

## Diffuse Coronary Spasm in a Patient With a Recent Stent

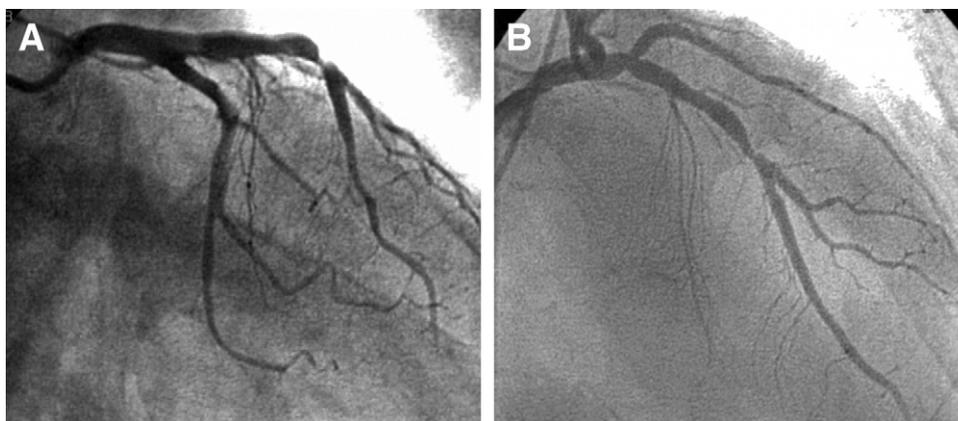
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The patient is a 65-year-old man who was complaining of chest pain induced by heavy exercise but sometimes occurring at rest. An exercise stress test was mildly positive electrically (1 mm ST-segment depression at 9 min of exercise and at a heart rate of 92% of the maximally predicted heart rate for age). The patient was treated medically. A few months later, he presented to the outpatient clinic with more severe and more frequent chest pain occurring mainly at rest. He was referred for coronary angiography, which revealed a 70% stenosis in the mid left anterior descending artery (LAD) (Figs. 1A and 1B). The lesion did not significantly improve with intracoronary nitroglycerin and was treated by implantation of a LIBERTE 3.5 × 16 mm bare-metal stent (Boston Scientific, Natick, Massachusetts), which was redilated in its proximal segment by a 4 × 10 mm noncompliant balloon at 18 atm. The result was excellent, with a negative residual stenosis and a normal flow

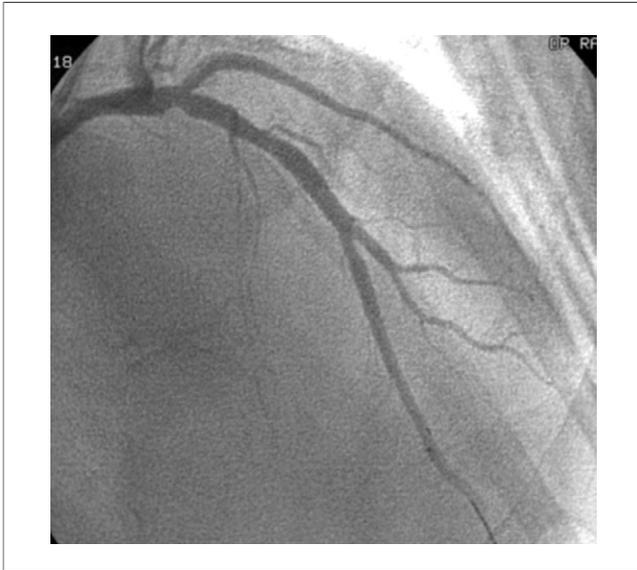
(Fig. 2). The patient continued to experience chest pain occurring mainly in early morning and awakening him from sleep. The pain was described as being more severe than before stenting. Repeat coronary angiography was performed 3 days after the initial procedure (see [Online Video 1](#) for the first 2 runs) and revealed diffuse spasm involving all the left coronary circulation (including the left main), except in the segment of the LAD where the stent was present (Fig. 3, [Online Video 1](#)). After intracoronary nitroglycerin, the spasm resolved (Fig. 4, [Online Video 1](#)). The patient was placed on oral nitroglycerin and calcium channel blocker and remains pain-free more than 8 months after follow-up.

The stenosis in the LAD of the patient was in retrospect, not the cause of the symptoms, which were due to spasm. These images demonstrate that spasm can be diffuse and can involve all the coronary circulation including the left main. They



**Figure 1. Baseline Angiographic Views**

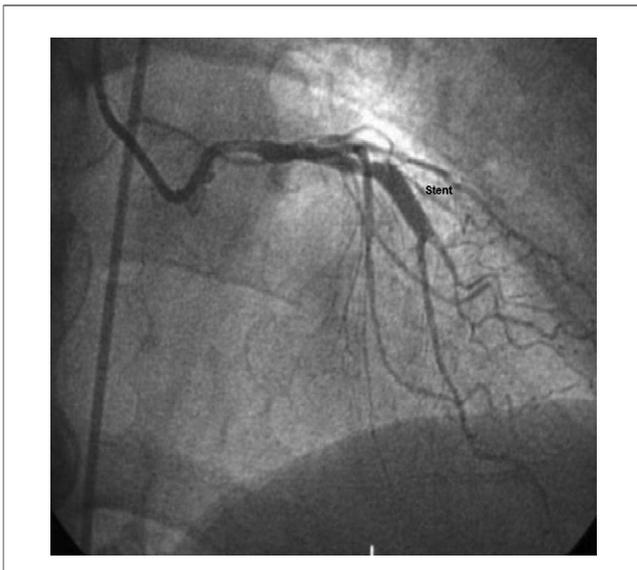
Right caudal oblique view before nitroglycerine (A) and right cranial oblique view after intracoronary nitroglycerine (B) during the initial procedure showing a tight mid left anterior descending artery stenosis.



**Figure 2. Final Result After Stent Implantation**

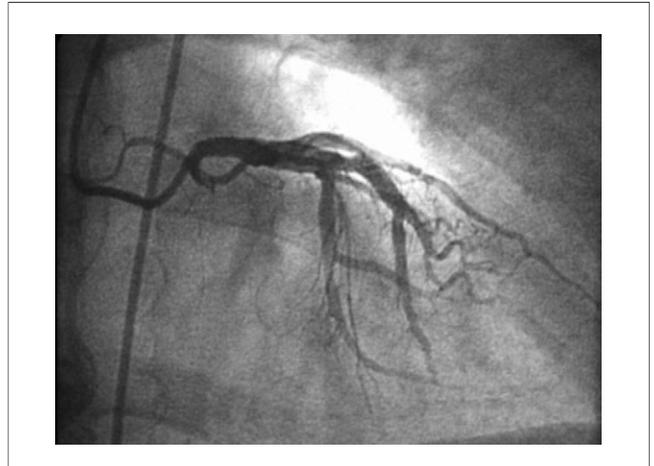
Right cranial oblique view showing the final angiographic result after implantation of a bare-metal stent (Liberté, Boston Scientific, Natick, Massachusetts), 3.5 × 16 mm in the mid left anterior descending artery. The stent was post-dilated at 18 atm with a 4-mm noncompliant balloon.

also demonstrate that spasm can occur either proximal or distal to a stented segment, which explains the “inefficacy” of stenting in the treatment of spastic angina.



**Figure 3. Diffuse Coronary Spasm Except in the Stented Segment**

Initial right oblique view during the follow-up procedure 3 days later, showing diffuse coronary spasm occurring proximal and distal to the stented segment and involving the left main (Online Video 1).



**Figure 4. Spasm Resolution**

Same right-oblique view after injection of 200 µg of intracoronary nitroglycerin. The spasm has resolved.

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#### ▶ APPENDIX

For a supplementary video and its legend, please see the online version of this article.