined physiological impact of these conditions. This study aims to assess the relationship between heart rate variability (HRV) parameters and reaction time in anemic women with hypothyroidism.

Materials and Methods: This cross-sectional study included 20 anemic women with hypothyroidism aged 18–50 years. HRV was recorded using the AD Instruments PowerLab 26T system. Reaction time was measured using a digital reaction time apparatus (Psychotronics, Bengaluru; Model No. 501-004TR) with 1 ms accuracy. Pearson's correlation analysis was performed using JAMOVI version 2.3.28 to evaluate the association between HRV parameters and simple visual reaction time (SVRT).

Results: The mean age of participants was 30.6 ± 9.12 years, and the mean serum thyroid-stimulating hormone level was 14.5 ± 7.17 mIU/L. A statistically significant inverse correlation was observed between the low-frequency (LF) component of HRV and SVRT ($r = –0.660$, $p = 0.038$). Higher LF-HRV values were associated with shorter reaction times, indicating better cognitive-motor performance.

Conclusion: Anemic women with hypothyroidism demonstrate a significant inverse relationship between LF-HRV and SVRT, suggesting that alterations in HRV are associated with impaired cognitive-motor processing. Further studies with larger samples are required to elucidate underlying mechanisms and clinical implications.

Keywords: Anemia, Cognitive-motor performance, Heart rate variability, Hypothyroidism, Reaction time

ABSTRACT 4

Clinical Presentation and Multidisciplinary Management of Left Main Coronary Artery Compression Syndrome in Adult Atrial Septal Defect

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Objectives: External compression of the left main coronary artery (LMCA) by a dilated pulmonary artery is a rare but critical complication in adult patients with an atrial septal defect (ASD). While ASD often has a benign course, long-standing volume overload can lead to pulmonary hypertension and subsequent mechanical impingement of the left main coronary ostium.

To evaluate sex-specific differences in clinical presentation, hemodynamic parameters, and therapeutic outcomes in a series of patients diagnosed with left main coronary artery (LMCA) compression syndrome secondary to atrial septal defect (ASD).

Materials and Methods: This study analyzed 55 adult patients (>35 years) with ASD who underwent comprehensive evaluation, including coronary angiography and cardiac catheterization. Patients identified with >50% LMCA stenosis underwent further characterization through multi-slice computed tomography and intravascular ultrasound to differentiate extrinsic compression from atherosclerotic disease.

Results: Significant LMCA compression was identified in four patients (7.3%), comprising three females and one male. Female patients primarily presented with progressive dyspnea and chronic angina on exertion. In contrast, the male patient presented with an acute ST-segment myocardial infarction and had the highest mean pulmonary artery pressure (50 mmHg). Across the cohort, LMCA compression was significantly correlated with reduced ejection fraction (46 ± 10.3 vs. 60 ± 2.0; p = 0.001) and an increased pulmonary artery-to-aortic diameter ratio (2.6 ± 0.9 vs. 1.2 ± 0.2; $p < 0.01$). Management strategies involved surgical ASD closure with aortocoronary bypass, percutaneous drug-eluting stenting, and conservative medical therapy. All four patients remained asymptomatic at mean [Table 1] follow-up of 20 months [Table 1].

Conclusion: LMCA compression is a rare but life-threatening association of ASD and pulmonary hypertension. This study highlights that while women may present more frequently with exertional symptoms, men may present with acute coronary syndromes due to higher pulmonary pressures and associated coronary disease, necessitating a multidisciplinarytreatment approach.

Keywords: Atrial septal defect, Intravascular ultrasound, Left main coronary artery,

Table 1: Characteristics of patients with significant LMCA compression.

Variable	Case 1	Case 2
Sex	Female	Female
Age (years)	40	60
Presentation	Progressive dyspnea and angina on exertion	Angina on exertion
Electrocardiogram	RAD, RVH, IRBBB, ST elevation (aVR), ST depression (II, III, aVF, V5-V6)	ST-segment depression in V1 to V6
Ejection fraction (%)	45	45
ASD size (mm)	54	34
PA Diameter (mm)	57	74
Aorta diameter (mm)	22	19.5
PA/Aorta ratio	2.6	3.8
mPAP (mmHg)	41	38
Qp/Qs ratio	2.6	3.2
LMCA compression (%)	90	80
Intravascular ultrasound MLA (mm^2)	5.1	4.2
Associated CAD	Yes	No
Angiography findings	LAD filling anterogradely and retrogradely from RCA	Normal coronaries
Intervention	ASD patch closure, TV repair, and CABG	LMCA Stenting (Drug-eluting stent)
Follow-up/Outcome	41 months/ Asymptomatic	16 months/ Asymptomatic
Variable	**Case 3**	**Case 4**
Sex	Male	Female
Age (years)	42	39
Presentation	ST-segment MI with progressive angina/ dyspnea	Progressive dyspnea on exertion
Electrocardiogram	ST-segment elevation in II, III, aVF	RAD, RBBB, and features of right ventricular strain
Ejection fraction (%)	35	55
ASD size (mm)	30	40
PA Diameter (mm)	40	49
Aorta diameter (mm)	22	23
PA/Aorta ratio	1.8	2.1
mPAP (mmHg)	50	44
Qp/Qs ratio	2.1	4.0
LMCA compression (%)	75	90
Intravascular ultrasound MLA (mm^2)	6.2	5.9
Associated CAD	Yes	No
Angiography findings	Anomalous LMCA; occluded LCX and RCA	Normal coronaries
Intervention	LCX Stenting; ASD/ LMCA surgery	Conservative; awaiting surgical ASD closure
Follow-up/Outcome	12 months/ Asymptomatic	11 months/ Asymptomatic

ASD: Atrial septal defect, LCMA: Left main coronary artery, LAD: Left anterior descending, CABG: Coronary artery bypass grafting, CAD: Coronary artery disease, RCA: Right coronary artery, LCX: Left circumflex artery, MI: Myocardial infarction, MLA: Minimal lumen area, RAD: Right axis deviation, RVH: Right ventricular hypertrophy, IRBBB: Incomplete RBBB, RBBB: Right bundle branch block, PA: Pulmonary artery, mPAP: mean pulmonary artery pressure, pulmonary to systemic blood flow, Qp/Qs: Pulmonary to systemic blood flow

(*Contd...*)

ABSTRACT 5

A Novel Machine-learning derived "3-D" VENUS PRISM (Post-Primary Percutaneous Coronary Intervention RISk Modeling) Risk Score for Dynamic Prediction of In-hospital, 1-month and 1-year Mortality in Women undergoing Primary Percutaneous Coronary Intervention for the Indian Population

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Objectives: 3D Risk scoring?: 3-D risk estimation is a novel concept being used for risk assessment in Biostatistics that uses the three dimensions of Probability, Severity, and Level of control. Rather than only admission parameters that most risk scores study, our VENUS- PRISM 3D risk scoring also incorporates "dynamic" behaviour of the patient and change in vital parameters corresponding to therapy and discharge, time being the third dimension.

Materials and Methods: The study cohort comprised of 641 consecutive patients who have undergone primary percutaneous intervention (PPCI) with a derivation (n=416 patients) and validation (n=225 as of date) cohorts. Outcomes: Gender- specific in –hospital, thirty-day major adverse cardiovascular events (MACE) and 1-year MACE following the PPCI comprising of "hard" outcomes of cardiovascular (CV) mortality, non-fatal arrhythmias and nonfatal re-infarction was the primary end point, while rehospitalisation for heart failure and stroke within the 1- year period were secondary endpoints eventually leading to an eventual risk model development. 35 variables were considered. Mortality prediction was analysed using feature selection methods with Gender –Based propensity analysis using both multivariate regression analysis, and Machine-Learning algorithms. We then compared our score to CADILLAC risk score, second primary angioplasty in myocardial infarction (PAMI –II).

Results: In-hospital mortality predictors in model score with 20/37 points included: (1) Admission left ventricular ejection fraction (LVEF) < 30% (Weighted factor:4), (2) Ostial left anterior desceding artery (LAD) infarction and shock index > 0.7 with need of inotropes for more than 48 hours (WF: 4) (3)) Admission sugars > 300 mg %, need for insulin infusion for sugar control or HbA1c > 8.5% (WF: 3.5)(4)Total ischemic time > 6hours (WF: 3.5), (5) Hypotension on admission with vasotropic inotropic score (WF:3.5), (6) Post PCI slow flow and thrombolysis in myocardial infarction flow (TIMI) flow grade 2 and below (WF:3.0), (7) Peri procedural hypokalemia requiring IV correction anytime during the course of hospital stay(WF:3.0), (8) global longitudinal strain (GLS)< -11%,or Tissue Doppler e' < 3.5 cm/sec(WF:2.5), (9)Admission or periprocedural haemoglobin (HB)< 11 gm% and the need of blood product transfusion (WF: 2.5), (10) Development of renal insufficiency during post PCI in- hospital stay and need for Renal replacement therapy (RRT)(WF: 2.5), and (11) change in GLS (delta GLS) < - 3% or delta e' < 1.5 cm/sec at discharge(WF:2.5) and (12)Complicated PCI involving loss of large side branch, abrupt closure, acute ST or post coronary artery bypass graft (CABG) primary percutaneous intervention (PPCI) (WF:2.5). A similar score could also be generated for mortality upto 1st month and 1 year after discharge. The five gender specific strongest risk predictors of mortality, using SHAPley analysis, common to all 3 time points were: Admission with cardiopulmonary cerebral resuscitation (CPCR) and hypoxic ischemic encephalopathy, serum Albumin <3.3 with N/L >4.5 with c-reactive protein (CRP), HbA1c>8.5 at admission (even stronger than LVEF by AUROC), Admission with AWMI with cardiogenic shock, and Hb < 10 gm% with CRP > 10. Among women, the best machine learning PRISM model for in-hospital, 30 days, and 1-year outperformed both CADILLAC and PAMI -II risk scores (AUC = 0.88, 95% CI: 0.846–0.910; vs AUC = 0.81, 95% CI:0.772–0.845, AUC = 0.90, 95% CI: 0.870–0.935; vs AUC = 0.80, 95% CI: 0.746–0.838, AUC = 0.84, 95% CI: 0.798–0.872; vs AUC = 0.76, 95% CI: 0.715–and PAMI -II risk scores underestimate risk of mortality in Indian women. 88% of non-survival patients are classified as high risk by PRISM algorithm compared to 66% by CADILLAC and < 45% by both SLEDP and PAMI -II

Conclusion: Female patients with acute ST-elevation myocardial infarction were better risk-stratified with 3D RISK, our novel PRISM risk model, compared to other historic risk scores. Targeting diabetes control and anemia will allow for better risk stratification and management of the patient.

Keywords: Coronary artery bypass graft, Major adverse cardiovascular events, Primary percutaneous intervention, Left ventricular ejection fraction, Left anterior desceding artery, Second primary angioplasty in myocardial infarction

ABSTRACT 6

Outcomes in Female Patients undergoing Foam Sclerotherapy for Lower Limb Varicose Veins: A Single-center Retrospective Study

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Objectives: Varicose veins are a common manifestation of chronic venous disease and constitute a major cause of morbidity worldwide. Epidemiological studies indicate that varicose veins are at least equally prevalent among women; however, female patients are consistently under-represented in hospital-based treatment cohorts. This discrepancy suggests a gender gap in health-seeking behavior rather than a true difference in disease burden. Women engaged in domestic and agricultural work are routinely exposed to prolonged standing, static posture, and heavy physical activity, all of which are established risk factors for venous hypertension. Despite this, such activities are rarely recognized as occupational hazards. Ultrasound-guided foam sclerotherapy is a minimally invasive, outpatient-based treatment option that is particularly suited to populations with limited access to advanced healthcare infrastructure. To evaluate gender-based differences in demographic profile, occupational exposure, clinical presentation, and complications among patients undergoing ultrasound-guided foam sclerotherapy for lower limb varicose veins, with special emphasis on the female population.

Materials and Methods: This study included patients undergoing outpatient department based foam sclerotherapy for lower limb varicose veins. Demographic and clinical data and occupational history were recorded. Gender-based comparisons were performed, with focused subgroup analysis of female patients.

Results: A total of 177 patients were included in the study, comprising 22 females and 155 males. The mean age of the female participants was 34.6 years, whereas males had a higher mean age of 45.5 years. The mean BMI was comparable between the two groups, measuring 24.4 ± 3.5 in females and 24.3 ± 2.4 in males. Comorbidities were more common among females (63.6%) compared to males (22.9%). The mean great saphenous vein (GSV) diameter before the procedure was 4.34 ± 1.74 mm in females and 4.30 ± 1.73 mm in males. Following the procedure, the mean GSV diameter decreased to 3.45 ± 1.49 mm in females ($p < 0.001$) and 3.55 ± 1.45 mm

in males, indicating a significant reduction in females. Similarly, the mean number of incompetent perforators before the procedure was 2.82 ± 1.53 in females and 3.53 ± 1.97 in males. After the procedure, this number reduced to 1.91 ± 1.82 in females ($p < 0.001$) and 2.23 ± 1.76 in males, suggesting a notable improvement following the intervention.

Conclusion: Female patients with varicose veins are significantly under-represented in hospital-based treatment despite substantial occupational exposure and symptom burden. Homemakers constitute the majority of affected women and represent a neglected high-risk group. Female patients have a higher burden of metabolic and endocrine comorbidities - diabetes mellitus, hypertension, and thyroid disorders. GSV size reduction and perforator incompetence were comparable in female and male patients, suggesting similar therapeutic benefit from foam sclerotherapy. The lower number of female patients presenting for treatment reflects reduced healthcare utilization rather than reduced treatment efficacy.

Keywords: BMI, Great saphenous vein

ABSTRACT 7

Does Timing Matter in Perimortem Cesarean Section? A Study of Maternal and Fetal Outcomes

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Objectives: Maternal cardiac arrest during pregnancy is a rare but catastrophic event associated with high maternal and fetal mortality. Perimortem cesarean section (PMCS) is recommended when return of spontaneous circulation is not achieved, yet evidence from low- and middle-income countries is limited. This study aims to evaluate the association between arrest-to-delivery interval and maternal and fetal survival following PMCS, and to describe etiologies and gestational age-specific outcomes at a tertiary referral center in northern India.

Materials and Methods: We conducted a retrospective cohort study of women undergoing PMCS after maternal cardiac arrest between January 2020 and December 2024. Women at ≥20 weeks' gestation with documented arrest-to-delivery intervals were included. The primary exposure was timing of PMCS (<5 min vs. ≥5 min). Primary outcomes were maternal and neonatal survival. Categorical variables were compared using Fisher's exact test.

Results: Twenty women underwent PMCS during the study period. The mean maternal age was 32 years, and the mean gestational age was 33.8 ± 3.2 weeks. Overall maternal survival was 20% (4/20), while fetal survival was 75% (15/20). Seven women (35%) underwent PMCS within 5 min of arrest. Maternal survival was higher with early intervention compared with delayed intervention (28.6% vs. 15.4%; relative risk [RR] 1.86; $p = 0.338$). Fetal survival was 100% after early PMCS compared with 61.5% after delayed intervention (RR 1.63; $p = 0.083$). Infectious etiologies accounted for 25% of arrests, and with no maternal survivors, whereas hypertensive and hemorrhagic causes showed comparatively better outcomes. Gestational age was not significantly associated with survival [Figure 1].

Conclusion: Maternal survival following cardiac arrest in pregnancy was low, although fetal survival was substantial. Early PMCS showed improvement in outcomes. Infectious causes were associated with poor survival, highlighting the need for early recognition, aggressive management, and preparedness for rapid PMCS.

Keywords: Perimortem cesarean section, high maternal and fetal mortality, relative risk

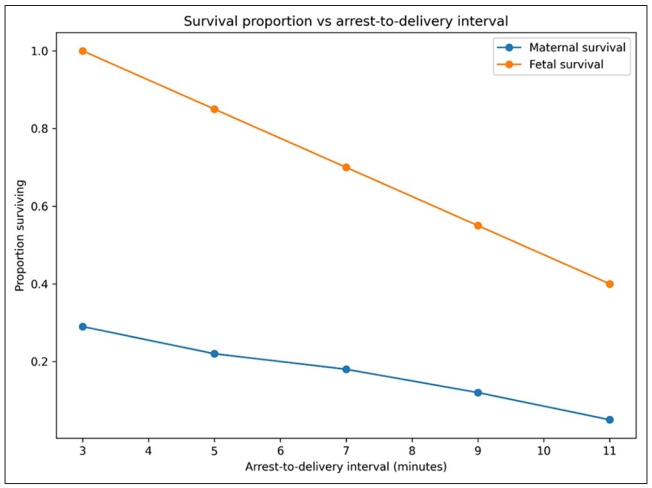

Figure 1: Survival proportion vs arrest-to-delivery interval.

ABSTRACT 8

Intravenous Nicorandil as an Adjunct to Primary Percutaneous Coronary Intervention in ST-Elevation Myocardial Infarction: Effects on Infarct Size, Left Ventricular Function, and Clinical Outcomes - The INAP Study

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Objectives: Microvascular obstruction and reperfusion injury significantly influence infarct size and clinical outcomes in patients with ST-elevation myocardial infarction (STEMI) undergoing primary percutaneous coronary intervention (PCI). Nicorandil, a nitrate derivative and ATP-sensitive potassium channel opener, exerts vasodilatory and cardioprotective effects that may improve microvascular perfusion and limit reperfusion injury. This study evaluated the effects of intravenous (IV) Nicorandil administered before primary percutaneous coronary intervention (PCI) on myocardial reperfusion, infarct-related ventricular function, and clinical outcomes.

Materials and Methods: This prospective study included 124 consecutive patients presenting with acute STEMI undergoing primary PCI (case group) and 25 individuals in the control group. Eligible patients had systolic blood pressure >100 mmHg and no cardiogenic shock. Patients with prior acute coronary syndrome, PCI, or coronary artery bypass grafting were excluded. IV Nicorandil was administered as a 4 mg bolus before PCI along with standard loading therapy (dual antiplatelets and statins), followed by infusion at 4 mg/h for 24 h. Intracoronary Nicorandil (4 mg)

was administered during PCI when required. Oral Nicorandil 5 mg twice daily was continued for 7 days. Procedural outcomes included incidence of no-reflow, thrombolysis in myocardial infarction (TIMI) flow grade, and need for thrombus aspiration. Echocardiographic parameters - left ventricular ejection fraction (LVEF), wall motion score (WMS) and left atrial (LA) dimension - were assessed at baseline, post-procedure, 30 days, 6 months, and 1 year. Clinical outcomes, including mortality, major adverse cardiovascular events (MACE), and heart failure, were recorded up to 1 year.

Results: One-year follow-up data were available for 40 out of 124 patients receiving IV Nicorandil (cases) and compared with available data of 10 out of 25 in the control study group undergoing standard primary PCI. Baseline characteristics and Door-to-balloon time (75 ± 17.8 vs. 74.6 ± 10.4 min) were comparable between groups. Procedural reperfusion outcomes favoured the nicorandil group. No-reflow occurred in 0/40 (0%) cases versus 4/10 (40%) controls. Final TIMI 3 flow was achieved in 40/40 (100%) Nicorandil-treated patients. Thrombus aspiration was required less frequently in cases (1/40, 2.5%) compared with controls (5/10, 50%). In the nicorandil group, mean LVEF improved progressively from 43.3 ± 4.9% at baseline to 49.0 ± 4.9% post-PCI, 54.0 ± 4.9% at 30 days, 57.1 ± 5.1% at 6 months and 59.6 ± 4.2 at 1 year ($p < 0.001$) (control: 41.2±3.6% at baseline to 43.0 ± 4.9% post PCI to 44.5 ± 3.5% at 1 year follow-up). EF category distribution shifted markedly, with most patients transitioning from mid-range EF at baseline to preserved EF by follow-up. Regional LV function showed parallel recovery. Mean WMS decreased from 2.45 ± 0.50 at admission to 1.80 ± 0.52 at 30 days and 1.49 ± 0.51 at 6 months and 1.49 ± 0.51 at 1 year ($p < 0.001$). The proportion of patients in the nicorandil group (vs. control) with near-normal regional function (WMS < 2) increased from 0% at baseline (vs. 10%) to 20% (vs. 70%) at 30 days and 51% (vs. 80%) at 6 months and 100% (vs. 80%) by 1 year. The left atrial dimension showed a reduction over follow-up, consistent with favorable remodeling. During 1-year follow-up, no mortality, MACE, or heart failure events occurred in the nicorandil group, whereas adverse events were observed in controls.

Conclusion: IV Nicorandil administered before primary PCI in hemodynamically stable STEMI patients was associated with favorable procedural reperfusion, improvement in ventricular function, and absence of recorded adverse clinical events during follow-up. These findings support further evaluation in controlled trials.

Keywords: Infarct size, Microvascular perfusion, Nicorandil, Primary percutaneous coronary intervention, Reperfusion injury, ST-elevation myocardial infarction

ABSTRACT 9

Females are at Higher Risk being Frail Harmonal Stress Issues, this Study was Done to Evaluate Drug Effects on Female Versus Male and of Various Cardiac Drugs Started in an Emergency Setting and in Follow-up

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Objectives: Long QT syndrome (LQTS) is a cardiac conduction disorder characterized by prolongation of ventricular repolarization, reflected as prolongation of the QT interval on surface electrocardiography (ECG). QT prolongation may predispose patients to malignant ventricular arrhythmias such as Torsades de Pointes (TdP), ventricular tachycardia, ventricular fibrillation, and may ultimately lead to sudden cardiac death. Drug-induced QT prolongation is an important and potentially preventable cause of arrhythmia, particularly in patients with coronary artery disease (CAD) receiving multiple cardiac and non-cardiac medications in emergency settings. To evaluate the clinical profile and gender differences associated with QT interval prolongation on ECG in patients with coronary artery disease presenting to the emergency department and receiving cardiac medications.

Materials and Methods: This was an observational study conducted in patients presenting with coronary artery disease in the emergency setting. Baseline ECG was recorded at admission and QT interval measurements were obtained. QTc was calculated using Bazett's formula ($QTc = QT/\sqrt{RR}$). Follow-up ECGs were recorded during hospital stay to identify QT prolongation after administration of commonly used cardiac and associated medications. Patients with QTc prolongation were analyzed for age distribution, gender differences, and change in QT and QTc intervals between baseline and follow-up ECGs.

Results: The study evaluated patients across multiple age groups ranging from 31 to 90 years. Both male and female patients demonstrated an increase in QT and QTc intervals during follow-up ECG recordings. However, gender-based comparison did not show statistically significant differences in QT or QTc prolongation across age groups. In female patients, the p-values for QT, QTc, QT2, QTc2, change in QT, and change in QTc were 0.589, 0.251, 0.346, 0.221, 0.937, and 0.662 respectively, indicating no significant association. Similarly, in male patients the corresponding p-values were 0.626, 0.637, 0.191, 0.056, 0.195, and 0.324, which were also not statistically significant. These findings suggest that QT prolongation occurred in both sexes without a significant gender predisposition.

Conclusion: QT interval prolongation is frequently observed in patients with coronary artery disease treated with multiple medications in emergency settings, but in this study no significant gender difference was identified. Regular monitoring of QT intervals using serial ECGs remains essential for early detection of drug-induced QT prolongation and prevention of potentially life-threatening arrhythmias such as Torsades de Pointes.

Keywords: Coronary artery disease, Drug-induced arrhythmia, Electrocardiography, Long QT syndrome, QT prolongation, Torsades de Pointes

ABSTRACT 10

Retrospective Observational Data of 15 Pregnant Patients undergoing Percutaneous Transvenous Mitral Commissurotomy in a Single-center Over 2 Years

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Objectives: Rheumatic mitral stenosis remains the most common valvular heart disease encountered during pregnancy. Percutaneous transvenous mitral commissurotomy (PTMC) is an effective, safe, and guideline-recommended therapeutic option for women with critical mitral stenosis in this setting. In this study, we report the maternal and fetal outcomes of pregnant women who underwent PTMC at our institute.

Materials and Methods: Fifteen consecutive pregnant women with critical mitral stenosis who underwent percutaneous PTMC over a 2-year period were retrospectively analyzed. All patients underwent detailed clinical and obstetric assessments and were optimally treated with medical therapy before intervention. Comprehensive transthoracic echocardiography was performed before and after PTMC to evaluate hemodynamic and structural

parameters. Obstetric details and fetal outcomes were systematically recorded at the time of delivery.

Results: The mean gestational age at the time of percutaneous transvenous mitral commissurotomy was 23.6 ± 6.68 weeks. Percutaneous transvenous mitral commissurotomy was successful in 86% of patients. Post-percutaneous transvenous mitral commissurotomy New York Heart Association functional class, mitral valve area, trans-mitral pressure gradient, and left atrial pressure had a significant improvement ($p < 0.001$). The mean gestational age at the time of delivery was 37.07 ± 3.02 weeks. The mean birth weight of live newborns was 2.1 ± 0.55 kg. The fetal complications include growth restriction in 26%, preterm delivery in 20%, intrauterine death in 6.6%, and low birth weight in 40%. A delayed percutaneous transvenous mitral commissurotomy at about 30 weeks of gestation did not affect the maternal and fetal outcomes.

Conclusion: Percutaneous transvenous mitral commissurotomy appears to be a safe and effective treatment option for pregnant women with critical mitral stenosis, resulting in significant improvement in clinical status and echocardiographic parameters. These findings support the feasibility of this intervention during pregnancy when performed in experienced centers with appropriate multidisciplinary care.

Keywords: Mitral valve area, Rheumatic mitral stenosis, Trans-mitral pressure gradient, and left atrial pressure

ABSTRACT 11

Gender Differences in Ectatic Coronary Arteries Pre- and Post-COVID-19

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Objectives: Coronary artery ectasia (CAE) is characterized by abnormal dilatation of coronary arteries exceeding 1.5 times the diameter of adjacent normal segments. In the pre-COVID era, coronary ectasia was considered a relatively rare angiographic finding. However, following the COVID-19 pandemic, an increasing number of patients presenting with acute coronary syndrome (ACS) have been observed to have ectatic coronary arteries. COVID-19 infection is associated with a significant inflammatory response and endothelial dysfunction, which may persist even after recovery and potentially contribute to vascular remodeling and the development of coronary ectasia. The aim is to evaluate the change in the prevalence of coronary artery ectasia before and after the COVID-19 pandemic in patients presenting with acute coronary syndrome.

Materials and Methods: This observational study was conducted at a tertiary care center in South India over a 7-year period (2017–2023). Patients aged ≥18 years presenting with acute coronary syndrome who underwent coronary angiography were included. Patients aged <18 years and pregnant women were excluded. The study population was divided into pre-COVID period (2017–2019) and post-COVID period (2020–2023). Coronary angiographic data were analyzed to identify the presence of coronary ectasia, the number of vessels involved, the predominant artery affected, and sex distribution.

Results: A total of 19,720 patients presenting with ACS were included in the study. Among them, 8,300 patients were evaluated during the pre-COVID period and 11,420 during the post-COVID period. Coronary ectasia was identified in 15% of patients in the pre-COVID era and 62% of patients in the post-COVID era, demonstrating a substantial increase in prevalence. Among the patients with ectasia in the post-COVID period, 63% were males and 37% were females. The left anterior descending artery (LAD) was the most commonly involved vessel, followed by the right coronary artery (RCA) and left circumflex artery (LCX), while left main coronary artery (LMCA) involvement was rare. In addition, multivessel ectasia, which was not observed in the pre-COVID period, was identified in 4% of patients during the post-COVID era. An increase in ACS events was also observed among younger patients without comorbidities, accounting for approximately 14% of cases. Although ectasia appeared more frequent in males compared to females, the difference was not statistically significant.

Conclusion: This study demonstrates a marked increase in coronary artery ectasia following the COVID-19 pandemic, possibly related to persistent endothelial dysfunction and inflammatory vascular injury associated with COVID-19 infection. The LAD artery was the most commonly affected vessel, and there was an emergence of multivessel ectasia in the post-COVID era. Recognition of this pattern is important, as coronary ectasia may increase thrombotic burden, slow coronary flow, and contribute to higher rates of acute coronary syndrome. Continued surveillance and further studies are required to better understand the long-term cardiovascular consequences of COVID-19.

Keywords: Acute coronary syndrome, Coronary angiography, Coronary artery ectasia, COVID-19, Endothelial dysfunction

ABSTRACT 12

Category-Gender differences in Diagnosis, Treatment, and Outcomes

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Objectives: Guideline-directed medical therapy (GDMT) is underprescribed and sub optimally uptitrated in heart failure with reduced ejection fraction (HFrEF).Women are historically underrepresented in heart failure trials and as shown in observational studies are less likely to be prescribed GDMT and reach target doses. To identify the proportion of patients receiving GDMT among patients with HFrEF attending a tertiary care medical college located in a semi-urban area. To assess the barriers to prescribing GDMT analyze the gender differences in GDMT usage in this cohort.

Materials and Methods: This was hospital-based cross-sectional study. All adult patients diagnosed with HFrEF visiting the OPD of general medicine and cardiology. Data were collected using a face-to-face interview and a semi-structured questionnaire. The questionnaire was divided into three parts: Part 1 comprised addressing the patient level, healthcare system level and physician level barriers. Part II comprised data on the current GDMT intake, and Part III included details of the 30-day hospital readmission rate.

Results: Among 194 patients (mean age 58.2 years; 69% male), only 0.52% received all four GDMT classes at target doses, while 38.14% received all four at suboptimal doses. Females were more likely to receive incomplete therapy than males (65% vs. 59.7%). The perceived barriers to accessing care also showed gender-specific trends: Females reported more difficulty in physically accessing the health care system, while males reported higher rates of financial/insurance issues and time constraints. Renal dysfunction, hypotension, limited reassessment opportunities, and variation in prescribing specialty were key physician-level barriers which did not show

any gender difference. Males had a 30-day readmission rate of 10.4%, which was more than double the 5.0% rate in females.

Conclusion: GDMT is significantly underused in this population, with females more likely to receive incomplete therapy. Barriers to GDMT usage show gender differences at the patient level and healthcare system level, which need a multidisciplinary approach.

Keywords: Heart failure with reduced ejection fraction Guideline-directed medical therapy, gender differences

ABSTRACT 13

Study of Gender-specific differences in Clinical Presentation, Risk Factor Profile and Angiographic Profile of Consecutive 100 Men and Women Presenting with Acute Myocardial Infarction in South Gujarat City Tertiary Cardiac Center

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Objectives: Various studies reveal gender specific differences in acute myocardial infarction, including clinical and angiographic profiles, treatment strategies, and prognostic implications. Co-existing comorbidities such as diabetes mellitus (DM) and hypertension, along with differences in risk factor prevalence makes it necessary to have a gender-specific approach. This study aims to study gender specific differences in risk factors, clinical and angiographic profiles of acute myocardial infarction (AMI) in a South Gujarat city tertiary cardiac center.

Materials and Methods: A total of 100 consecutive men and women presenting with AMI were studied. A detailed history including symptoms, history of DM, hypertension, smoking, and dyslipidemia was obtained. Electrocardiography, evaluation of cardiac enzymes (CPK-MB, Troponin I), random blood sugar, lipid profile, two-dimensional transthoracic echocardiography and coronary angiography were performed. The data were statistically analyzed.

Results: Among 100 patients (77 males and 23 females), we found a later age at presentation (60 y vs. 54 y) and higher prevalence of diabetes (64% vs. 36%, p = 0.004) and hypertension (52% vs. 34%) among females but more dyslipidemia (34% vs. 26%), smoking (44% vs. 0%, p = 0.0) and higher body mass index (BMI) (26.59 vs. 24.75, p = 0.020) among males. Chest pain was the most frequently reported symptom at presentation in both men and women. As compared to 4% of male patients, 11% of females presented with atypical symptoms such as epigastric pain, neck pain, arm pain, dyspnea, indigestion, and vomiting. On coronary angiography, single vessel disease was the most common lesion found (75% in males vs. 70 % in females), while multiple vessel disease was found in 25% males as compared to 30% females [Table 1].

Conclusion: South Gujarat city women with acute myocardial infarction presented at a later age, with atypical symptoms, more incidences of risk factors such as diabetes and hypertension, along with lesser dyslipidemia and BMI than men and need a higher index of suspicion while evaluating them for coronary artery disease (CAD). Misdiagnosis is more likely because of an atypical presentation. However, there was no significant difference in angiographic prevalence and pattern of CAD in men and women. We recommend more and larger Indian studies to acquire more data so that the increasing prevalence of CAD in women can be controlled at the very initial stage, with more awareness about the impact of risk factors such as diabetes and hypertension on the prevalence and pattern of coronary artery disease in women.

Keywords: Angiographic profile, Gender differences, Myocardial infarction, Risk factors

Table 1: Angiographic features of study population.

Angiographic study	Male (n=77)	Female (n=23)	p-value (Fisher's exact test)
Single vessel disease	58/77	16/23	p=0.60 (nonsignificant)
Multiple vessel disease	19/77	7/23	p=0.60 (non-significant)