Dysphagia soon after off-pump coronary surgery: the single suture technique

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Abstract

We report a case of a 76-year-old man complaining of dysphagia for solid food associated with a weight loss following an off-pump double vessel coronary artery revascularization. Multislice spiral computed tomography showed a 6 cm × 2.5 cm solid formation next to the posterior wall of the left atrium, adjacent to the pericardium and the right anterolateral side of the esophagus. The mass was confirmed to be an intramural esophageal hematoma by endoscopic ultrasound-guided fine-needle aspiration cytology. Injury to esophagus during the placement of deep pericardial sutures and postoperative infusion of heparin are claimed to be causes of this complication.

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1. Case report

A 76-year-old man was referred to our institution complaining of dysphagia for solid food starting 3 days after an off-pump CABG performed 2 weeks earlier at another institution. At admission, the patient was asymptomatic for dyspnea or angina but he reported a 5 kg weight lost since his hospital discharge.

The patient underwent a multislice spiral computed tomography that showed a 6 cm × 2.5 cm solid formation with an oval shape in correspondence of the posterior wall of the left atrium, adjacent to the pericardium and the right anterolateral side of the esophagus (Fig. 1). This mass did not show significant enhancement after contrast administration. No enlarged lymph nodes were found.

A gastrointestinal endoscopy with endoscopic ultrasound-guided fine-needle aspiration cytology (EUS-FNA) was then performed. Both esophageal and gastric mucosa appeared of normal shape and color, but at the level of the distal esophagus a 6 cm × 3.8 cm mass was detected. At ultrasound examination, it appeared hypoechochogenic, non homogeneous, with regular borders, embedded in the posterior esophageal wall.

Biopptic samples were obtained through the esophageal wall by a 22—25 G needle, which showed accumulation of red blood cells with a moderate inflammatory infiltrate of neutrophils. On the basis of these findings a diagnosis of iatrogenic intramural esophageal hematoma was made. For further confirmation, the operative report was carefully examined. Off-pump coronary surgery was performed through a median sternotomy. For coronary vessel exposure a deep pericardial suture of 2-0 Prolene was placed halfway between the left inferior pulmonary vein and the inferior vena cava. Stabilization of the coronary arteries was achieved by the Octopus III stabilizer (Medtronic, Inc, Anaheim, CA) under systemic heparinization with heparin 2 mg/kg. The patient underwent double vessel coronary revascularization, with the left IMA to the anterior descending artery and the right IMA to the first obtuse marginal branch.

At the end of the procedure, the pericardial stitch was removed and a light bleeding was noticed from the retro pericardial space. The bleeding was easily stopped by moderate manual compression. The postoperative course was uneventful, and perioperative blood loss was within normal limits (620 ml/48 h). Antiplatelet therapy (ASA 325 mg) was started on postoperative day 1. At routine transthoracic echocardiography on postoperative day 1, a normal cardiac contractility was found, with no signs of pericardial effusion. The patient was discharged on the sixth postoperative day.

Owing to the good hemodynamic status, we decided to conservatively treat the patient with a soft diet regime and Omeprazol 20 mg/day. Ten days later the dysphagia subsided and the patient was discharged in good general condition.
Endoscopic ultrasound 1 month later revealed the complete resolution of the intramural hematoma, without alteration of the esophageal wall.

2. Comment

During the last decade, the number off-pump coronary procedures have grown impressively, paralleling the evolution of technologies in the field of coronary stabilizations. Nowadays, many surgeons are familiar with the single deep pericardial stitch technique, which allows a good and safe control of the coronary vessels in the posterior-lateral territory of the heart [1,2]. Nevertheless, this apparently easy procedure must be performed cautiously, since a large needle inserted deeply in the retro pericardial space may easily injury the esophageal wall, generating intramural hematoma. It could also traverse the wall of aorta [3] or pulmonary vein [4], or penetrate the parenchyma of the lower lobe of the left lung [5]. In our case, even if the technique suggested by Lima has been followed, hematoma formation could not be avoided. This procedure concerns the placing of the suture superficially at first in order to pull the thread, followed by going deeply in the pericardium [6]. In this example another important factor regarding the use of forceps or clamps to grasp the pericardium before placing the suture has been elucidated by Salerno [3]. However, there is no general consensus about this point between authors as revealed by Zamvar et al. [5] who pointed out the poor feasibility of this manoeuvre because of the lack of room in the limited pericardial space especially when the assistant crowds another hand holding forceps. On the other hand, precautions like deflating the lung 30 or 40 s prior to placing the suture, careful blood aspiration of pericardial cavity, the use of a long needle holder (at least 24 cm) and a long curved needle (Ethicon Mersilk 60 mm 3/8c) have been suggested [5].

Finally, systemic heparinization as well as postoperative antiplatelet therapy may both contribute to the expansion of the hematoma within or outside the esophageal wall. In a previous report, Fukui and coworkers described a retro pericardial hematoma following injury of the left inferior pulmonary vein by a deep pericardial stitch during an off-pump procedure. These authors speculated that low molecular weight heparin administered on the third post-operative day could have been responsible for vein bleeding.

In our situation the intraoperative bleeding from the retro pericardial space was easily stopped by manual compression after heparin neutralization. Therefore, it is possible to speculate that the intraparietal bleeding had restarted on postoperative day 1 soon after the beginning of antiplatelet therapy.

In conclusion, great care should be taken placing too deep stitches when placing posterior pericardial sutures, keeping in mind the structures lying posterior to the pericardial cavity in order to avoid injury to the descending thoracic aorta, pulmonary veins, phrenic nerve or esophagus.

References