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Original Article

Compare the Effectiveness of Thrombolysis and Percutaneous Coronary Intervention in Myocardial Infarction Patients

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ABSTRACT

Background: Acute myocardial infarction requires timely reperfusion to limit myocardial injury and reduce early complications. Primary percutaneous coronary intervention is generally preferred when rapidly available, whereas streptokinase-based thrombolysis remains an important reperfusion option in settings where PCI access is delayed or unavailable. Objective: To compare in-hospital clinical outcomes among patients with acute myocardial infarction treated with percutaneous coronary intervention and streptokinase-based thrombolysis. Methods: This multicenter retrospective observational study included 100 patients with acute myocardial infarction treated in healthcare centers in Lahore, Pakistan. Patients were divided into two equal groups according to reperfusion modality: PCI group (n = 50) and streptokinase group (n = 50). Outcomes included cardiogenic shock, arrhythmia, in-hospital mortality, duration of hospital stay, and left ventricular ejection fraction. Categorical outcomes were compared using exact tests, and continuous outcomes were compared using independent samples t-test. Results: Cardiogenic shock was recorded in 0/50 patients in the PCI group and 22/50 patients in the streptokinase group, while arrhythmia was recorded in 0/50 and 15/50 patients, respectively. Both differences were statistically significant. In-hospital mortality was 0/50 in the PCI group and 1/50 in the streptokinase group, with no statistically significant difference. Hospital stay and ejection fraction were also comparable between groups. Conclusion: PCI was associated with fewer recorded in-hospital complications, particularly cardiogenic shock and arrhythmia, compared with streptokinase-based thrombolysis. Mortality, hospital stay, and ejection fraction did not differ significantly. These findings should be interpreted cautiously because of the retrospective non-randomized design and limited baseline comparability data. Keywords: Myocardial infarction; Percutaneous coronary intervention; Streptokinase; Thrombolysis; Reperfusion therapy; In-hospital outcomes.

INTRODUCTION

Acute myocardial infarction remains a major cause of preventable cardiovascular morbidity and mortality, particularly when timely restoration of coronary blood flow is not achieved. The clinical outcome of patients with acute myocardial infarction is strongly influenced by the duration of myocardial ischemia, the extent of coronary occlusion, the infarct territory involved, baseline hemodynamic status, and the availability of reperfusion therapy within the recommended therapeutic window. Reperfusion therapy is therefore central to contemporary management, with percutaneous coronary intervention and fibrinolytic therapy serving as the principal strategies for restoring myocardial perfusion in eligible patients. Primary percutaneous coronary intervention is generally preferred when it can be performed promptly by an experienced team, whereas fibrinolytic therapy remains clinically important in settings where immediate catheterization facilities are unavailable or transfer-related delays are expected (1).

The comparative effectiveness of primary percutaneous coronary intervention and thrombolytic therapy has been evaluated extensively in patients with ST-segment elevation myocardial infarction. Evidence from randomized and observational studies indicates that PCI is associated with more reliable coronary reperfusion, lower rates of recurrent ischemic events, and improved short- and long-term clinical outcomes when performed within an appropriate time frame. However, the benefit of PCI is time-sensitive, and delays in door-to-balloon time may reduce its advantage over early fibrinolysis, particularly in hospitals without on-site interventional cardiology services. In such circumstances, immediate thrombolysis followed by timely transfer for angiography or rescue PCI remains an important practical strategy, especially in resource-constrained healthcare systems (2).

The choice between PCI and thrombolytic therapy is particularly relevant in low- and middle-resource settings, where access to catheterization laboratories, trained interventional teams, and rapid transfer networks may be inconsistent. Streptokinase continues to be used in many hospitals because of its relatively low cost and availability, despite concerns regarding less predictable reperfusion, recurrent ischemia, allergic reactions, hypotension, and bleeding risk. Conversely, PCI requires specialized infrastructure and procedural expertise, which may limit its immediate availability for many patients. These practical constraints create a clinically important treatment dilemma: while PCI may offer superior reperfusion under optimal conditions, thrombolysis may remain the only feasible immediate reperfusion option for patients presenting to non-PCI-capable centers (3).

Existing literature also suggests that the relative benefit of reperfusion strategies may vary according to infarct location, baseline risk, hemodynamic instability, and treatment delay. Patients with larger infarcts, anterior wall involvement, cardiogenic shock, or high-risk clinical profiles may derive greater benefit from mechanical reperfusion when PCI is available without substantial delay. At the same time, immediate thrombolytic therapy may provide meaningful survival benefit when PCI is not rapidly accessible, emphasizing the importance of context-specific evaluation rather than universal assumptions based solely on ideal PCI availability (4,5). Therefore, local data comparing PCI with streptokinase-based thrombolysis remain important for guiding clinical decision-making, referral pathways, and resource allocation in healthcare systems where both treatment delay and cost influence patient care.

Despite international evidence favoring timely PCI in eligible patients, there is a need for locally generated comparative evidence from multicenter hospital settings where streptokinase is still used and PCI access may vary. In Pakistan, especially in mixed public and private care environments, treatment decisions are often influenced by catheterization laboratory availability, patient affordability, transfer feasibility, and institutional protocols. A comparative assessment of short-term in-hospital outcomes can help clarify whether patients receiving PCI and those receiving streptokinase differ in clinically relevant outcomes such as cardiogenic shock, arrhythmias, ejection fraction, hospital stay, and mortality within routine clinical practice. Such evidence is particularly useful when interpreted cautiously in light of baseline patient characteristics and non-random treatment allocation (6).

This study was therefore conducted to compare the in-hospital clinical outcomes of patients with acute myocardial infarction treated with percutaneous coronary intervention and those treated with streptokinase-based thrombolysis in multicenter healthcare settings in Lahore, Pakistan. The study specifically aimed to evaluate differences between treatment groups in cardiogenic shock, arrhythmia, in-hospital mortality, duration of hospital stay, and left ventricular ejection fraction, while also describing the distribution of myocardial infarction types across treatment groups. The central research question was whether PCI was associated with fewer in-hospital complications and better short-term clinical outcomes than streptokinase-based thrombolysis among patients with acute myocardial infarction treated in routine hospital practice (7).

MATERIAL AND METHODS

This multicenter retrospective observational comparative study was conducted to evaluate short-term in-hospital outcomes among patients with acute myocardial infarction treated with percutaneous coronary intervention or streptokinase-based thrombolysis. The study was carried out at multiple healthcare centers in Lahore, Pakistan, where patients with acute myocardial infarction received either PCI or streptokinase according to institutional protocols, clinical eligibility, and availability of reperfusion services. The study covered a four-month period after approval of the research synopsis and was designed to compare real-world clinical outcomes between two commonly used reperfusion approaches without altering the standard treatment pathway.

The study population consisted of adult patients aged more than 18 years who had clinical, electrocardiographic, and biochemical evidence of acute myocardial infarction and who received reperfusion therapy within 12 hours of symptom onset. Patients were included if they were treated either with PCI or with streptokinase-based thrombolysis during the study period and had sufficient hospital record data available for assessment of treatment modality, myocardial infarction type, in-hospital complications, ejection fraction, hospital stay, and survival status. Patients were excluded if they had contraindications to reperfusion therapy, previous coronary artery bypass graft surgery, end-stage disease, severe comorbid illness expected to independently influence survival or hospitalization outcomes, or incomplete clinical records for the primary study variables.

A total of 100 patients were included through non-probability consecutive sampling. Eligible patients were allocated into two comparison groups according to the reperfusion treatment actually received: 50 patients underwent percutaneous coronary intervention and 50 patients received streptokinase-based thrombolytic therapy. Consecutive sampling was used to reduce selective case inclusion, and all eligible records meeting the predefined criteria during the study period were screened until the required sample size was achieved. The sample size was estimated using OpenEpi for comparison of two independent proportions, with a two-sided 95% confidence level, 80% statistical power, and equal allocation between treatment groups, based on the expected difference in major post-infarction complication proportions between patients treated with streptokinase and those treated with PCI.

The exposure variable was reperfusion modality, categorized as PCI or streptokinase-based thrombolysis. Additional independent variables included age, sex, type of myocardial infarction, and vascular access site where applicable. The main clinical outcome variables were cardiogenic shock, arrhythmia, in-hospital mortality, duration of hospital stay, and left ventricular ejection fraction. Cardiogenic shock was defined according to documentation of hemodynamic instability consistent with shock during hospitalization. Arrhythmia was defined as any clinically documented rhythm disturbance occurring during the hospital course. In-hospital mortality was defined as death from any cause before discharge. Duration of hospital stay was recorded in days from admission to discharge or in-hospital death. Ejection fraction was recorded as the post-treatment left ventricular ejection fraction measured by echocardiography during hospitalization.

The diagnosis of acute myocardial infarction was established using the documented clinical presentation, standard 12-lead electrocardiographic findings, and cardiac biomarker evidence recorded in the hospital files. Patients in the streptokinase group received thrombolytic therapy according to institutional treatment protocols after assessment for eligibility and contraindications. Patients in the PCI group underwent coronary angiography followed by angioplasty and/or stenting when clinically indicated. PCI procedures were performed in catheterization laboratories equipped for coronary intervention. Post-treatment assessment included monitoring for cardiogenic shock, arrhythmia, survival status, duration of hospitalization, and echocardiographic evaluation of left ventricular ejection fraction.

Data were collected from hospital records using a structured data collection form. The extracted variables included demographic characteristics, clinical presentation, myocardial infarction type, treatment modality, vascular access site when recorded, post-treatment in-hospital complications, echocardiographic findings, duration of hospital stay, and discharge outcome. To improve data consistency, variables were extracted according to predefined operational definitions, and records were checked for completeness before inclusion in the final analysis. Patient identity was anonymized during data handling, and only coded clinical information was used for statistical analysis.

Potential sources of bias included non-random treatment allocation, variation in institutional treatment pathways, possible differences in baseline infarct severity, and differences in PCI availability or treatment timing. These were addressed at the design stage by using predefined inclusion and exclusion criteria, consecutive case selection, standardized variable extraction, and group-wise comparison of myocardial infarction type and clinical outcomes. Because the study was observational, all associations were interpreted as treatment-related differences rather than causal effects. The statistically significant difference in myocardial infarction type distribution between treatment groups was considered clinically relevant when interpreting outcome comparisons.

Data were entered and analyzed using SPSS version 27.0. Categorical variables were summarized as frequencies and percentages, while continuous variables were summarized as mean and standard deviation. The PCI and streptokinase groups were compared for categorical outcomes using the Chi-square test or Fisher's Exact Test according to expected cell frequencies. For categorical variables with more than two categories, the Fisher-Freeman-Halton Exact Test was applied where appropriate. Continuous variables, including hospital stay and ejection fraction, were compared between groups using the independent samples t-test when distributional assumptions were acceptable. A p-value of less than 0.05 was considered statistically significant. Results were interpreted with attention to clinical relevance, sample size, and the retrospective non-randomized design.

The study was conducted after ethical approval from the Institutional Review Board of Superior University. Patient confidentiality was maintained by anonymizing extracted data and restricting access to study records. The study did not interfere with clinical decision-making, treatment allocation, or standard patient care. Data were used only for research purposes, and all findings, including statistically non-significant outcomes, were reported transparently to reduce selective reporting bias.

RESULTS

A total of 100 patients with acute myocardial infarction were included in the analysis. Of these, 50 patients underwent percutaneous coronary intervention and 50 patients received streptokinase-based thrombolysis. The available results are presented according to treatment group, myocardial infarction type, and in-hospital clinical outcomes. Because this was a retrospective observational comparison, all findings are interpreted as associations between treatment modality and short-term in-hospital outcomes.

Data-integrity note: The reported myocardial infarction type counts in the available manuscript sum to 91 rather than the stated total sample size of 100. Therefore, Table 1 presents the reported MI-type counts exactly as available, without recalculating percentages from uncertain denominators. The missing or unclassified MI-type records should be reconciled before final submission.

Table 1. Reported Distribution of Myocardial Infarction Types by Treatment Group and Sex

Myocardial Infarction Type	PCI Male, n	PCI Female, n	SK Male, n	SK Female, n	Reported Total, n
AWMI	8	4	6	5	23
IWMI	9	4	9	6	28
IPWMI	6	5	6	5	22
AMI, unspecified	1	1	1	1	4
EAWMI	1	1	1	1	4

Myocardial Infarction Type	PCI Male, n	PCI Female, n	SK Male, n	SK Female, n	Reported Total, n
Posterolateral MI	1	0	1	0	2
HLWMI	1	0	1	0	2
IWMI + NSTEMI	1	0	1	0	2
IWMI + RV infarct	1	0	0	0	1
STEMI, unspecified	1	1	1	0	3
Reported total	30	16	27	18	91

Abbreviations: AMI, acute myocardial infarction; AWMI, anterior wall myocardial infarction; EAWMI, extensive anterior wall myocardial infarction; HLWMI, high lateral wall myocardial infarction; IPWMI, inferior-posterior wall myocardial infarction; IWMI, inferior wall myocardial infarction; NSTEMI, non-ST-segment elevation myocardial infarction; PCI, percutaneous coronary intervention; RV, right ventricular; SK, streptokinase; STEMI, ST-segment elevation myocardial infarction.

Among the reported myocardial infarction categories, IWMI was the most frequent diagnosis, with 28 recorded cases, followed by AWMI with 23 cases and IPWMI with 22 cases. The reported distribution included 46 categorized cases in the PCI group and 45 categorized cases in the SK group, indicating that nine cases from the stated sample of 100 were not accounted for in the available MI-type table. Because of this discrepancy, the reported Fisher-Freeman-Halton Exact Test result for MI-type distribution should be interpreted cautiously until the missing or unclassified cases are clarified.

Table 2. Comparison of In-Hospital Categorical Outcomes Between PCI and Streptokinase Groups

Outcome	PCI Group, n/N (%)	SK Group, n/N (%)	Risk Difference, %	95% CI	p-value
Cardiogenic shock	0/50 (0.0)	22/50 (44.0)	-44.0	-57.7 to -29.3	<0.001
Arrhythmia	0/50 (0.0)	15/50 (30.0)	-30.0	-43.8 to -17.0	<0.001
In-hospital mortality	0/50 (0.0)	1/50 (2.0)	-2.0	-10.5 to 5.3	0.982

Risk difference calculated as PCI minus SK. Confidence intervals were calculated from the available group counts. p-values are reported as available in the manuscript. PCI, percutaneous coronary intervention; SK, streptokinase.

Cardiogenic shock was recorded in 22 of 50 patients in the SK group and in none of the 50 patients in the PCI group, corresponding to an absolute risk difference of -44.0%. Arrhythmia was recorded in 15 of 50 patients in the SK group and in none of the PCI-treated patients, corresponding to an absolute risk difference of -30.0%. Both outcomes showed statistically significant between-group differences. In-hospital mortality was rare, with one death in the SK group and no deaths in the PCI group; however, this difference was not statistically significant. These findings suggest that PCI was associated with fewer recorded in-hospital complications, particularly cardiogenic shock and arrhythmia, but the available mortality data do not demonstrate a statistically significant survival difference between groups.

Table 3. Comparison of Continuous In-Hospital Outcomes Between PCI and Streptokinase Groups

Outcome	PCI Group, Mean ± SD	SK Group, Mean ± SD	Mean Difference	95% CI	p-value
Hospital stay, days	6.92 ± 3.57	7.70 ± 3.82	-0.78	-2.25 to 0.69	>0.05
Ejection fraction, %	43.54 ± 6.94	44.14 ± 6.94	-0.60	-3.35 to 2.15	>0.05

Mean difference calculated as PCI minus SK. Confidence intervals were calculated from the reported means, standard deviations, and group sizes. Exact p-values were not available in the manuscript. PCI, percutaneous coronary intervention; SD, standard deviation; SK, streptokinase.

The mean duration of hospital stay was 6.92 ± 3.57 days in the PCI group and 7.70 ± 3.82 days in the SK group, giving a mean difference of -0.78 days. The confidence interval crossed zero, and the reported comparison was not statistically significant. Mean ejection fraction was also similar between groups, with values of 43.54 ± 6.94% in the PCI group and 44.14 ± 6.94% in the SK group. The mean difference was -0.60 percentage points, with a confidence interval crossing zero. These findings indicate that the available data do not demonstrate statistically significant between-group differences in hospital stay or left ventricular ejection fraction.

Overall, the results show that patients treated with PCI had lower recorded frequencies of cardiogenic shock and arrhythmia during hospitalization compared with patients treated with streptokinase-based thrombolysis. However, in-hospital mortality was uncommon and did not differ significantly between groups, while hospital stay and ejection fraction were comparable. Interpretation of these findings should remain cautious because the study was retrospective, treatment allocation was non-randomized, baseline comparability data were not available in the presented results, and the reported MI-type distribution requires correction before final publication.

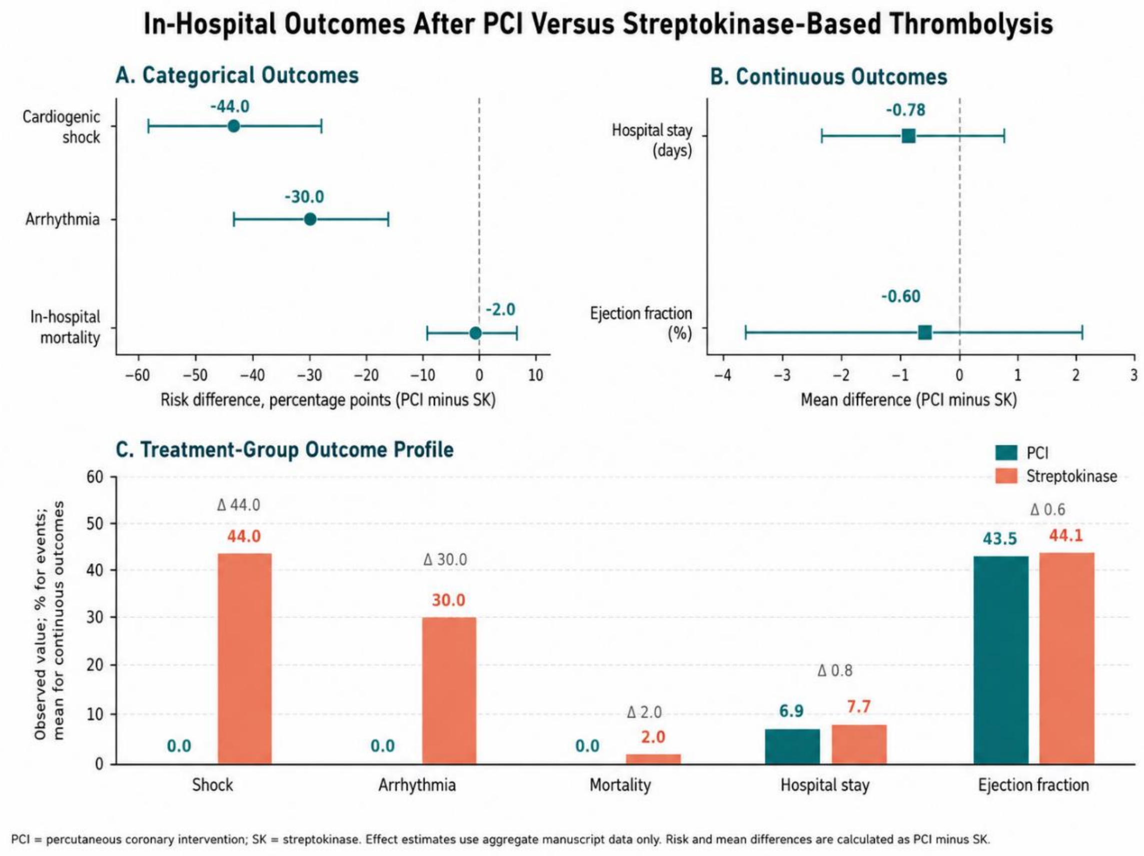

Figure 3. In-Hospital Outcome Gradient After PCI Versus Streptokinase-Based Thrombolysis

This panelled figure summarizes the comparative in-hospital outcome profile of patients treated with percutaneous coronary intervention and streptokinase-based thrombolysis. Panel A shows absolute risk differences with 95% confidence intervals for categorical complications, calculated as PCI minus streptokinase. PCI was associated with lower recorded risks of cardiogenic shock by 44.0 percentage points and arrhythmia by 30.0 percentage points, whereas the mortality difference was small at 2.0 percentage points and clinically uncertain. Panel B shows mean differences with 95% confidence intervals for continuous outcomes, demonstrating no clear between-group difference in hospital stay or ejection fraction. Panel C integrates event percentages and continuous outcome means into a treatment-contrast gradient, showing that the largest separation between groups occurred for cardiogenic shock and arrhythmia, while mortality, hospital stay, and ejection fraction showed minimal separation. Overall, the figure supports an association between PCI and fewer in-hospital complications, while avoiding unsupported claims of significant mortality, hospital-stay, or ejection-fraction benefit.

DISCUSSION

This multicenter retrospective observational study compared in-hospital outcomes among patients with acute myocardial infarction treated with percutaneous coronary intervention and those treated with streptokinase-based thrombolysis. The principal finding was that PCI was associated with markedly lower recorded frequencies of cardiogenic shock and arrhythmia during hospitalization compared with streptokinase. Cardiogenic shock was documented in 44.0% of patients in the streptokinase group and in none of the PCI-treated patients, while arrhythmia was documented in 30.0% of patients in the streptokinase group and in none of the PCI-treated patients. In contrast, in-hospital mortality was uncommon and did not differ statistically between groups, and no statistically significant differences were observed for duration of hospital stay or left ventricular ejection fraction. These findings suggest that PCI was associated with fewer short-term in-hospital complications in this cohort, although the non-randomized retrospective design requires cautious interpretation.

The observed reduction in cardiogenic shock and arrhythmia among PCI-treated patients is consistent with the biological and clinical rationale that mechanical reperfusion can achieve more predictable restoration of epicardial coronary flow than fibrinolytic therapy. Previous comparative evidence has shown that PCI is generally associated with better reperfusion success and fewer adverse ischemic outcomes than thrombolysis when performed in a timely manner, particularly in patients with ST-segment elevation myocardial infarction. A systematic review and meta-analysis reported important safety and outcome differences between fibrinolytic therapy and primary PCI, supporting the overall preference for PCI when it is available within an appropriate time window (8). Similarly, comparative analyses of PCI and thrombolytic therapy in STEMI populations have indicated that PCI may reduce major adverse cardiac events and improve short-term clinical outcomes, although local access, timing, and patient selection remain critical determinants of benefit (9).

The higher frequency of cardiogenic shock in the streptokinase group must be interpreted carefully because the available dataset does not clearly distinguish whether shock was present at admission, developed before treatment, or occurred after reperfusion therapy. This distinction is essential because shock may represent baseline disease severity rather than a treatment-related complication. Evidence from larger STEMI cohorts has shown that patients with cardiogenic shock represent a high-risk subgroup in whom reperfusion strategy, timing, hemodynamic status, and institutional capability strongly influence outcomes (12). Therefore, although the present study found a large between-group difference in shock frequency, this result should not be interpreted as a direct causal effect of treatment unless future analysis confirms that shock developed after treatment and that baseline severity was comparable between groups.

The difference in arrhythmia frequency also supports the possibility of more stable early clinical recovery among PCI-treated patients, but the same caution applies. Arrhythmias after myocardial infarction may be influenced by infarct location, infarct size, reperfusion success, electrolyte imbalance, left ventricular dysfunction, and timing of treatment. The significant imbalance in myocardial infarction type distribution between treatment groups further complicates interpretation because infarct territory may affect the likelihood of arrhythmia and hemodynamic instability. Earlier studies have suggested that infarct location can influence outcomes after reperfusion therapy, including survival and functional recovery, emphasizing the importance of adjusting for baseline clinical and anatomical differences when comparing reperfusion modalities (5). In the present manuscript, the MI-type distribution table also requires correction because the reported categories account for 91 rather than 100 patients, which limits confidence in subgroup interpretation.

The finding that in-hospital mortality did not differ significantly between groups should be interpreted as absence of detected statistical difference rather than equivalence. Only one death occurred in the streptokinase group and no deaths occurred in the PCI group, producing a very low number of mortality events. Such sparse event counts substantially limit statistical power and make it inappropriate to claim a definitive survival advantage or similarity between groups. Previous observational and randomized evidence has reported mortality benefits with timely PCI in selected STEMI populations, but the magnitude of this benefit depends on treatment delay, baseline risk, transfer logistics, and reperfusion success (10). Therefore, the mortality findings of the present study are best described as inconclusive because the sample size and event frequency were insufficient to detect a reliable difference.

Hospital stay and ejection fraction were numerically similar between the two groups. The mean hospital stay was 6.92 days in the PCI group and 7.70 days in the streptokinase group, while mean ejection fraction was 43.54% and 44.14%, respectively. These findings do not support a statistically significant difference in hospitalization duration or post-treatment left ventricular systolic function in the available data. This may reflect limited sample size, variability in discharge practices, lack of baseline ejection fraction data, differences in infarct location, or the timing of echocardiographic assessment. Previous studies comparing thrombolysis, pharmaco-invasive strategies, and PCI have shown that outcomes may differ depending on the timing of angiography after thrombolysis and the availability of rescue or early invasive intervention (11,14). The present study did not include door-to-needle time, door-to-balloon time, symptom-to-treatment interval, angiographic TIMI flow, or rescue PCI status, which limits interpretation of treatment effectiveness.

From a clinical perspective, the findings support the continued preference for PCI when it is promptly available, while also acknowledging the continued role of thrombolysis in settings where PCI cannot be performed within guideline-recommended time windows. Streptokinase remains relevant in resource-limited environments because it is inexpensive and widely available, but its systemic mechanism and less predictable reperfusion profile may contribute to higher rates of incomplete reperfusion and clinical instability compared with mechanical intervention. Recent discussions on pharmaco-invasive strategies emphasize that thrombolysis should not be viewed as a complete substitute for PCI, but rather as part of an integrated reperfusion pathway when primary PCI is delayed or unavailable (11,13). In this context, the present findings are locally relevant because they reflect real-world treatment patterns in a healthcare setting where both PCI and streptokinase-based thrombolysis continue to be used.

The study has several important limitations. First, the retrospective observational design prevents causal inference and is vulnerable to selection bias, confounding by indication, and incomplete documentation. Second, treatment groups were not randomized, and baseline comparability data such as age distribution, comorbidities, symptom duration, hemodynamic status at presentation, infarct severity, and medication use were not fully reported. Third, the statistically significant difference in myocardial infarction type distribution suggests baseline imbalance, and the MI-type table contains an internal numerical inconsistency that must be corrected before final interpretation. Fourth, the timing of cardiogenic shock and arrhythmia was not clearly defined, making it uncertain whether these were baseline clinical features or post-treatment complications. Fifth, the study did not report important reperfusion metrics such as door-to-needle time, door-to-balloon time, culprit vessel, stent use, TIMI flow, rescue PCI, bleeding, reinfarction, or 30-day outcomes. Finally, the small sample size and low mortality event count limited the ability to detect differences in survival and other less frequent outcomes.

Despite these limitations, the study provides useful preliminary local evidence comparing PCI and streptokinase-based thrombolysis in patients with acute myocardial infarction treated in routine hospital practice. The strongest finding is the association of PCI with lower recorded frequencies of cardiogenic shock and arrhythmia during hospitalization. However, because of baseline imbalance, missing adjustment for confounders, and unresolved data inconsistencies, the findings should be interpreted as hypothesis-generating rather than definitive. Future studies should use prospective multicenter designs, clearly define baseline and post-treatment complications, report treatment timing metrics, include angiographic outcomes, and apply adjusted regression or propensity-based methods to better estimate the independent association between reperfusion modality and clinical outcomes.

CONCLUSION

In this multicenter retrospective observational study of 100 patients with acute myocardial infarction, percutaneous coronary intervention was associated with lower recorded frequencies of in-hospital cardiogenic shock and arrhythmia compared with streptokinase-based thrombolysis. However, in-hospital mortality was rare and did not differ significantly between groups, while duration of hospital stay and left ventricular ejection fraction were comparable. These findings support the clinical value of PCI when timely access is available, but they also highlight the continued practical role of streptokinase in settings where immediate PCI cannot be provided. Because treatment allocation was non-randomized, baseline comparability data were limited, and the myocardial infarction type distribution requires numerical correction, the results should be interpreted cautiously and confirmed through larger prospective studies with adjustment for infarct severity, treatment delays, comorbidities, and reperfusion success.

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