

## A STUDY OF INCIDENCE, OUTCOME & BACKGROUND OF PATIENTS DEVELOPING CORONARY NO REFLOW AFTER OPENING OF AN OCCLUDED CORONARY ARTERY

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### Abstract

**Background:** To better characterize the incidence, predictors, and outcomes of the no-reflow phenomenon in our population, we analyzed patients with AMI who were undergoing PCI of native coronary artery stenoses in the Cath lab from January 1, 2024 through December 31, 2024. This study aimed to assess the common Risk factors, incidence associated with patients developing No-flow after the PCI for Coronary artery disease. **Materials and Methods:** A Observational study was conducted at the Department of Cardiology, Coimbatore Medical College and Hospital, from January 2023 to December 2024. A total of 50 patients who underwent cardiac catheterization for CAD and had a No flow were included in the study. Data on demographic characteristics, clinical history, medication use, and complications during the procedure and after 1 month were collected and analysed. **Result:** The study found that 20% of participants developed Complications during or within one month after revascularisation. Older age, male gender, smoking, cardio genie shock were identified as significant risk factors for developing No flow during PCI. **Conclusion:** Patients who developed no-reflow were more likely to present with signs and symptoms of advanced heart failure, cardiogenic shock, and STEMI.

## INTRODUCTION

No-reflow, a phenomenon in which coronary blood flow remains impaired despite restoration of epicardial coronary artery patency, is a known complication of percutaneous coronary intervention (PCI). In experimental animal models, no-reflow is explained by microvascular dysfunction as a result of capillary injury, endothelial swelling, changes in blood viscosity, oxidative injury, myocardial edema, and thrombus embolization. No-reflow is encountered most frequently among patients undergoing PCI for acute myocardial infarction (AMI) or PCI of saphenous vein grafts. In early studies of patients with AMI, the incidence of no-reflow during PCI ranged widely from 11% to 41% of patient and has been associated with increased mortality.<sup>[1-5]</sup>

### Objectives

To assess the incidence, outcomes in patients undergoing cardiac catheterization studies for STEMI and develops No Reflow.

## MATERIALS AND METHODS

**Study Design:** The study employed a retrospective analytical design to investigate the incidence and risk factors in pci with No Reflow in patients who underwent cardiac catheterization for Coronary Artery Disease (CAD) at the Department of Cardiology, Coimbatore Medical College and Hospital.

**Study Setting:** The study was conducted at the Department of Cardiology, Coimbatore Medical College and Hospital, spanning from January 2024 to December 2024.

**Sample Size:** A total of 250 patients were included in the study cohort, meeting the criteria of undergoing cardiac catheterization for CAD during the specified study period.

**Sampling Technique:** Purposive sampling was employed to select patients meeting the inclusion criteria and excluding those with predefined exclusion criteria.

## Study Population

### Inclusion Criteria

Patients undergoing cardiac catheterization for Coronary Artery Disease were included in the study. Exclusion Criteria: Patients who had Valvular Heart Disease, cardiomyopathy, congenital heart disease undergone an angiographic study were excluded from the study.

### Data Collection

1. Demographic and clinical characteristics of patients were collected, including age, gender, comorbidities, and procedural details.
2. Left Ventricular Ejection Fraction (LVEF) was assessed as part of the clinical evaluation.
3. Patient Angiogram details will be collected

4. Patient will be followed up for period of one month for development of any complications

**Statistical Analysis:** Statistical analysis was performed to analyze the incidence of CIN and identify associated risk factors. Descriptive statistics, such as mean, standard deviation, and frequency distributions, were used to summarize patient characteristics. Inferential statistics, including chi-square tests and Mann Whitney U test were utilized to assess the relationship between risk factors and the development of CIN.

**Ethical Consideration:** The study protocol was approved by the Institutional Ethics Committee, ensuring adherence to ethical guidelines, patient confidentiality, and informed consent procedures.

## RESULTS

**Table 1: Profile of the study participants.**

S No	Variable	Frequency	Percentage
1	Age (Years)		
	< 40	34	13.6
	41 – 50	74	29.6
	51 – 60	75	30
	> 61	67	26.8
2	Gender		
	Male	197	78.8
	Female	53	21.1
3	Smoker		
	Yes	86	34.4
	No	164	65.6
4	Associating factors		
	Hypertension	86	34.4
	Diabetes Mellitus	93	37.2
	Anaemia	228	91.2
	Dehydration	30	12

**Table 2: Table depicting the complications due to thrombus**

Complications	No of patients
Heart failure	20
Long segment lesion	14
Smoking	35
STEMI	35
Recurrent PCI	10

## DISCUSSION

The incidence of angiographic no-reflow phenomenon in the present cohort of patients with AMI undergoing PCI was lower than that reported in previous studies. The lower incidence of no-reflow seen in the present study could also, in part, be attributed to differences in patient characteristics and improvement in adjunctive pharmacology and catheter-based techniques in our contemporary PCI population. The contemporary use adjunctive technologies such as embolic protection devices and thrombus aspiration catheters might have helped minimize the consequences of distal embolization in patients with AMI and contributed to reductions in the incidence of no-reflow. The rate of periprocedural glycoprotein IIb/IIIa inhibitor use was considerably greater in the present study compared to previous studies and might have been associated with the low incidence of no-reflow phenomenon.<sup>[6]</sup>

We defined the clinical and angiographic variables that were associated with the development of no-reflow during PCI of native coronary arteries for patients with AMI. Presentation with cardiogenic shock had the strongest association with the development of no-reflow. Should We Emergently Revascularize Occluded Coronaries for Cardiogenic Shock (SHOCK) trial showed that unsuccessful PCI in the setting of cardiogenic shock portends double the risk of mortality compared to successful PCI.<sup>[7]</sup> Given the association between the development of no-reflow and an unsuccessful lesion outcome in our study, no-reflow might be a mediator of the greater mortality in this population. Patients who developed no-reflow had a longer interval from symptom onset to admission before PCI and greater preprocedural epicardial flow impairment, implying a greater thrombus burden.<sup>[8]</sup> Greater risk angiographic anatomy (longer lesions, high-risk lesions, and bifurcated lesions) was associated with no-reflow and

might represent a contribution of increased vascular reactivity and limited compensatory endothelial vasodilation, which have been shown to contribute to the risk of no-reflow.<sup>[9]</sup> Previous studies have also described an association between lesion complexity, using the SYNTAX score, and no-reflow in patients with AMI.<sup>[6]</sup> Current tobacco use and previous PCI appeared to be associated with a high risk of no-reflow.

## CONCLUSION

This study demonstrated the common Risk factors associated with No Reflow phenomenon was Age, Heart failure, difficult lesions angiogram, Smoking, Recurrent PCI and outcomes are very poor in the above conditions and also in patients presenting with STEMI. This study also suggests that glycoprotein IIb/IIIa inhibitors may be effective in the presence of angiographic No Reflow. Additional studies in patients who have undergone more recent angioplasty procedures may be instructive.

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