# Successful Treatment of a Distal Saphenous Vein Graft Lesion Using the Proxis™ Embolic Protection System

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*"No-reflow" complicates 10% to 15% of saphenous vein graft (SVG) percutaneous coronary interventions (PCIs). It is suggested by some studies to be the cause of a 31% rate of acute myocardial infarction and may increase in-hospital mortality 10-fold. A 73-year-old white male with a history of coronary artery bypass surgery, paroxysmal atrial fibrillation, hyperlipidemia, and renal insufficiency presented with progressive exertional chest pain relieved by rest. Angiography revealed a minor stenosis in the right coronary artery and the left anterior descending artery (LAD). The left internal mammary artery to the LAD was occluded, as was the native circumflex. The patient underwent primary PCI of the SVG to the posterior lateral branch with balloon predilation of the target vessel, which resulted in a "no-reflow" phenomenon. The patient then underwent intervention with the Proxis Embolic Protection System, which reduced the distal stenosis to 0% with thrombolysis in myocardial infarction 3 flow.*
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**Key words:** Percutaneous coronary intervention • Saphenous vein graft • No-reflow • Embolic protection

I am a practicing Interventional Cardiologist at DuBois Regional Medical Center, a 200-plus bed facility in DuBois, PA. This case was my first experience with the Proxis™ Embolic Protection System, a proximal protection system from St. Jude Medical (St. Paul, MN).

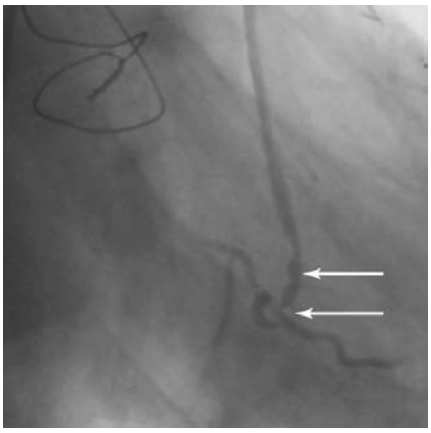


**Figure 1.** *The initial angiography shows multiple distal lesions in the saphenous vein graft to the posterior lateral 1 branch.*

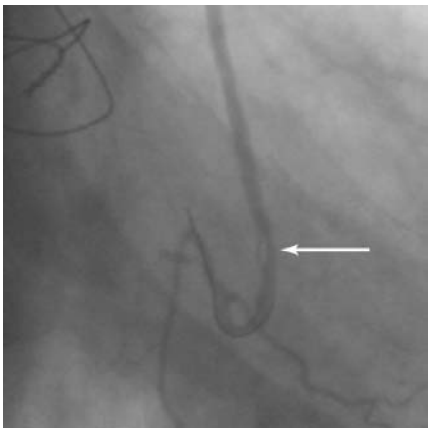


**Figure 2.** *The angiography following predilation of the lesion shows 70% residual stenosis with a linear dissection.*

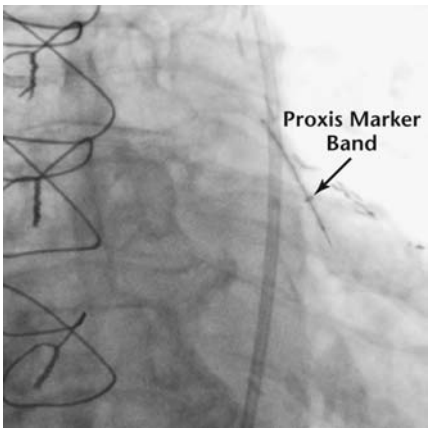



**Figure 3.** *The guidewire, stent, and Proxis are staged proximal to the lesion prior to the Proxis sealing balloon inflation.*

## Patient Presentation

A 73-year-old white male with a history of coronary artery bypass surgery, paroxysmal atrial fibrillation, hyperlipidemia, and renal insufficiency presented with progressive exertional chest pain relieved by rest.

## Cardiac Catheterization and Intervention

Angiography revealed a minor stenosis in the right coronary artery and the left anterior descending artery (LAD). The left internal mammary artery to the LAD was occluded, as was the native circumflex. The culprit lesions for the patient's symptoms were distal stenoses in the saphenous vein graft (SVG) that extended to the posterior lateral (PL) branch of the native circumflex (Figure 1).

## Initial Percutaneous Coronary Intervention

Primary percutaneous coronary intervention (PCI) of the SVG to the PL branch was performed with balloon predilation of the target vessel, which resulted in a "no-reflow" phenomenon (described as a failure to restore normal myocardial blood flow despite removal of the coronary obstruction) that was associated with ST elevation and chest pain. A residual 70% narrowing associated with linear dissection was noted in the target vessel after dilation (Figure 2). Although ST elevation and chest pain improved with an intracoronary infusion of adenosine, it was felt that stenting was inappropriate without embolic protection due to the recurrent risk of "no-reflow." The patient was admitted to the intensive care unit and scheduled for intervention the following morning using the Proxis™ Embolic Protection System.

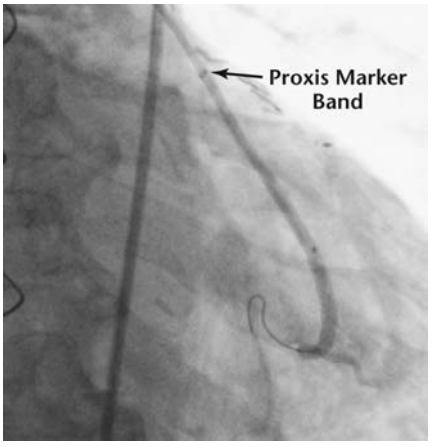
## PCI With the Proxis Embolic Protection System

In preparation for the Proxis intervention, a 7-French guide catheter with side holes was engaged into the SVG to PL1. The Proxis Device was inserted and tracked to the distal tip of the guide catheter. A 300-cm guidewire was advanced into the target vessel without crossing the target lesions. The Proxis catheter was then advanced over the wire with its tip positioned 2 to 3 cm proximal to the target lesions. A 3.0 mm by 23 mm stent was loaded onto a 300-cm guidewire and staged proximally to the target lesions (Figure 3). Intracoronary adenosine (180 μg) was infused, and the Proxis balloon was inflated. Dampened arterial pressure was noted, along with a static contrast column (0.5 cc injection) that confirmed appropriate sealing of the Proxis balloon. The lesion was then crossed with the wire and the stent was deployed, followed by aspiration of 3 to 4 mL of blood and particulate (Figure 4). The Proxis balloon was then deflated, and an additional 15 mL of blood was aspirated.

## Discussion

The final result shown in Figure 5 indicates an excellent result with no evidence of compromised blood

**Figure 4.** *The stent is inflated under proximal protection and with full visualization of the target lesions due to static contrast.*



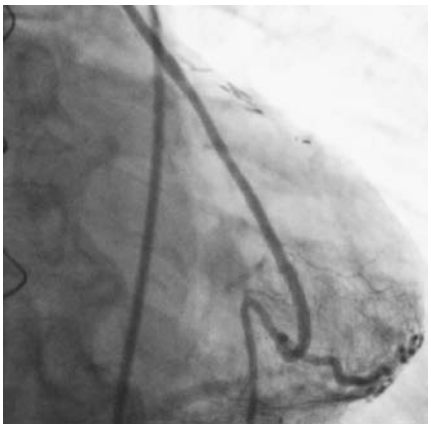


**Figure 5.** *The final angiography shows excellent filling to the first and second posterior lateral branches and excellent myocardial blush.*

flow, no ST segment changes, and no chest pain. There was excellent filling to the first and second PL branches and an excellent myocardial blush.

## Conclusion

"No-reflow" complicates 10% to 15% of SVG PCIs.[1] It is suggested by some studies to be the cause of a 31% rate of acute myocardial infarction[2] and may increase in-hospital mortality 10-fold.[2] In this case, predilation of the lesion resulted in "no-reflow" associated with ST elevation and chest pain, which suggested that stenting without embolic protection would be inappropriate. Due to the lesion locations, however, distal protection would not have been an option.

By using proximal protection with the Proxis™ Embolic Protection System, the distal stenosis was reduced to 0% with thrombolysis in myocardial infarction 3 flow. During the Proxis procedure, there was no evidence of "no-reflow," ST elevation, or chest pain, as was seen in the first intervention without Proxis. Excellent filling of the first and second PL branches and an excellent myocardial blush were noted on the final angiograms (Figure 5). This case demonstrates the ability to treat distal SVG lesions using the Proxis Embolic Protection System. ■

### References

1. Block PC. CABG caveats. *Catheter Cardiovasc Interv*. 2001;54:325-326.
2. Abbo KM, Dooris M, Glazier S, et al. Features and outcome of no-reflow after percutaneous coronary intervention. *Am J Cardiol*. 1995;75:778-782.

## Main Points

- "No-reflow" complicates 10% to 15% of saphenous vein graft percutaneous coronary interventions. It is suggested by some studies to be the cause of a 31% rate of acute myocardial infarction and may increase in-hospital mortality 10-fold.
- In some patients, predilation of the target lesion can result in "no-reflow" associated with ST elevation and chest pain.
- Embolic protection may be necessary when there is a recurrent risk of "no-reflow."
- Intervention with the Proxis Embolic Protection System can reduce distal stenosis to 0% with thrombolysis in myocardial infarction 3 flow. It can eliminate "no-reflow," ST elevation, and chest pain.