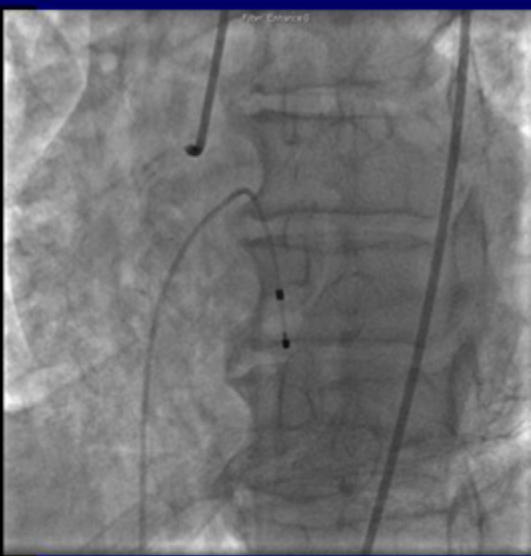
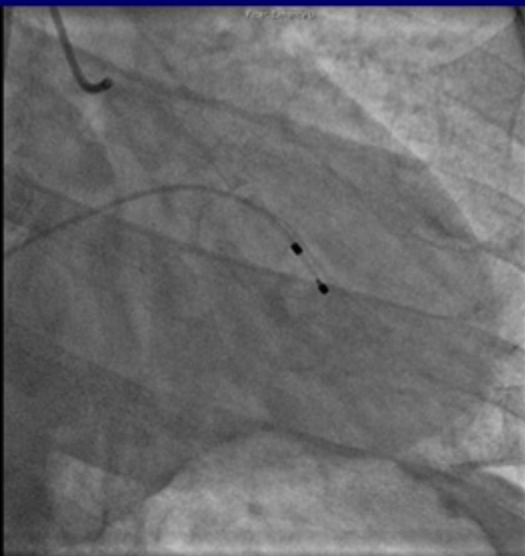


Left Main PCI in Acute Myocardial Infarction

Michael S. Lee, MD, FACC, FSCAI

Assistant Professor

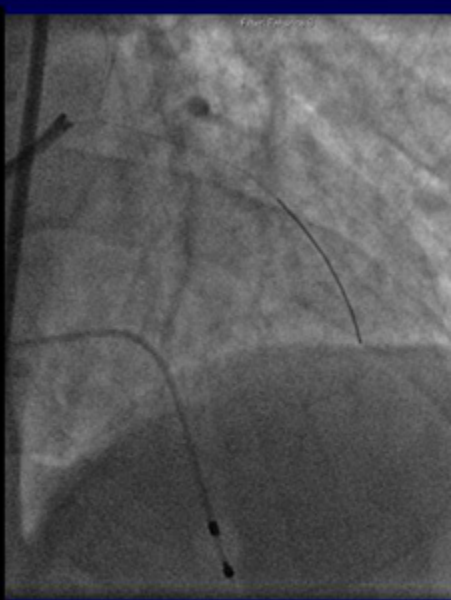
UCLA School of Medicine

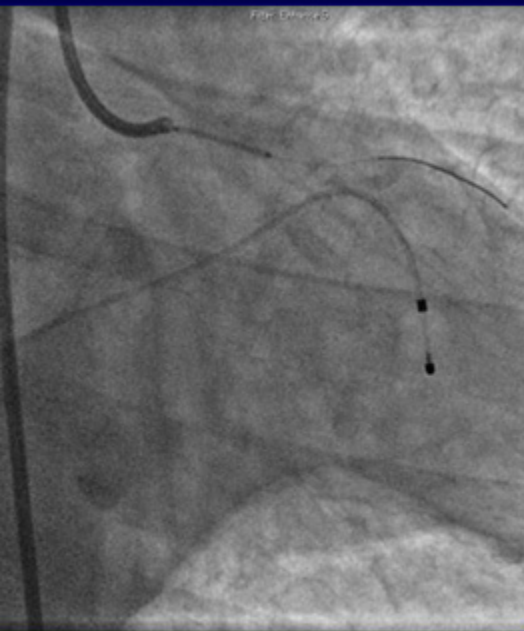


Acute left main occlusion occurs in 0.8% of STEMI

CABG vs. PCI?

- **Feasibility**
- **Safety**
- **Efficacy**
- **More rapid reperfusion with PCI**





Unprotected left main revascularization in patients with acute coronary syndromes

Gilles Montalescot, David Brieger, Kim A. Eagle,
Frederick A. Anderson Jr, Gordon FitzGerald, Michael
S. Lee, Ph Gabriel Steg, A´lvaro Avezum, Shaun G.
Goodman, and Joel M. Gore for the GRACE
Investigators

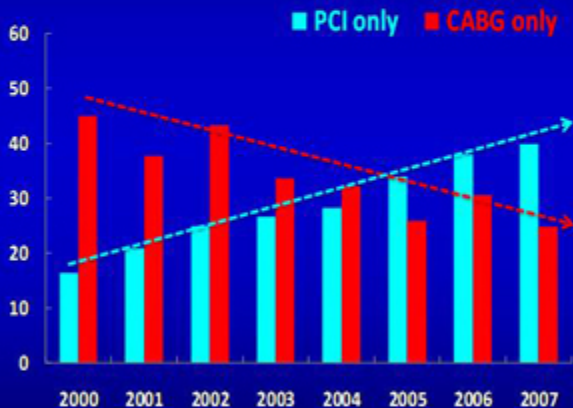
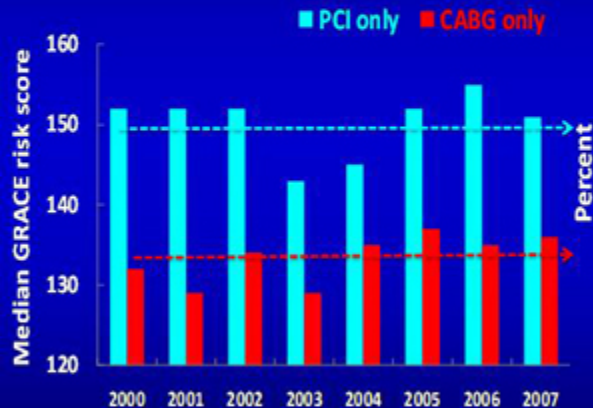
<http://eurheartj.oxfordjournals.org/cgi/content/full/ehp353>



ULMCD Revascularization in ACS

Temporal Trends in Severity of ACS

Temporal Trends in Type of Revascularization



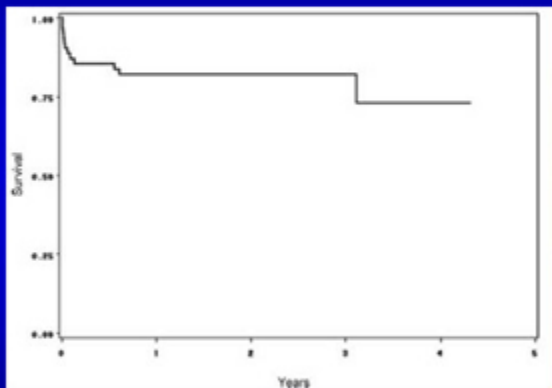
$p < .001$ using Mantel-Haenszel linear trend test

Multicenter International Registry of Unprotected Left Main Coronary Artery Percutaneous Coronary Intervention With Drug-Eluting Stents in Patients With Myocardial Infarction

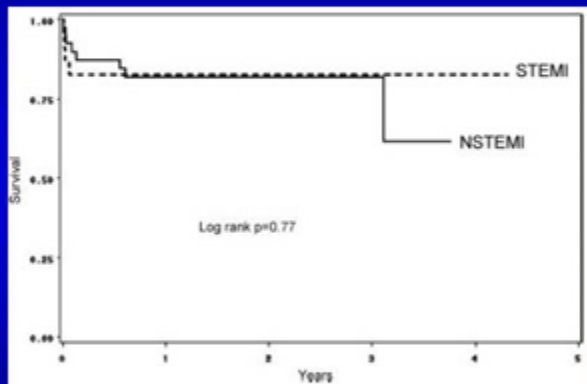
Michael S. Lee,^{1*} MD, Dario Sillano,² MD, Azeem Latib,³ MD, Alaide Chieffo,³ MD, Giuseppe Biondi Zoccai,² MD, Ravi Bhatia,¹ Imad Sheiban,² MD, Antonio Colombo,³ MD, and Jonathan Tobis,¹ MD

Background: Patients who present with myocardial infarction (MI) and unprotected left main coronary artery (ULMCA) disease represent an extremely high-risk subset of patients. ULMCA percutaneous coronary intervention (PCI) with drug-eluting stents (DES) in MI patients has not been extensively studied. **Methods:** In this retrospective multicenter international registry, we evaluated the clinical outcomes of 62 consecutive patients with MI who underwent ULMCA PCI with DES (23 ST-elevation MI [STEMI] and 39 non-ST-elevation MI [NSTEMI]) from 2002 to 2006. **Results:** The mean age was 70 ± 12 years. Cardiogenic shock was present in 24%. The mean EuroSCORE was 10 ± 8 . Angiographic success was achieved in all patients. Overall in-hospital major adverse cardiac event (MACE) rate was 10%, mortality was 8%, all due to cardiac deaths from cardiogenic shock, and one patient suffered a periprocedural MI. At 566 ± 431 days, 18 patients (29%) experienced MACE, 12 patients (19%) died (the mortality rate was 47% in patients with cardiogenic shock), and target vessel revascularization was performed in four patients, all of whom had distal bifurcation involvement (two patients underwent repeat PCI and two patients underwent bypass surgery). There was no additional MI. Two patients had probable stent thrombosis and one had possible stent thrombosis. Diabetes [hazard ratio (HR) 4.22, 95% confidence interval (CI) (1.07–17.36), $P = 0.04$], left ventricular ejection fraction [HR 0.94, 95% CI (0.90–0.98), $P = 0.006$], and intubation [HR 7.00, 95% CI (1.62–30.21), $P = 0.009$] were significantly associated with increased mortality. **Conclusions:** Patients with MI and ULMCA disease represent a very high-risk subgroup of patients who are critically ill. PCI with DES appears to be technically feasible, associated with acceptable long-term outcomes, and a reasonable alternative to surgical revascularization for MI patients with ULMCA disease. Randomized trials are needed to determine the ideal revascularization strategy for these patients. © 2008 Wiley-Liss, Inc.

Overall Survival



STEMI vs. NSTEMI



N=62

Cardiogenic shock 24%

All in-hospital deaths from cardiogenic shock

STATE-OF-THE-ART PAPER

Unprotected Left Main Coronary Disease and ST-Segment Elevation Myocardial Infarction

A Contemporary Review and Argument for Percutaneous Coronary Intervention

Michael S. Lee, MD,* Pooya Bokhoo, MD,* Seung-Jung Park, MD,† Young-Hak Kim, MD,† Gregg W. Stone, MD,‡ Imad Sheiban, MD,§ Giuseppe Biondi-Zoccai, MD,§ Dario Sillano, MD,§ Jonathan Tobis, MD,* David E. Kandzari, MD||

Los Angeles and La Jolla, California; Seoul, South Korea; New York, New York; and Turin, Italy

“Absent a randomized trial, it is our belief that physicians and guidelines committees should recognize emergent PCI as the preferred reperfusion modality for selected patients with MI and LMCA occlusion.”

...angiogram more persistent ventricular aneurysms and significant cardiomegaly. The higher rate of target vessel revascularization associated with ULMCA PCI compared with CABG is an acceptable tradeoff given the primary need for rapid reperfusion to enhance survival. (J Am Coll Cardiol Interv 2010;3:791-5) © 2010 by the American College of Cardiology Foundation

PRACTICE GUIDELINE

2011 ACCF/AHA/SCAI Guideline for Percutaneous Coronary Intervention

A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines and the Society for Cardiovascular Angiography and Interventions

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Henry H. Ting, MD, FACC, FAHA†

*Writing committee members are required to recuse themselves from writing on sections to which their specific relationships with industry and other entities may apply; see Appendix 1 for recusal information.
†ACCF/SCAI Representative, FSCAI Representative, Chair/Revascularization Section, Author, JACC/SCAI Task Force on Practice Guidelines, Liaison, *ACCF/SCAI Task Force on Performance Measures Liaison.

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2.2. Revascularization to Improve Survival: Recommendations

Left Main CAD Revascularization

CLASS I

1. CABG to improve survival is recommended for patients with significant ($\geq 50\%$ diameter stenosis) left main coronary artery stenosis (24–30). (Level of Evidence: B)

CLASS IIa

1. PCI to improve survival is reasonable as an alternative to CABG in selected stable patients with significant ($\geq 50\%$ diameter stenosis) unprotected left main CAD with: 1) anatomic conditions associated with a low risk of PCI procedural complications and a high likelihood of good long-term outcome (e.g., a low SYNTAX score [≤ 22], ostial or trunk left main CAD); and 2) clinical characteristics that predict a significantly increased risk of adverse surgical outcomes (e.g., STS-predicted risk of operative mortality $\geq 5\%$) (13,17,19,23,31–48). (Level of Evidence: B)
2. PCI to improve survival is reasonable in patients with UA/NSTEMI when an unprotected left main coronary artery is the culprit lesion and the patient is not a candidate for CABG (13,36–39,44,45,47–49). (Level of Evidence: B)
3. PCI to improve survival is reasonable in patients with acute STEMI when an unprotected left main coronary artery is the culprit lesion, distal coronary flow is less than TIMI (Thrombolysis In Myocardial Infarction) grade 3, and PCI can be performed more rapidly and safely than CABG (33,50,51). (Level of Evidence: C)



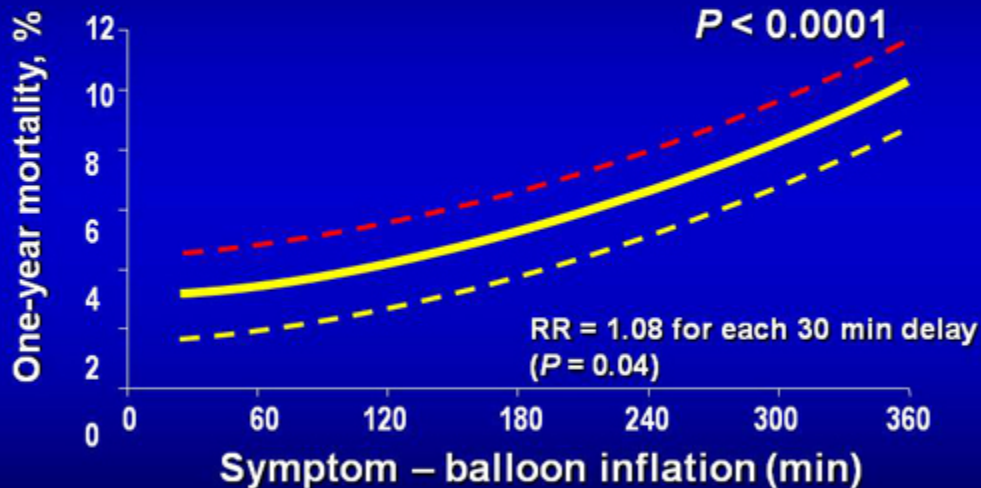
Minimum 1 hour

5 minutes!

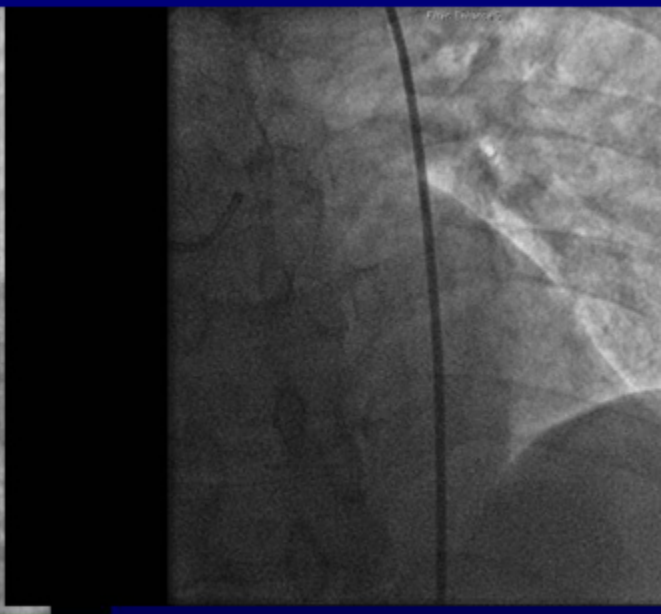


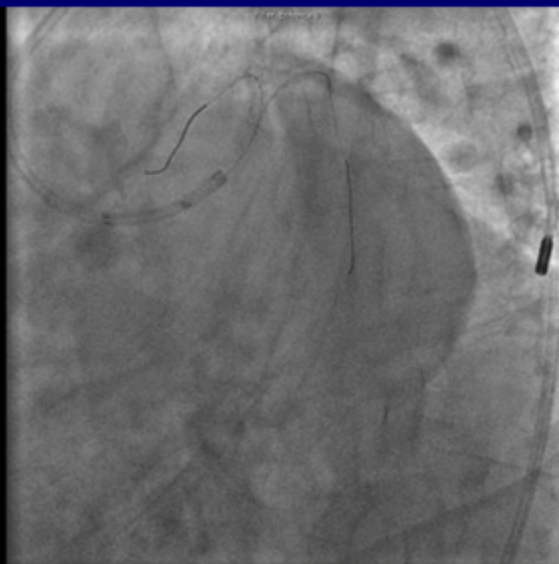
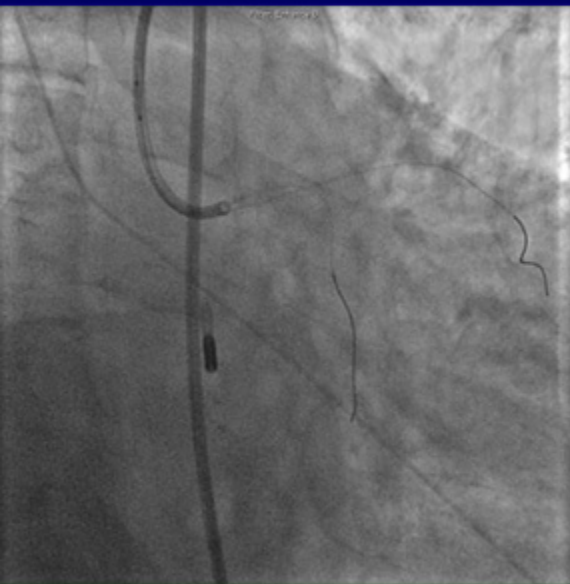
Symptom Onset-Balloon Time and Mortality in Primary PCI for STEMI

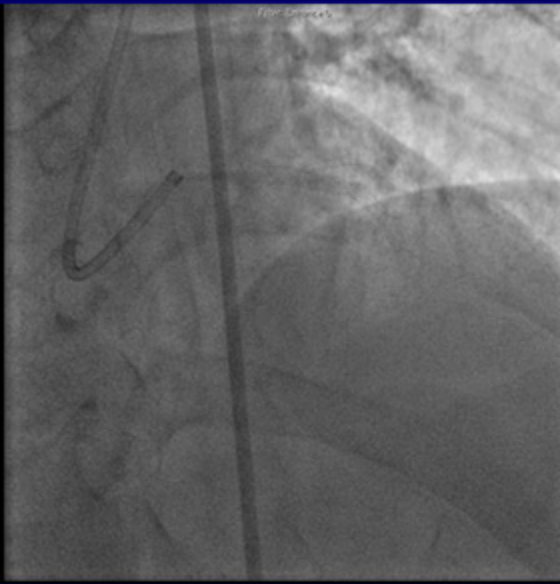
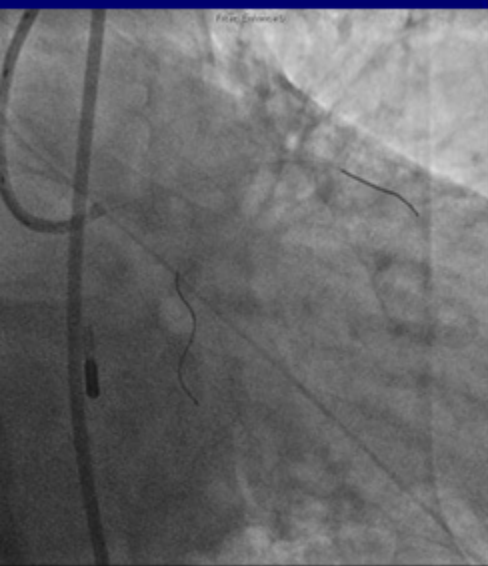
6 RCTs of Primary PCI by Zwolle Group 1994–2001
N = 1791

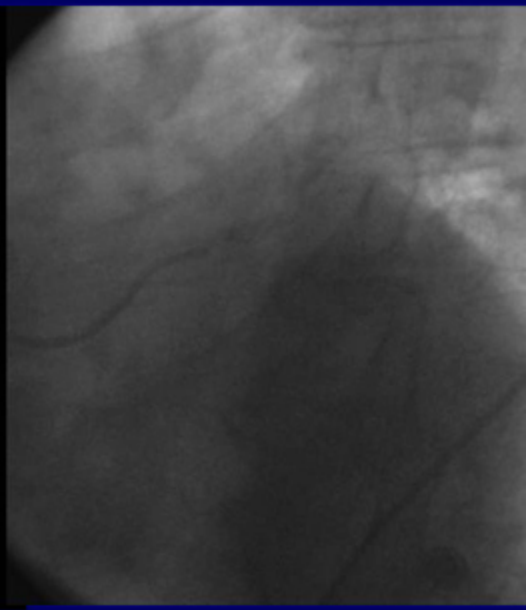
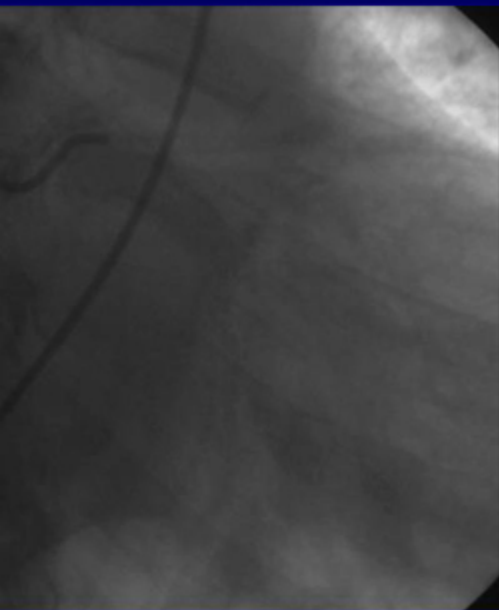


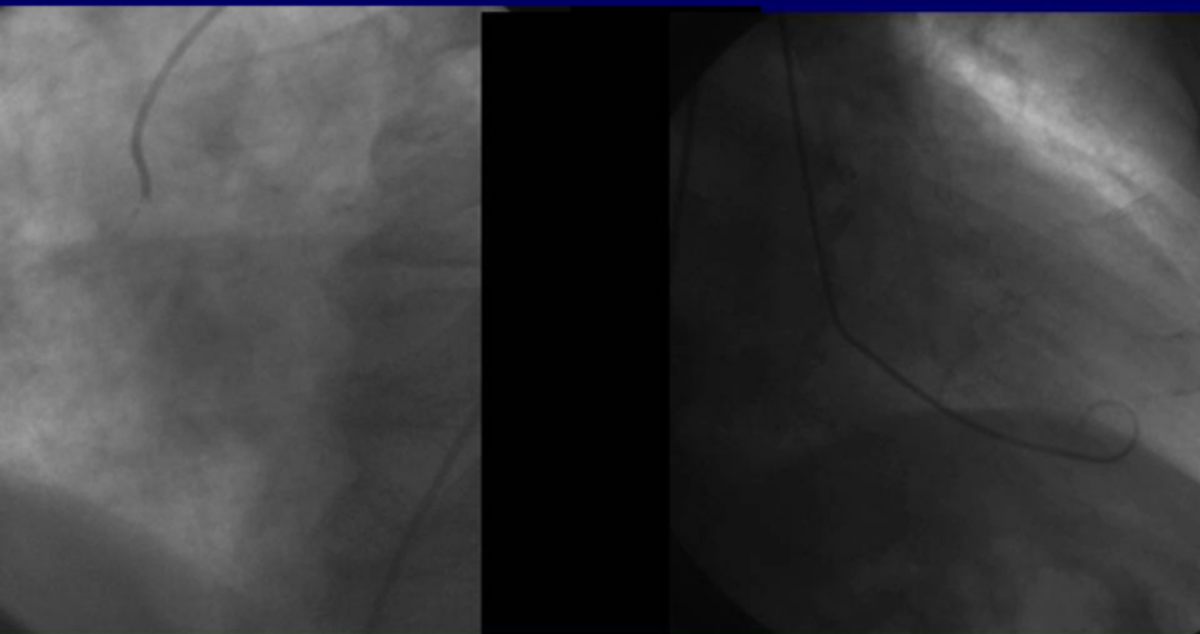
The relative risk of 1-year mortality increases by 7.5% for each 30-minute delay

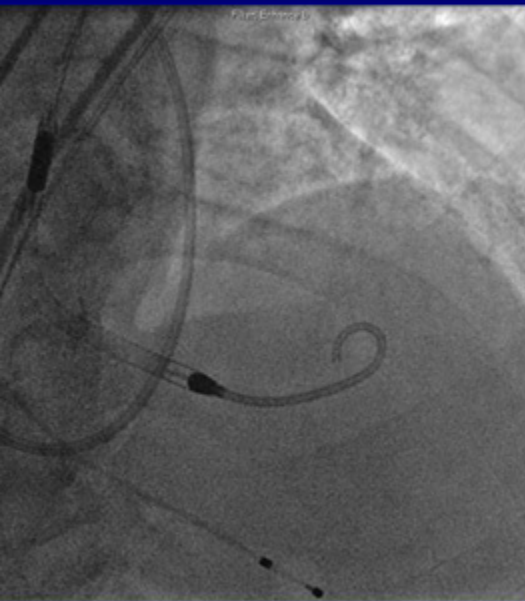


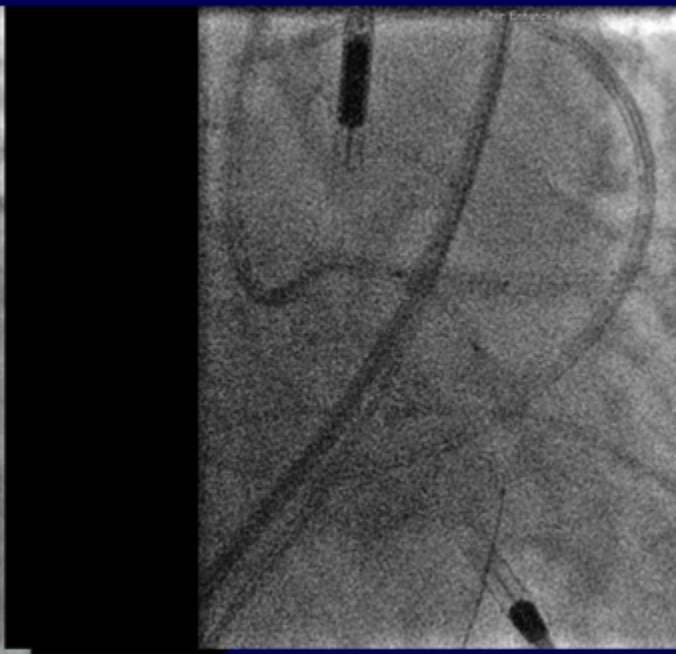












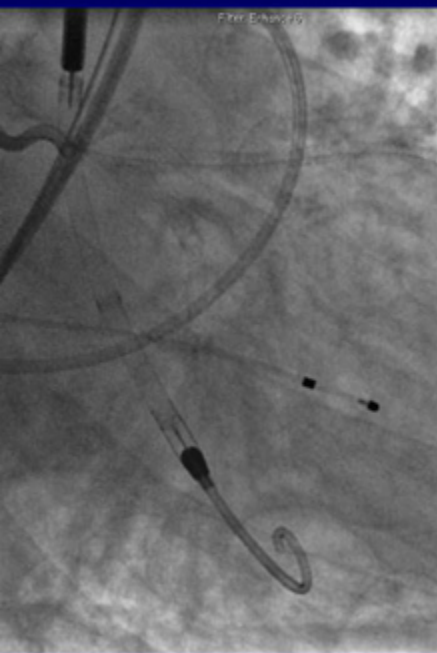
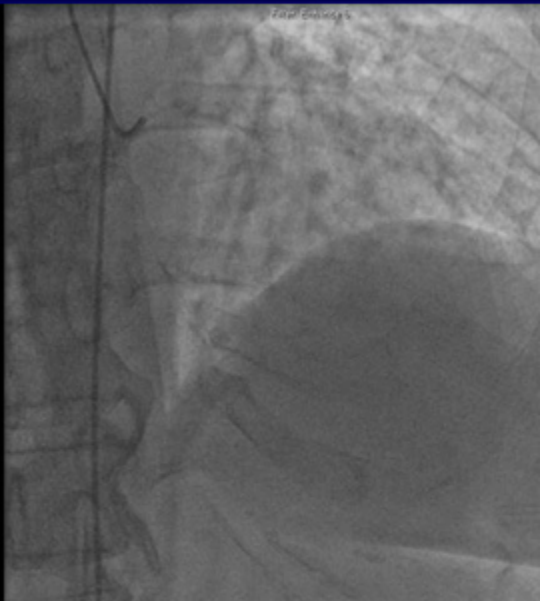


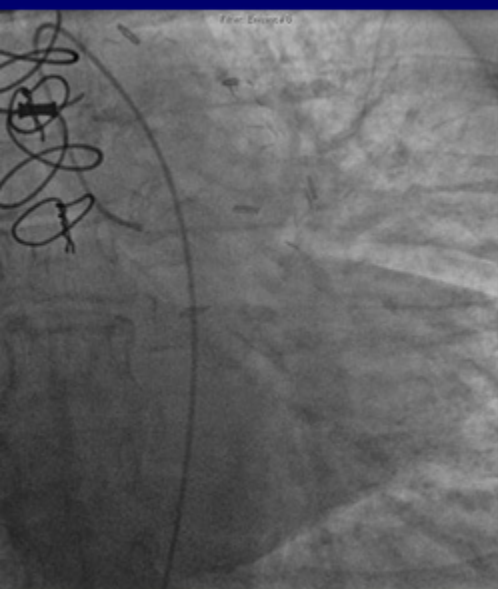


Figure 1: Entrance U

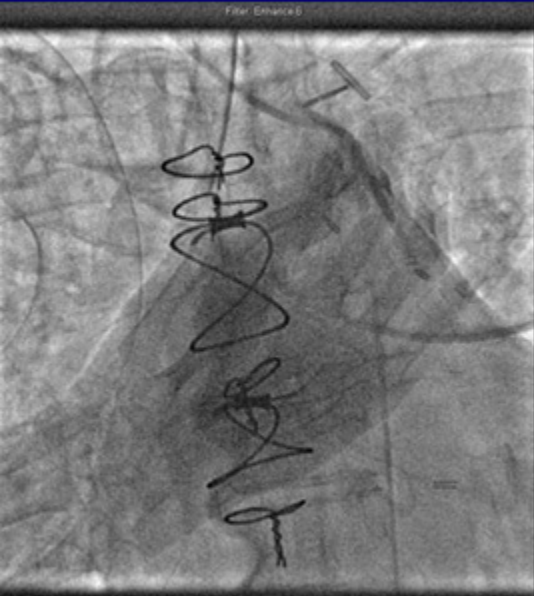


Figure 2: Entrance V

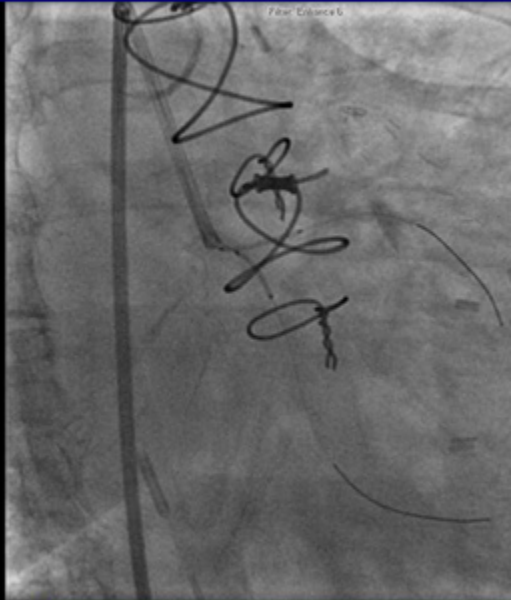


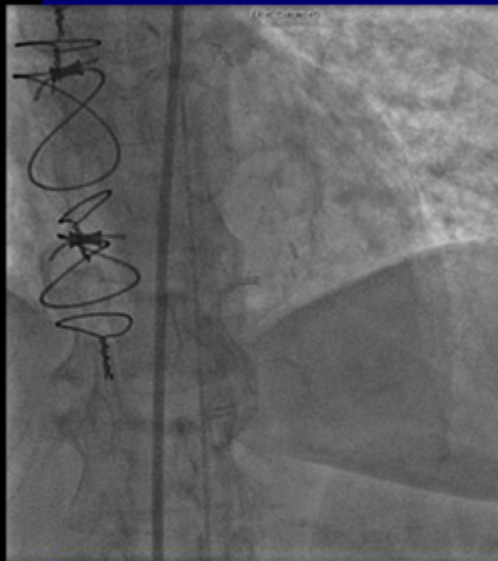
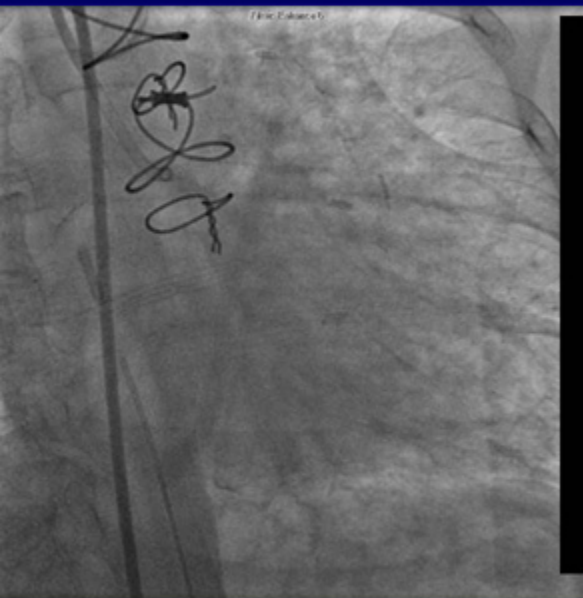


Fiber Enhance 6

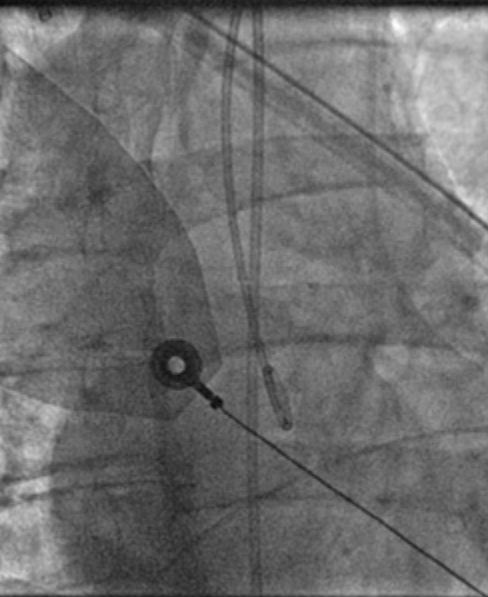


Fiber Enhance 6

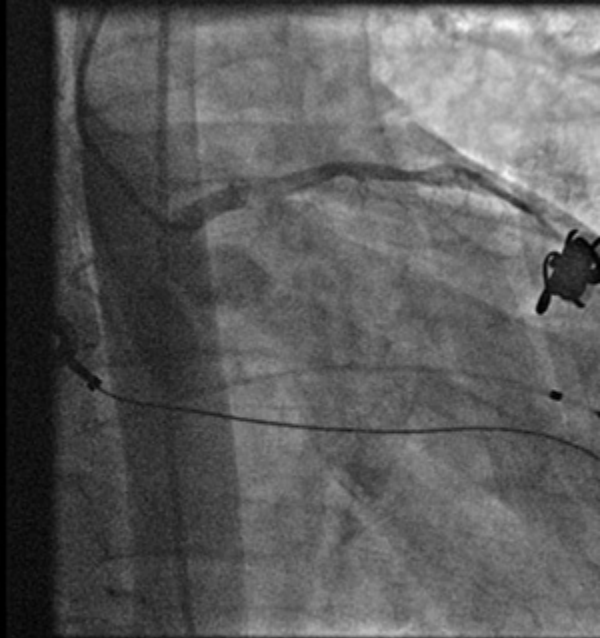


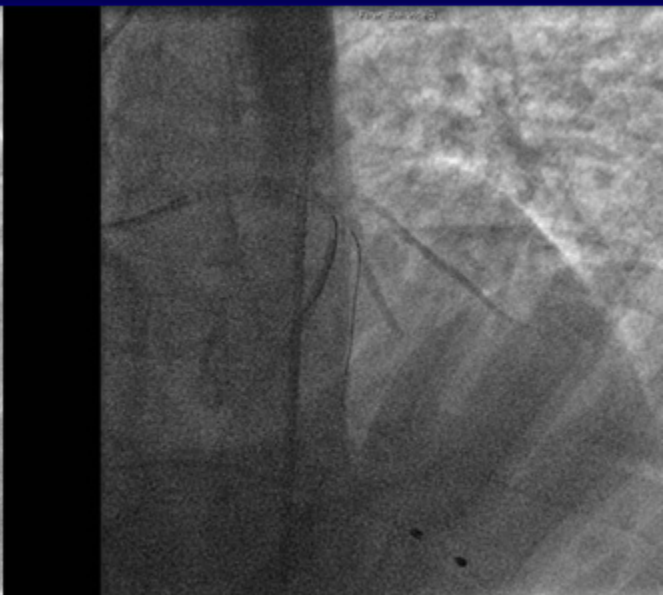


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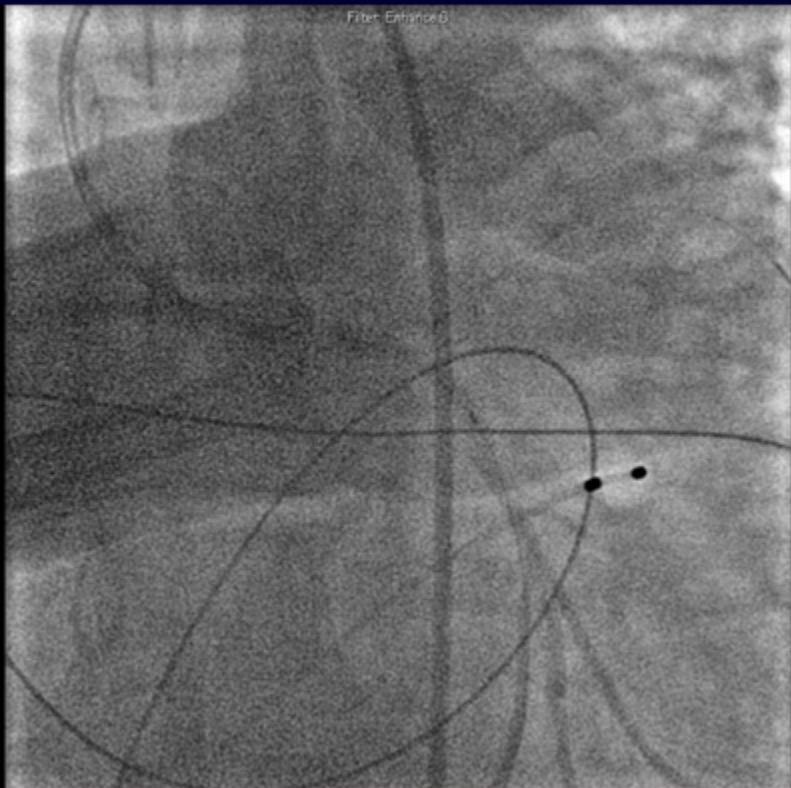
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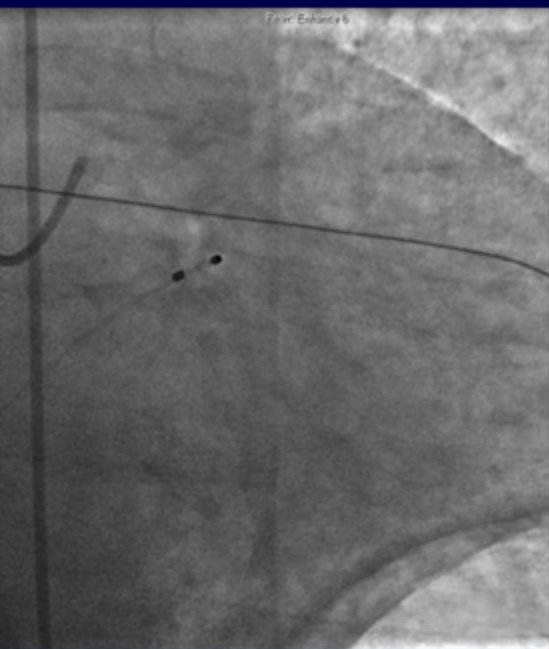




Filter Enhance 6



Fiber Enhance 6



Fiber Enhance 6



Summary

- Acute ULMCA occlusion is a clinically catastrophic event, often leading to abrupt and severe circulatory failure, lethal arrhythmias, and sudden cardiac death.
- PCI is
 - technically feasible
 - provides more rapid reperfusion
 - is associated with a lower risk of stroke.

Summary

- Primary PCI of the ULMCA should be considered as a viable alternative to CABG
 - ULMCA occlusion and less than TIMI flow grade 3
 - cardiogenic shock
 - persistent ventricular arrhythmias
 - significant comorbidities.
- The higher risk of TVR associated with ULMCA PCI compared with CABG is an acceptable tradeoff given the primary need for rapid reperfusion to enhance survival.