

The “Child-in-Mother” Technique: Successful Transradial Use of the GuideLiner Catheter in a Heavily Calcified Circumflex Artery

PHYSICIAN

Jack P. Chen, MD, FACC, FSCAI
Saint Joseph's Heart and Vascular Institute, Atlanta, GA

PRESENTATION

The patient had undergone robotic totally endoscopic coronary artery bypass (TECAB) involving the left internal mammary artery (LIMA) to the left anterior descending artery (LAD) two years prior. Subsequently, the patient developed distal LIMA anastomotic stenosis, as well as severe progression of disease in the left circumflex artery (LCX) and right coronary artery (RCA).

At repeat bypass surgery (with sternotomy), saphenous vein grafts (SVGs) were anastomosed to the LAD, first obtuse marginal branch (OM1), and right posterior descending artery (PDA). The LIMA was tied off at the distal anastomosis to enhance SVG-LAD flow.

The patient recently developed recurrent angina.

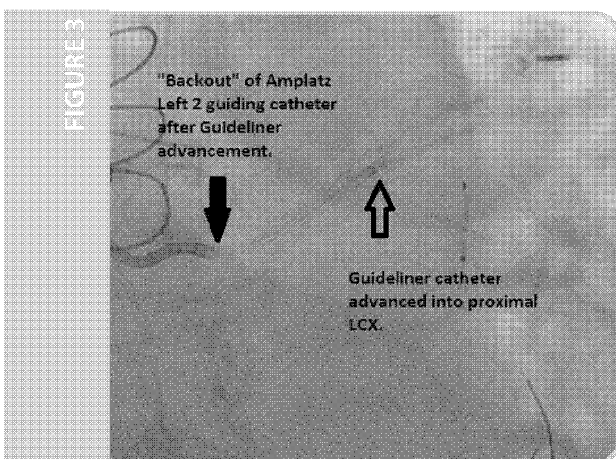
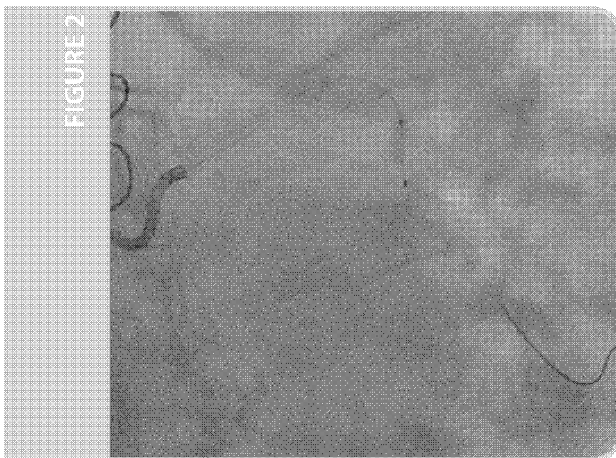
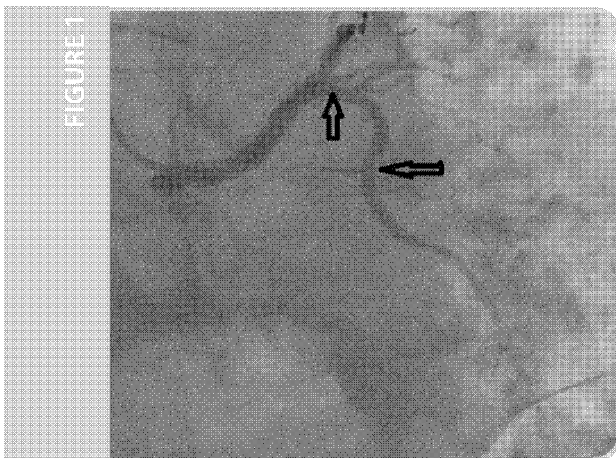
INITIAL FINDINGS

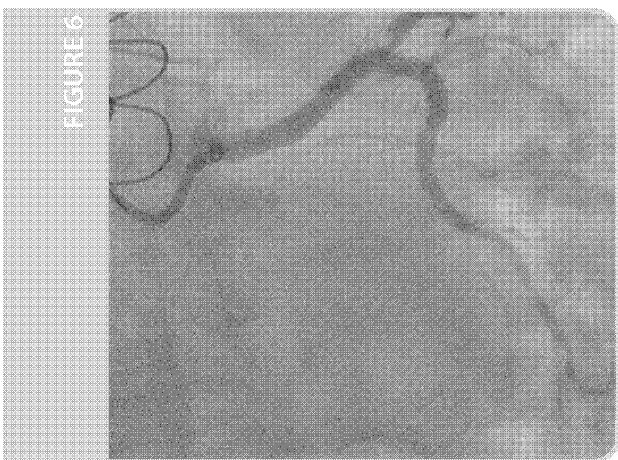
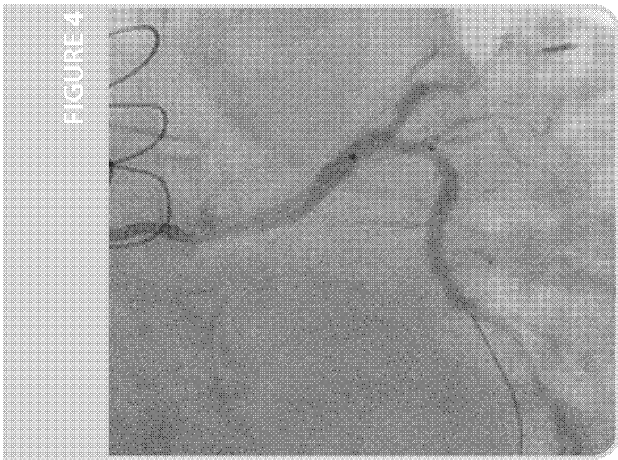
Transradial cardiac catheterization revealed patent SVGs to the OM1 and PDA. However, the SVG to the LAD was occluded ostially. The native LCX was a calcified vessel, with a very angulated origin from the left main artery. There were stenoses in the proximal and distal LCX (Figure 1). The native OM1 was totally occluded proximal to the anastomosis, and there was no retrograde perfusion of the LCX. The LAD had a chronic total occlusion proximally, as did the RCA. The LIMA was not imaged.

TREATMENT

It was decided to proceed with hybrid TECAB-LAD and stent-LCX. Transradial PCI was performed with initial balloon predilatation with a 2.0mm x 15mm Sprinter® balloon (Figure 2). However, the marked LM-LCX angulation and severe arc (270°), coupled with marked calcification, prevented stent advancement despite use of a stiff wire. A 6F compatible GuideLiner catheter, likewise, could not be advanced into the proximal arc.

(continued on back)





TREATMENT OF CIRCUMFLEX ARTERY

The original balloon was re-advanced through the GuideLiner into the distal vessel; the GuideLiner was subsequently inserted slowly into the proximal LCX, using sequential short, firm advancements.

Once the GuideLiner was positioned in the proximal LCX, two 3.5mm x 18mm Driver® bare metal stents were deployed in the mid and proximal lesions without a problem (Figures 3 & 4). However, the intervening vessel segment now appeared narrowed.

A third 3.5mm x 18mm Driver stent would not traverse the previously deployed proximal stent. The GuideLiner catheter was once again advanced, this time through the proximal stent to avoid “stent-on-stent” friction. The third stent was easily deployed after advancing through the GuideLiner, between the two previous stents (Figure 5). The final result was excellent (Figure 6).

The patient subsequently underwent uneventful repeat TECAB utilizing a free right internal mammary artery segment as a “jump graft” anastomosed to and bridging the distal LIMA and the mid-LAD. Unfortunately, this free RIMA graft segment also developed diffuse stenosis a few months subsequently, necessitating further DES implantation via the LIMA graft.

CONCLUSION

This case illustrates the value of the “child-in-mother” technique of deep catheter engagement to facilitate difficult device advancement.

Advancement of additional stents through a previously deployed proximal stent can be challenging. When positioned through a deployed stent, the GuideLiner acted as a smooth sleeve or inner lining allowing passage of the new stent.

Additionally, it is not uncommon to observe concomitant guide catheter disengagement or back-out from the coronary ostium with GuideLiner advancement. This is not a concern, as the intracoronary GuideLiner offers substantial back-up support.

Jack P. Chen, MD, FACC, FSCAI

Dr. Chen received his M.D. from Weill-Cornell Medical College. He completed his Cardiology fellowship at New York-Presbyterian Hospital. As an Interventional Cardiologist, Dr. Chen serves as the Medical Director of Cardiology at Northside Hospital and is the Director for Cardiac Studies at Saint Joseph’s Translational Research Institute (Saint Joseph’s Hospital) in Atlanta, Georgia.



GuideLiner catheters are intended to be used in conjunction with guide catheters to access discrete regions of the coronary and/or peripheral vasculature, and to facilitate placement and exchange of guidewires and other interventional devices. Please see the Instructions for Use for a complete listing of the indications, contraindications, warnings and precautions.

CAUTION: Federal law (U.S.A.) restricts this device to sale by or on the order of a physician.

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Vascular Solutions, Inc.
6464 Sycamore Court North
Minneapolis, Minnesota 55369 USA
Customer Service:
United States: 888.240.6001
International: (001) 763.656.4298
customerservice@vasc.com
www.vasc.com

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