# In-Hospital Outcomes after Rescue Percutaneous Coronary Intervention in Patients with ST Segment Elevation Myocardial Infarction

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***Objective:*** *To investigate the outcomes of patients who underwent rescue percutaneous coronary intervention (PCI) for ST segment elevation myocardial infarction (STEMI) after failed thrombolytic therapy.*
***Material and Method:*** *This observational cohort study was conducted between June 1, 2008 and May 31, 2013. Consecutive STEMI patients who underwent either emergency rescue PCI or primary PCI were included. Rescue PCI patients were compared with primary PCI patients. Clinical data including baseline characteristics, angiographic results, periprocedural details, and in-hospital adverse events were reviewed.*
***Results:*** *Three hundred sixteen patients were enrolled, of which 72.5% were male. Mean age of participants was 59.5 years. Rescue PCI and primary PCI was performed in 24 and 292 patients, respectively. Median time from symptom onset to emergency room (ER) arrival was 175 minutes and not statistically different between groups. Thirteen percent of patients were critically ill and in cardiogenic shock upon arrival. Radial artery access was significantly more frequently used in the rescue PCI group. The rescue PCI group had a significantly higher proportion of initial TIMI grade 3 flow than the primary PCI group (rescue PCI 33.3% vs. primary PCI 13.4%, p = 0.042). No significant differences were observed in final TIMI grade 3 between the two groups (rescue PCI 87.5% vs. primary PCI 89.7%, p = 0.77). Rate of platelet glycoprotein IIb/IIIa receptor blocker use was significantly higher in the primary PCI group (41.4% vs. 4.2%, p<0.001). Left ventricular ejection fraction was significantly higher in the rescue PCI group (rescue PCI 57.7% vs. primary PCI 50%, p = 0.013). There were no significant differences between groups for angiographic success rate (rescue PCI 83.3% vs. primary PCI 88.7%, p = 0.229) or procedural success rate (rescue PCI 79.2% vs. primary PCI 85.6%, p = 0.164). Forty-one patients (14%) in primary PCI group and two patients (8.3%) in rescue PCI group died during hospitalization (p = 0.75). Stroke and reinfarction were rare events in this study. Hemorrhagic stroke occurred in one patient in each group. There were no significant differences in major bleeding or major vascular complications between groups.*
***Conclusion:*** *The angiographic outcome and procedural success rates in patients who underwent rescue PCI were not significantly different from rates in patients who underwent primary PCI. Rescue PCI in STEMI can be performed with favorable success rates and in-hospital outcomes and should be considered in patients that experience failure after thrombolytic therapy.*

***Keywords:*** *Myocardial infarction, Acute coronary syndrome, Primary percutaneous coronary intervention, Rescue percutaneous coronary intervention, Failed thrombolysis*

***J Med Assoc Thai 2016; 99 (6): 645-52***
***Full text. e-Journal:*** *http://www.jmatonline.com*

Primary percutaneous coronary intervention (PCI), if performed in a timely fashion, is the reperfusion strategy of choice in ST segment elevation myocardial infarction (STEMI). Compared with thrombolytic therapy, primary PCI produces higher rates of infarct artery patency, TIMI 3 flow, and lower rates of recurrent ischemia, re-infarction, emergency repeat revascularization procedures, intracranial hemorrhage (ICH), and death[1]. The major compound limitation of this reperfusion strategy is lack of accessibility to a 24-hour cardiac catheterization laboratory team and the necessity of emergency response. Delayed door-to-balloon time is strongly correlated with higher mortality in STEMI[2]. In Thailand, the median door to balloon time with primary PCI was 127 minutes, which is longer than the standard guideline recommendations[3,4]. In addition, mortality remains high particularly at 12 months after the index event[3].

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Because of logistical challenges and limited resources, particularly in developing countries, many hospitals continue to give thrombolytic treatment as reperfusion therapy in STEMI patients. The extension of the Thai Acute Coronary Syndrome Registry (TACSR) reported that thrombolytic therapy remains the backbone treatment for STEMI patients in Thailand[3]. The utilization rate of thrombolytic therapy and primary PCI in STEMI patients in Thailand was 42.6% and 24.7%, respectively[3]. It has been reported that 40% of patients do not achieve TIMI grade 3 flow, even with the use of fibrin-specific thrombolytic agents[5]. If there is clinical evidence of failed reperfusion after thrombolytic therapy, urgent rescue PCI is recommended to establish reperfusion to salvage the myocardium and potentially improve survival[4].

The benefits and risks of rescue PCI were studied in two randomized controlled trials. In the MERLIN trial, rescue PCI improved event-free survival compared with conservative therapy due to a reduction in subsequent revascularization; however, rescue PCI was associated with more stroke and more transfusions[6]. In the REACT trial, event-free survival after failed thrombolytic therapy was significantly higher in rescue PCI than in repeated thrombolysis or conservative treatment with a significantly increased risk of non-fatal bleeding associated with rescue PCI[7]. However, in both the MERLIN and the REACT trials, survival benefit was not demonstrated in the rescue PCI group[6,7].

Shavelle et al reported an in-hospital mortality rate of 3.4% from a real-world study conducted in the United States in patients undergoing rescue PCI for failed thrombolysis, despite the presence of cardiogenic shock and cardiac arrest in 20% and 9.6% of patients, respectively[8]. A single-center observational study from Korea that compared outcomes between rescue PCI and primary PCI found that event-free survival rates were not significantly different[9]. A single-center observational study from Pakistan by Hakeem et al reported an in-hospital death rate of 10% and a 16-month event-free survival rate of 74% after rescue PCI[10].

The relevance of these results to the practice of rescue PCI in Thailand is unknown, particularly in the era of potent antiplatelet therapy and new generation fibrin-specific thrombolytic agents. The objective of this study was to profile and describe real-world experience with rescue PCI in consecutive, unselected STEMI patients who underwent emergency rescue PCI after failed thrombolytic therapy in a university-based tertiary care hospital in Thailand and compare those results with patients who underwent primary PCI.

**Material and Method**

This observational cohort study enrolled 316 consecutive patients who presented with STEMI at Faculty of Medicine Siriraj Hospital, in Bangkok between June 1, 2008 and May 31, 2013 study period. Of the 316 STEMI patients, 24 patients underwent rescue PCI and 292 underwent primary PCI. Rescue PCI patients were compared with patients who underwent primary PCI.

STEMI was defined as presence of ischemic chest pain lasting more than 30 minutes, symptoms were unrelieved by nitrates, and associated with typical ST segment elevation on the 12-lead ECG with at least 2 mm of ST segment elevation in two or more contiguous chest leads and at least 1 mm of ST segment elevation in two or more contiguous limb leads. Rescue PCI was performed in patients with continued chest pain or failure of ST segment elevation to resolve by more than 50% in the lead with maximum elevation at 90 minutes after initiation of thrombolytic therapy. The decision to perform rescue PCI was made by the attending physician. Patients whose coronary angiogram was unavailable for review were excluded from this study.

All clinical data, including baseline characteristics, angiographic findings, peri-procedural details, and in-hospital adverse events were retrospectively reviewed.

All patients were pre-treated with aspirin and clopidogrel before rescue PCI, with dose determined by the attending physician. PCI was performed according to standard protocol. Choices and decisions relating to arterial access site, periprocedural medications, stents, and device therapy were left to operator discretion. Left-ventricular ejection fraction was measured after PCI using echocardiogram by Simpson's method.

All coronary angiograms were reviewed by a single investigator who was blinded to patient clinical information and outcome. TIMI flow grades were defined, as follows. Grade 0 (no perfusion): no antegrade flow beyond the point of occlusion. Grade 1 (penetration without perfusion): contrast material passes beyond the area of obstruction, but "hangs up" and fails to opacify the entire coronary bed distal to the obstruction. Grade 2 (partial perfusion): contrast material passes across the obstruction and opacifies the coronary bed distal to the obstruction. However,

the rate of entry of contrast material into the vessel distal to the obstruction or its rate of clearance from the distal bed (or both) is perceptibly slower than its entry into or clearance from comparable areas not perfused by the previously occluded vessel. Grade 3 (complete perfusion): antegrade flow into the bed distal to the obstruction occurs as promptly as antegrade flow into the bed proximal to the obstruction and clearance of contrast material from the involved bed is as rapid as clearance from an uninvolved bed in the same vessel or the opposite artery.

Angiographic success was defined as reduction of a minimal stenosis diameter to less than 50% with a final TIMI flow grade 3. Procedural success was defined as angiographic success without occurrence of death, reinfarction, or stroke at 24 hours post-procedure. Reinfarction was defined as a repeat episode of ischemic chest pain after recovery from the initial event with typical ST-segment re-elevation on ECG and lasting longer than 30 minutes despite nitrate therapy.

The primary outcome was to determine angiographic outcome and procedural success rate in patients who presented with STEMI and underwent rescue PCI after failed thrombolytic therapy.

This study was approved by the Siriraj Institutional Review Board, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand.

***Statistical analysis***

Categorical data were presented as frequency and percentage. Continuous variables were reported as mean ± standard deviation or median (interquartile range) when there was skewed distribution. Categorical data were compared using Chi-square test or Fisher's exact test and continuous data were compared using Student's t-test (normality) or Mann-Whitney U test (non-normality). A *p*-value of less than 0.05 was considered statistically significant. All statistical analysis was performed using PASW Statistics v.18.0 (SPSS, Inc., Chicago, IL, USA).

**Results**

Three hundred sixteen patients were enrolled. Baseline characteristics and time intervals are presented in Table 1. Mean age was 59.5 years and 72.5% of participants were male. Twenty-four patients underwent rescue PCI after failed thrombolytic therapy. Tissue plasminogen activator and streptokinase were the thrombolytic agents used in 45.8% and 29.2% of rescue PCI patients, respectively. Primary PCI was performed in 292 patients. Median time from symptom onset to emergency room arrival was not statistically different between groups 160 and 134 minutes in the primary PCI and rescue PCI groups, respectively. There was a trend for a shorter interval of symptom onset to start of reperfusion time in the rescue PCI group (rescue PCI 222 minutes vs. primary PCI 292 minutes, $p = 0.086$) due to a significantly shorter door to reperfusion time.

Presenting complications are shown in Table 2. There were no significant differences in presenting complications between groups. Congestive heart failure (Killip class >1) was the most frequent presenting complication in both the primary PCI and rescue PCI groups (28.8% and 20.8%, respectively). Thirty-nine patients (13.4%) in primary PCI group and three patients (12.5%) in rescue PCI group presented with cardiogenic shock. In the primary PCI group, 34 patients (11.6%) and five patients (1.7%) presented with cardiac arrest and sustained ventricular tachycardia, respectively.

Coronary angiographic findings and procedural characteristics are presented in Table 3. Radial artery access was more frequently used in the rescue PCI group. The left anterior descending artery was the most frequent infarct-related artery in both groups. The rescue PCI group had a significantly higher proportion of initial TIMI grade 3 flow (rescue PCI 33.3% vs. primary PCI 13.4%, $p = 0.042$). No significant differences in final TIMI grade 3 flow were observed between groups (rescue PCI 87.5% vs. primary PCI 89.7%, $p = 0.77$).

Rate of platelet glycoprotein IIb/IIIa receptor blocker use was significantly higher in the primary PCI group. Although periprocedural heparin dose was significantly higher in primary PCI group, longest activated clotting time (ACT) was not significantly different between groups. Left ventricular ejection fraction was significantly higher in the rescue PCI group (rescue PCI 57.7±10.8% vs. primary PCI 50±14.5%, $p = 0.013$). There were no significant differences in the angiographic success rate (rescue PCI 83.3% vs. primary PCI 88.7%, $p = 0.229$) or procedural success rate (rescue PCI 79.2% vs. primary PCI 85.6%, $p = 0.164$) between groups.

In-hospital outcomes are presented in Table 4. Forty-one patients (14%) in the primary PCI group and two patients (8.3%) in the rescue PCI group died during hospitalization; however, the difference between groups was not statistically significant ($p = 0.75$).

**Table 1.** Baseline characteristics and time intervals in 316 patients who underwent PCI for STEMI

| Characteristic | Primary PCI (n = 292) | Rescue PCI (n = 24) | *p*-value |
|---|---|---|---|
| Age | 61.1±12.9 | 58.0±12.8 | 0.260 |
| Male (%) | 210 (71.9) | 19 (79.2) | 0.445 |
| Body weight (kg) | 65.9±11.4 | 66.8±11.1 | 0.751 |
| Risk factor (%) | | | |
| Diabetes mellitus | 103 (35.3) | 7 (29.2) | 0.546 |
| Hypertension | 182 (62.3) | 14 (58.3) | 0.698 |
| Smoking | 112 (38.4) | 12 (50.0) | 0.261 |
| Dyslipidemia | 176 (60.3) | 15 (62.5) | 0.830 |
| Previous myocardial infarction | 44 (15.1) | 0 (0) | 0.116 |
| Previous PCI | 31 (10.6) | 1 (4.2) | 0.489 |
| Previous CABG | 5 (1.7) | 1 (4.2) | 0.380 |
| Systolic blood pressure (mmHg) | 131.4±38.3 | 133.4±36.7 | 0.801 |
| Heart rate (beats/minute) | 79.9±26.7 | 76.0±17.8 | 0.483 |
| Creatinine (mg/dL) | 1 (0.9, 1.3) | 1 (0.8, 1.2) | 0.238 |
| GRACE risk score | 161.8±43.3 | 150.8±41.7 | 0.230 |
| Infarct location (%) | | | |
| Anterior wall | 162 (55.5) | 11 (45.8) | 0.361 |
| Inferior wall | 124 (42.5) | 13 (54.2) | 0.266 |
| Time from symptom onset to ER arrival (minutes) | 160 (75, 324) | 134 (80, 398) | 0.425 |
| Time from symptom onset to start of reperfusion (minutes) | 292 (192, 455) | 222 (141, 358) | 0.086 |
| Time from ER arrival to start of reperfusion (minutes) | 106 (74, 145) | 47 (35, 130) | 0.002 |
| Thrombolytic agent used (%) | | | |
| Tissue plasminogen activator | NA | 11 (45.8) | - |
| Streptokinase | NA | 7 (29.2) | - |
| Tenecteplase | NA | 6 (25.0) | - |

PCI = percutaneous coronary intervention; STEMI = ST segment elevation myocardial infarction; CABG = coronary artery bypass graft; ER = emergency room; NA = not available
Data presented as mean ± standard deviation, number (%) of patients, or median (IQR)

**Table 2.** Presenting complications in 316 patients who underwent PCI for STEMI

| Characteristic | Primary PCI (n = 292) | Rescue PCI (n = 24) | *p*-value |
|---|---|---|---|
| Killip class >1 | 84 (28.8) | 5 (20.8) | 0.406 |
| Cardiogenic shock | 39 (13.4) | 3 (12.5) | 1.000 |
| Sustained VT | 5 (1.7) | 0 (0) | 0.885 |
| Cardiac arrest/VF | 34 (11.6) | 0 (0) | 0.090 |
| Complete heart block | 20 (6.8) | 1 (4.2) | 1.000 |

VT = ventricular tachycardia; VF = ventricular fibrillation
Data presented as number (%) of patients

Stroke and reinfarction were rare events in this study. Hemorrhagic stroke occurred in one patient in each of the two groups. There were no significant differences in major bleeding or major vascular complications between the two groups.

## Discussion

In the present study, angiographic outcome and procedural success rates in patients who underwent rescue PCI were not significantly different from rates in patients who underwent primary PCI. After rescue PCI, the angiographic success rate was 83.3% and procedural success rate was 79.2%.

Patients in this study were relatively young with a mean age of 59 years, similar to the mean age in previous studies[6,8,9]. Median time from onset of chest pain to emergency room presentation was a lengthy 160 minutes, which is considerably longer than times reported from the Western world, which was two hours[11]. This delayed presentation likely results from one or more of the following: lack of patient awareness, absence of an established ambulance system, traffic-related issues, and other multifactorial logistical barriers.

Compared to previous studies[6,9], our angiographic success rate in rescue PCI was lower

**Table 3.** Coronary angiographic findings and procedural characteristics in 316 patients who underwent PCI for STEMI

| | Primary PCI (n = 292) | Rescue PCI (n = 24) | *p*-value |
|---|---|---|---|
| Infarct-related coronary artery | | | |
| Left anterior descending | 154 (52.7) | 12 (50.0) | 0.853 |
| Left circumflex | 22 (7.5) | 1 (4.2) | |
| Right coronary artery | 96 (32.9) | 9 (37.5) | |
| Left main | 1 (0.3) | 0 (0) | |
| Multivessel disease (%) | 174 (59.6) | 14 (58.3) | 0.904 |
| Presence of intra-coronary thrombus (%) | 252 (86.3) | 20 (83.3) | 0.633 |
| Baseline angiogram TIMI grade | | | |
| 0/1 | 234 (80.1) | 14 (58.3) | 0.042 |
| 2 | 17 (5.8) | 2 (8.3) | |
| 3 | 39 (13.4) | 8 (33.3) | |
| Post-PCI TIMI grade | | | |
| 0/1 | 17 (5.8) | 2 (8.3) | 0.770 |
| 2 | 11 (3.8) | 1 (4.2) | |
| 3 | 262 (89.7) | 21 (87.5) | |
| Diameter stenosis | | | |
| Pre-PCI | 100 (99, 100) | 100 (99, 100) | 0.025 |
| Post-PCI | 0 (0, 0) | 0 (0, 0) | 0.854 |
| Stent placement (%) | 260 (89.0) | 22 (91.7) | 1.000 |
| Drug-eluting stent placement (%) | 110 (37.7) | 10 (41.7) | 0.840 |
| Thrombectomy (%) | 217 (74.3) | 15 (62.5) | 0.287 |
| Multivessel PCI performed (%) | 37 (12.7) | 6 (25.0) | 0.115 |
| Use of platelet glycoprotein IIb/IIIa receptor blocker (%) | 121 (41.4) | 1 (4.2) | <0.001 |
| Use of intra-aortic balloon pump (%) | 64 (21.9) | 4 (16.7) | 0.840 |
| Arterial access site (%) | | | |
| Femoral | 279 (95.5) | 17 (70.8) | <0.001 |
| Radial | 10 (3.4) | 7 (29.2) | |
| Peri-procedural heparin dose (units) | 7,500 (5,125, 7,500) | 5,000 (4,000, 6,000) | <0.001 |
| Highest ACT (seconds) | 257 (230, 300) | 255 (214, 316) | 0.938 |
| Angiographic success (%) | 259 (88.7) | 20 (83.3) | 0.229 |
| Procedural success (%) | 250 (85.6) | 19 (79.2) | 0.164 |

ACT = activated clotting time; PCI = percutaneous coronary intervention
Data presented as mean ± standard deviation, number (%) of patients, or median (IQR), *p*-value <0.05 indicate statistical significance

**Table 4.** In-hospital outcomes in 316 patients who underwent PCI for STEMI

| Outcome | Primary PCI (n = 292) | Rescue PCI (n = 24) | *p*-value |
|---|---|---|---|
| Congestive heart failure | 68 (23.3) | 7 (29.2) | 0.515 |
| Stroke | | | |
| Ischemic | 2 (0.7) | 0 (0) | 0.272 |
| Hemorrhagic | 1 (0.3) | 1 (4.2) | |
| Entry site major vascular complication | 6 (2.1) | 1 (4.2) | 0.428 |
| Major bleeding (non-entry site) | 28 (9.6) | 2 (8.3) | 1.000 |
| Re-infarction | 5 (1.7) | 0 (0) | 1.000 |
| Unplanned percutaneous coronary intervention | 9 (3.1) | 0 (0) | 1.000 |
| Death | 41 (14.0) | 2 (8.3) | 0.755 |

Data are presented as number (%) of patients

(83.3% vs. over 90%). This difference in success rate may be explained by differences in definition of successful PCI, patient characteristics, and/or procedural characteristics. In the present study, the proportion of patients who presented with cardiogenic shock was higher (13.3% vs. 8.7%) than previous studies. Multivessel disease and presence of intracoronary thrombus were also distinctly higher than previous studies. In our study, streptokinase was used in 29.2% of patients in the rescue PCI group; whereas, the only thrombolytic agents reportedly used in a previous study were tissue plasminogen activator and urokinase[9]. The efficacy of streptokinase is lower than the newer generation thrombolytic agents, which may explain the high rate of intracoronary thrombus found in this study. Nevertheless, streptokinase remains the most commonly used thrombolytic agent worldwide due to its lower cost and wide availability.

The in-hospital death was 14% and 8.3% in the primary PCI group and the rescue PCI group, respectively. This difference was likely due to the selection of patients with more serious conditions to undergo primary PCI. There were no significant differences in other in-hospital outcomes, including re-infarction, major bleeding, stroke, and congestive heart failure between groups. In-hospital mortality rate in the rescue PCI group (8.3%) in this study was higher than data from prior observational studies (3.9-6.5%) conducted in developed countries[8,9], but comparable to the 10% rate reported from Pakistan[10]. These findings may be due to failure to restore reperfusion at the microvascular level, despite establishment of normal epicardial coronary flow. In addition, differences in patient baseline characteristics, aggressive use of third-generation thrombolytic agents, and logistical barriers and challenges present in developing countries may explain these differential outcomes.

This study illustrates the need to improve care of STEMI patients in developing countries. Efforts to create public awareness and support timely access to emergency care are of paramount importance. After emergency thrombolysis, prompt recognition of reperfusion failure and early transfer to a cardiac catheterization laboratory facility is strongly recommended.

## Conclusion

Angiographic outcome and procedural success rates in patients who underwent rescue PCI were not significantly different from rates in patients who underwent primary PCI. Rescue PCI in STEMI can be performed with favorable success rates and in-hospital outcome and should be considered in patients that experience failure of thrombolytic treatment.

## Study limitations

This study had some inherent limitations. Although this was a single-center, non-randomized study, enrolled participants were consecutive patients that represent a real-world clinical setting in Thailand. In addition, findings based on the small number of patients in the rescue PCI group may not be generalizable to all Thai patients and hospitals. This is, however, the largest series to date in rescue PCI in STEMI from Thailand. Lastly, only short-term in-hospital outcomes were analyzed and presented.

## What is already known on this topic?

Rescue PCI is recommended for failed reperfusion thrombolytic therapy.

## What this study adds?

This study profiles and describes real-world experience with rescue PCI for STEMI in Thailand's largest university-based tertiary referral center.


## Acknowledgements

This study was funded by a Siriraj Grant for Research Development. The authors gratefully acknowledge Rungtiwa Pongakasira for administrative support.


## Potential conflicts of interest

None.

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## ผลการรักษาผู้ป่วยด้วยวิธี Rescue Percutaneous Coronary Intervention

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**วัตถุประสงค์:** เพื่อศึกษาผลการรักษาผู้ป่วยภาวะหลอดเลือดหัวใจขาดเลือดฉับพลันชนิด ST-segment ยก (ST-segment elevation myocardial infarction, STEMI) ที่ได้รับการถ่างขยายหลอดเลือดเป็นกรณีฉุกเฉินภายหลังจากที่การรักษาด้วยยาสลายลิ่มเลือดไม่สามารถเปิดหลอดเลือดได้สำเร็จ (rescue percutaneous coronary intervention, rescue PCI)

**วัสดุและวิธีการ:** การศึกษานี้เป็นการศึกษาแบบติดตามผู้ป่วยภาวะ STEMI ที่รักษาด้วย rescue PCI ตั้งแต่ วันที่ 1 มิถุนายน พ.ศ. 2551 ถึง 31 พฤษภาคม พ.ศ. 2556 มีการเปรียบเทียบระหว่างผู้ป่วยกลุ่ม rescue PCI กับกลุ่มที่รักษาด้วยการถ่างขยายหลอดเลือดแบบปฐมภูมิ (primary PCI)

**ผลการศึกษา:** มีผู้ป่วยทั้งหมด 316 ราย โดยเป็นผู้ชายร้อยละ 72.5 อายุเฉลี่ย 59.5 ปี ผู้ป่วยจำนวน 24 ราย และ 292 ราย ได้รับการรักษาด้วย rescue PCI และ primary PCI ตามลำดับ ค่ามัธยฐานของเวลาตั้งแต่ผู้ป่วยเริ่มมีอาการจนผู้ป่วยมาถึงห้องฉุกเฉินอยู่ที่ 175 นาที และไม่ต่างกันระหว่างผู้ป่วยสองกลุ่ม มีผู้ป่วยร้อยละ 13 อยู่ในภาวะ cardiogenic shock กลุ่ม rescue PCI มีการสวนหลอดเลือดผ่านทางหลอดเลือด radial มากกว่าและมีการใช้ยาต้านเกล็ดเลือดชนิดยับยั้ง glycoprotein IIb/IIIa receptor น้อยกว่ากลุ่ม primary PCI อย่างมีนัยสำคัญทางสถิติ ค่า left-ventricular ejection fraction ในกลุ่ม rescue PCI สูงกว่ากลุ่ม primary PCI อย่างมีนัยสำคัญทางสถิติ ผลสำเร็จของการถ่างขยายหลอดเลือด และผลการรักษาระหว่างนอนในโรงพยาบาลไม่มีความแตกต่างกันทางสถิติ มีผู้ป่วยเสียชีวิต 41 ราย (ร้อยละ 14) ในกลุ่ม primary PCI และ 2 ราย (ร้อยละ 8.3) ในกลุ่ม rescue PCI ($p = 0.75$) พบการเกิดภาวะโรคหลอดเลือดสมองเฉียบพลัน และ reinfarction น้อยมาก แต่ละกลุ่มมีผู้ป่วยที่เกิดเลือดออกในสมอง 1 ราย การเกิดเลือดออกที่รุนแรงหรือผลแทรกซ้อนทางหลอดเลือดส่วนปลายไม่แตกต่างกันระหว่างสองกลุ่ม

**สรุป:** การรักษาด้วยการทำ rescue PCI มีผลสำเร็จของการถ่างขยายหลอดเลือดและผลลัพธ์ของการรักษาระหว่างนอนในโรงพยาบาลไม่แตกต่างจากการรักษาด้วยวิธี primary PCI ฉะนั้นในผู้ป่วยภาวะ STEMI ที่ได้รับยาสลายลิ่มเลือด แล้วยาไม่สามารถเปิดหลอดเลือดได้สำเร็จ ควรได้รับการพิจารณาทำ rescue PCI อย่างฉุกเฉิน