

IMAGES IN INTERVENTION

Overlapping-Stent Intervention Treatment of a Giant Right Coronary Artery Pseudoaneurysm



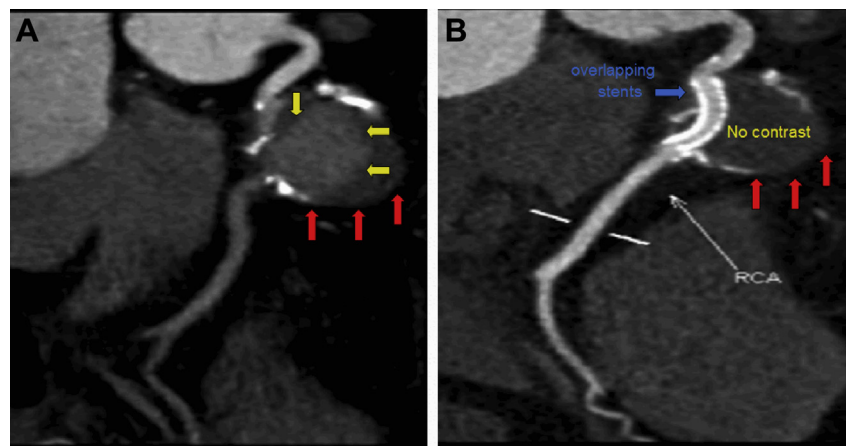
Hai-Long Dai, MD, PhD,*† Xue-Feng Guang, MD,* Li-Hong Jiang, MD, PhD,‡ Qiang Xue, MD,* Wei-Hua Zhang, MD*

A 69-year-old woman presented with chest heaviness. She had no remarkable medical history and no history of Kawasaki disease or other inflammatory disease. Echocardiography showed a large paracardiac mass in the lateral free wall of the right atrium. Dual-source 64-slice cardiac computed tomography angiography (CCTA) showed

a giant right coronary artery (RCA) pseudoaneurysm (4.4 × 4.5 cm) (Figure 1A). Coronary angiography revealed a large pseudoaneurysm in the RCA with 90% stenosis (Figure 2A, Online Video 1).

This coronary pseudoaneurysm may have been spontaneous. Treatment options included resection with bypass grafting, coil embolization, and covered

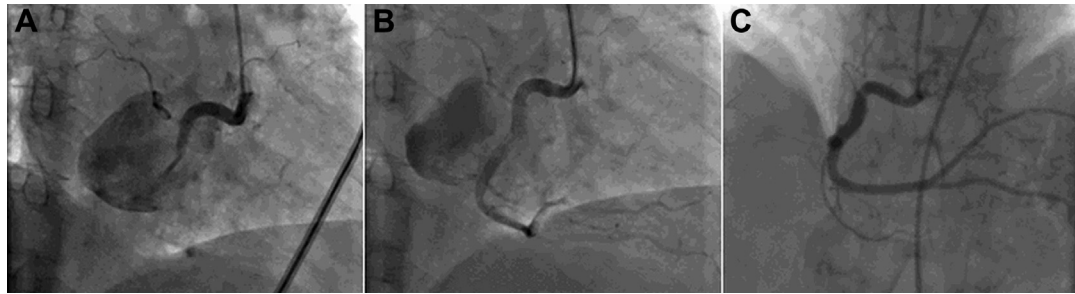
FIGURE 1 Dual-Source 64-Slice CCTA



(A) A giant RCA pseudoaneurysm (red arrows) containing contrast (yellow arrows). The vessel distal to the pseudoaneurysm shows impaired contrast filling. (B) Nine months after placement of 3 overlapping stents, total exclusion of the pseudoaneurysm is accomplished, and normal distal contrast filling is obtained. RCA = right coronary artery.

From the *Department of Cardiology, Yan'an Affiliated Hospital of Kunming Medical University, Kunming, People's Republic of China; †The Key Laboratory of Stem Cell and Regenerative Medicine, Institute of Molecular and Clinical Medicine, Kunming Medical University, Kunming, People's Republic of China; and the ‡Department of Cardiothoracic Surgery, Yan'an Affiliated Hospital of Kunming Medical University, Kunming, People's Republic of China. The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

Manuscript received June 25, 2015; revised manuscript received July 16, 2015, accepted July 31, 2015.

FIGURE 2 Coronary Angiography

(A) A large pseudoaneurysm in the right coronary artery with 90% stenosis (Online Video 1). (B) Three overlapping stents were placed, after which only small leaks remained, with an aneurysmal flow reduction (Online Video 2). (C) One month after the procedure, the pseudoaneurysm has been successfully occluded (Online Video 3).

stents (1). However, aneurysms with collateral branches cannot be treated with covered stents, delayed endothelialization, or thrombosis after covered stent implantation (2,3). Some studies reported that treatment of carotid pseudoaneurysms using overlapping stents produced good results (4).

We decided to perform a percutaneous coronary intervention. After balloon dilation of the stenotic lesion of the RCA, a percutaneous procedure using 3 overlapping stents (Lepu drug-eluting stents, 4.0 × 36 mm, 4.0 × 24 mm, and 4.0 × 18 mm, Lepu Medical, Beijing, People's Republic of China) was performed (the jet of contrast decreased a little after the first stent was deployed; a second stent was deployed, and there was reduction in the leak, and we then inserted a third stent). Although small leaks remained, an overlapping-stent intervention induced a slow-velocity flow field in the pseudoaneurysmal sac (Figure 2B, Online Video 2). After the procedure, the patient was on aspirin and clopidogrel. One

month after the procedure, the patient reported no discomfort. The coronary angiogram revealed that the pseudoaneurysm was completely sealed off, and the branch of the RCA was not affected (Figure 2C, Online Video 3). At 9 month follow-up, the patient was symptom free. CCTA demonstrated stent patency and complete coverage of the neck with total exclusion of the pseudoaneurysm (Figure 1B). The patient remains asymptomatic at the 20-month clinical follow-up.

To the best of our knowledge, this is the first reported percutaneous treatment of a coronary pseudoaneurysm with multiple overlapping stents.

REPRINT REQUESTS AND CORRESPONDENCE: Dr. Wei-Hua Zhang, Department of Cardiology, Yan'an Affiliated Hospital of Kunming Medical University, 245 East Renming Road, Kunming 650051, People's Republic of China. E-mail: zwdfc168@sohu.com OR 46944404@qq.com.

REFERENCES

1. Aqel RA, Zoghbi GJ, Iskandrian A. Spontaneous coronary artery dissection, aneurysms, and pseudoaneurysms: a review. *Echocardiography* 2004; 21:175-82.
2. Takano M, Yamamoto M, Inami S, et al. Delayed endothelialization after polytetrafluoroethylene-covered stent implantation for coronary aneurysm. *Circ J* 2009;73:190-3.
3. Alston EA, Brott BC, Misra VK, Athanasuleas CL, Anderson PG, Litovsky SH. Histologic analysis of a covered stent implanted for pseudoaneurysm in a coronary artery. *Cardiovasc Pathol* 2013;22:e19-21.
4. Amistà P, Barbisan D, Beghetto M, Cavasin N, Zucchetta P, Frego M. Three-stent placement for treatment of carotid artery pseudoaneurysm. A case report. *Interv Neuroradiol* 2006;12:339-43.

KEY WORDS cardiac computed tomography, coronary artery pseudoaneurysm, intervention

APPENDIX For supplemental videos, please see the online version of this article.