Trapped Stent in the Left Coronary Sinus in a Myocardial Infarction Patient

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Stent entrapment is a very rare complication of percutaneous coronary intervention. The interventional approach could be a treatment strategy. However, if it does not work, surgical treatment should be considered. Here, we report a case of surgical treatment of stent entrapment in the left coronary sinus of a 53-year-old male patient.

Key words: 1. Coronary stent entrapment 2. Myocardial infarction

CASE REPORT

A 53-year-old male was admitted to the hospital with chest discomfort that had persisted for five days. His medical history was unremarkable, except for a tuberculosis infection 10 years earlier. Elevated cardiac enzyme levels were observed, including 0.1 ng/mL of troponin T and 11.1 ng/mL of creatine kinase-myocardial band. Electrocardiography showed that the ST segment was elevated at the anterior lead. A chest X-ray showed pulmonary congestion. Transthoracic echocardiography revealed a reduction of the ejection fraction to 35%, with severe hypokinesis of the anteroseptal area. The patient was diagnosed with myocardial infarction accompanied by pulmonary edema. Selective coronary angiography showed 90% stenosis in the proximal to mid-portion of the left anterior descending (LAD) artery. The lesion was long and irregular. We decided to insert two stents into the lesions. The first stent was inserted uneventfully into the proximal LAD artery, after which an attempt was made to insert the second stent into the mid-portion of the LAD artery because of the irregularity of the lesion. However, when the stent was extracted from the balloon, it was trapped and deformed. One part of it floated in the left coronary sinus (Fig. 1). We tried to push and withdraw the stent by snaring it, but failed. We planned the surgical removal of the trapped stent and a coronary artery bypass graft. With cardiopulmonary bypass, we were able to remove the stent through the aortotomy site (Fig. 2). We also performed left internal thoracic artery bypass to the distal portion of the LAD artery. The next day, the patient was extubated and he recovered well. However, on the second postoperative day, he had a sudden cough that produced fresh blood. He was intubated again and was subjected to chest computed tomography (CT). The chest CT showed active bleeding from the right middle lobe (Fig. 3). A lesion was also found in the bronchoscopy examination. We resectioned the right middle lobe. The lesion in the right middle lobe may have existed before the coronary angiography. In the follow-up echocardiography, the wall motion of the left ventricle was good. The ejection fraction increased from 35% to 65%. The patient had postoperative pneumonia and acute renal failure.
He was treated with active intensive care including antibiotics, hemodialysis, and pulmonary rehabilitation. His condition waxed and waned. He was improving and underwent conservative treatment including hemodialysis in the general ward. However, unfortunately, he passed away at 5 months after the operation due to aspiration pneumonia.

**DISCUSSION**

Entrapment of a coronary stent is a rare and dangerous complication of percutaneous coronary intervention. It may be life-threatening and may sometimes require emergency surgical treatment. The increased use of endovascular intervention has resulted in an increasing number of complications pertaining to unretrievable devices due to abrupt entrapment. Several bailout devices have been developed such as GooseNeck snares, basket retrieval devices, and angioplasty balloons. In a previous study, 15% to 20% of the cases of failed percutaneous retrieval of catheter remnants were referred for surgical removal [1].

An angulated coronary anatomy, coronary calcification, a long stent, and sequential stents may cause stent entrapment [2]. In the case of a long lesion, the distal stent is generally inserted earlier, because if the proximal stent is inserted earlier, it may entrap the distal stent. In addition, poor stent tractability, flexibility, and conformability may cause stent entrapment in the coronary artery. In one case, the order of insertion of sequential stents in a long coronary lesion was inverted, but the patient had no other predisposing factors.

These days, to improve flexibility, stents often have fewer fixed links than the past stents. However, these designs might reduce the strength of the stent and, therefore, pose an increased risk of longitudinal deformation, which is a cause of stent entrapment [3].

An entrapped stent could cause a blood clot. This may be critical because it may cause sudden myocardial infarction [4]. Transcatheter removal of an entrapped stent is usually better, faster, and safer than surgical removal. The use of a snaring wire or another balloon is a treatment alternative for stent entrapment. However, if this does not work, surgical treatment should be strongly considered, particularly in the...
left coronary opening, as in our patient. However, surgical inter-
vention may have catastrophic results. With respect to a
coronary artery bypass graft, it is preferable to anastomose the graft to the coronary segment distal to the entrapment site. In conclusion, here, we have reported a case of stent entrapment, which is a rare complication of percutaneous coro-
nary intervention.

**CONFLICT OF INTEREST**

No potential conflict of interest relevant to this article was reported.

**REFERENCES**