Suction Tip Migration to Internal Iliac Vein during Cardiac Surgery

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Abstract

During the cannulation of the inferior vena cava in a 29-year-old patient undergoing mitral and aortic valve replacement, the pump suction tip was inadvertently lost in the right atrium. After starting CPB and cardioplegic arrest of the heart, the right atrium and ventricle were searched for the foreign body, but it became evident by reontgenography that the foreign body had migrated to the pelvic veins. At the end of the operation, extraction with a Fogarty catheter was attempted but was not successful and the foreign body was extracted via laparatomy ***(Iranian Heart Journal 2009; 10 (3):44-46).***

Key words: foreign body migration ■ iliac vein ■ heart surgery

The incidence of a foreign body left in the heart following surgery is exceedingly rare, as one would suspect. Many cases of foreign bodies in the heart are related to missile fragments, retained intracardiac foreign body following attempted percutaneous procedures, migrated venous stents, retained catheter fragments, venous bullet embolizations, and needle embolization.[1-3] The symptoms of foreign bodies in the heart may vary from totally latent, symptomless conditions to signs and symptoms of vascular embolization.[4] There are many papers in the literature regarding the subject of foreign bodies left in place after cardiac surgery, but these foreign bodies are usually left in the pleural or pericardial cavities. In this report, a case of suction tip migration from the inferior vena cava to the internal iliac vein during cardiac surgery is presented.

Case report

A 29-year-old man was referred for surgery for mitral valve stenosis and aortic regurgitation. The patient had clinically mild dyspnea on exertion and palpitation. The blood pressure was 130/55 mmHg and pulse rate was 110 beats /min. Physical examination revealed a diastolic rumble and diastolic murmur of aortic regurgitation. The electrocardiogram revealed right axis deviation and moderate cardiomegaly. Chest roentgenogram also showed moderate cardiomegaly and increased pulmonary vascular markings. Cardiac catheterization revealed severe aortic insufficiency, moderate dilatation of the left ventricle (LV), and dome-shaped mitral valve with normal coronary arteries. Transmitral valve pressure gradient was 14mmHg. Preoperative laboratory examinations and coagulation studies were within normal limits.

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The operation was performed via median sternotomy, aortic and bicaval cannulation, and routine cardiopulmonary bypass. During the inferior vena caval cannulation, due to severe bleeding from the inferior vena cava (IVC), the suction tip which was placed near the IVC to facilitate cannulation, was inadvertently entered into the opening of the purse string suture by the surgical resident, became entangled by the purse string sutures, and was separated from the suction handle and suddenly entered the right atrium. After initiating CPB, the aorta was immediately cross clamped, opened transversly, and the heart was arrested by a direct injection of cold blood cardioplegia via the coronary artery osita. After opening the right atrium and searching the atrium and right ventricle, the foreign body was not found. An abdominal X-ray was performed and the suction tip was found in the right pelvic region (Fig. 1).

Fig. 1. Abdominal radiograph showing a foreign body in the right pelvic region, below the towel clip

The operation was performed routinely, and the mitral valve was repaired and the aortic valve replaced. At this time, retrieval of the suction tip using a Fogarty catheter was attempted via the inferior vena caval ostium, but this maneuver was not successful and it seemed that any another attempt would not be successful. We, consequently, changed our strategy and performed a midline laparatomy: the retroperitoneal space was dissected and the suction tip was pushed up to the abdominal inferior vena cava before it could be removed by making an incision in the IVC. The postoperative course was uneventful, and the patient was discharged from hospital on the 10^{th} postoparative day.

Discussion

In our center, the pump suction instrument used has a metallic tip which connects to the pump suction line. The metal tip itself has two components, with an outer part which screws onto the internal porous rod. During packaging and even during surgery, many times these two parts are unscrewed and separated for cleaning. Care must be taken that the outer part is twisted tightly, otherwise these two parts may become separated and this tragedy may be repeated. Of course, this was a iatrogenic mistake and by careful attention and without undue haste, it could have been prevented. It is more common that foreign bodies are left in place in the pericardial or pleural cavity during cardiac surgery. In these cases, the diagnosis and management are not difficult and with special attention, the diagnosis is confirmed by routine postoperative X- ray. Sometimes, foreign bodies cannot be diagnosed postoperatively and patients will come back with related complications or signs and symptoms such as chills, fever, arrhythmias, and pericardial masses.

As the management of a retained foreign body in the heart chambers is difficult and the foreign body may embolize immediately to any vital organ of the body, prevention is very critical. On the other hand, management of foreign bodies in the vascular system remains controversial. There are many reports of foreign body embolization from the iliac veins to the heart or other parts of the great vessels. Kaushik and Mandal reported a case of a 0.38-caliber bullet embolizing from the

left common iliac vein to the right atrium. The bullet was successfully retrieved with a percutaneous transvenous catheter technique.[5] Saraswat and associates reported a case of retained intracardiac foreign body following attempted percutaneous transluminal mitral commissurotomy.[6] Lodder reported a case of bullet embolism from the right common iliac vein to the left pulmonary artery.[7] Kalimi reported another case of bullet embolization from the left internal iliac vein to the right ventricle.[8] Schurr and associates reported a paradoxical bullet embolization from the left external iliac vein to the left common iliac artery via a patent foramen oval.[9] Colquhoun and associates reported two cases of venous bullet embolism to the right heart due to airgun pellet injuries. Both cases required bullet embolectomy using cardiopulmonary bypass.[10] Although displacement of the foreign body from the internal iliac vein to the IVC in our case was very difficult, it was prudent to remove the object by any means to prevent other serious complications.

Retained foreign bodies represent a serious ethical and legal dilemma as well. In spite of the well-known precautions of medical personel, these accidents must be regarded as one of the possible risks of surgical interventions. In conformity with the standpoint of the current Iranian law, retained foreign bodies cannot be regarded as negligence, but treated as malpractice. In almost all cases of retained foreign bodies after cardiac surgery, two problems are common to a great extent: lack of attention during surgery and an unexpected intraoperative event.

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