

PERCUTANEOUS PERICARDIAL DRAIN: A DEADLY EMBRACE OF THE HEART

Filipe Leite*, Gonçalo Paupério

Department of Thoracic Surgery, Instituto Português de Oncologia do Porto Francisco Gentil, Porto, Portugal

*Contacto Autor: filipe.miguel.leite@outlook.com

Abstract

Pericardial effusions have multiple causes and when significant percutaneous drainage is standard. Usually removal is a simple and quick procedure with reduced risks. Still, the authors present a case where the drain surrounded the heart and great vessels, causing severe pain, bradycardia and hypotension when pulled, forcing a surgical removal of the same.

CASE REPORT

A 58 year old man with an undifferentiated oesophageal carcinoma, cT3, N+, M0, previously submitted to concurrent chemo and radiotherapy followed by adjuvant chemotherapy, was admitted due to uncontrolled dorsal pain, with cervical irradiation.

During the hospital stay a CT-scan was performed and a pericardial effusion was identified.

An echocardiogram confirmed the effusion, without cardiac tamponade.

A percutaneous pericardial drain was placed and 550 mL of serous liquid were drained.

Serial echocardiograms were performed to document the effusion.

On the third day, due to no further significant drainage and no effusion on the echocardiogram a removal of the drain was attempted.

It did not move, with the patient developing an intense chest pain, severe hypotension and bradycardia. The procedure was halted and the patient recovered.

The Thoracic Surgery department was contacted.

It was assumed that the drain had become caught within the chest wall and the pain had caused a vagal reaction. A new attempt was performed, with a new episode of chest pain, extreme bradycardia and hypotension, with spontaneous recovery upon release of the drain.

An emergency chest CT was performed (Figure 1), showing the drain crossing the transverse sinus on the posterior wall of the heart, emerging on the obtuse border and passing just anterior the root of the aorta and pulmonary artery, before passing the acute border into the inferior wall of the heart.

A medial sternotomy is performed (Figure 2). The pericardium was thickened and completely adherent to the

heart, with no visible pericardial metastasis, leaving only a small tunnel through which the drain traversed.

The drain was removed uneventfully and the patient made a full recovery.

DISCUSSION

To the best of our knowledge, this complication had not been previously described in the literature.

In a patient with an advanced stage oesophageal carcinoma and a *de novo* pericardial effusion, either a pericardial progression of the primary disease or metastasis were assumed.

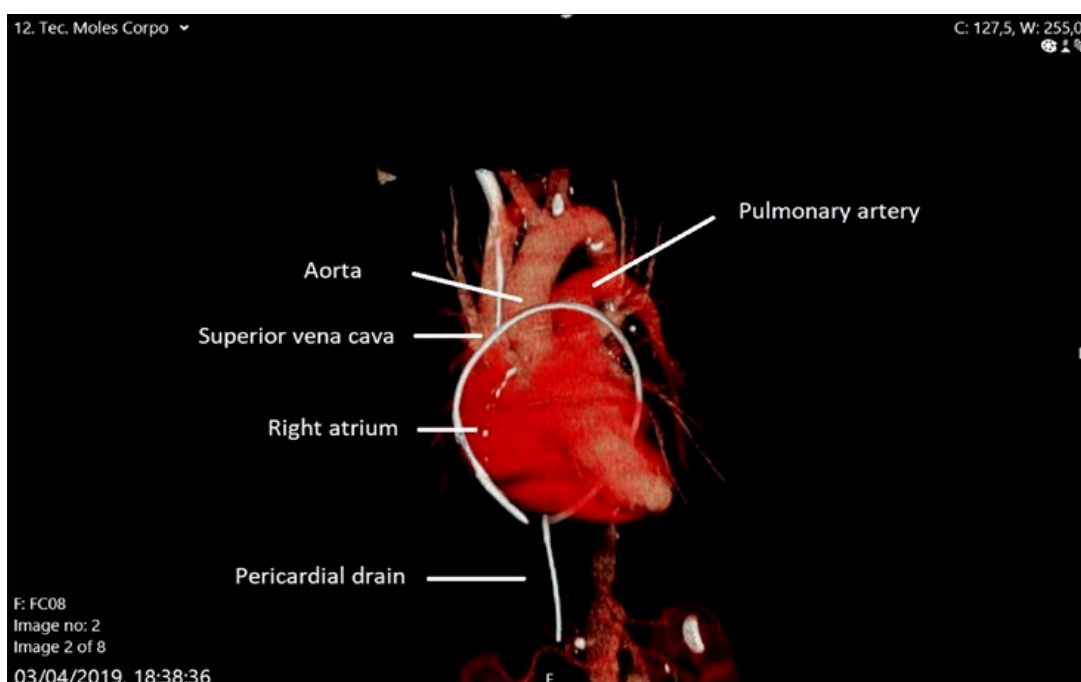
Still, other possible causes include infections, inflammatory connective tissue disease, vasculitis, drug induced, postcardiotomy/thoracotomy, postmyocardial infarction, trauma, dissecting aortic aneurysm, iatrogenic, anticoagulants, radiation therapy, chronic renal failure, chylopericardium, stress-induced cardiomyopathy, hyperthyroidism or hypothyroidism.

Given the previous chemo and radiotherapy, the most likely diagnosis was a malignant or a postchemo-radiotherapy effusion.

Even though there was no cardiac tamponade, a pericardiocentesis and the placement of a small-bore drain is advisable. Unfortunately, the effusion was not sent for cytological examination.

As the drain had no significant drainage, either it had occluded or no more effusion was present. The echocardiogram showed no effusion, so it was possible to safely remove the drain.

Possible causes for a drain not being able to be removed without force usually include being caught in a suture line or between hard structures in the body, such as bony surfaces.

**Figure 1**

CT reconstruction showing the drain crossing the transverse sinus on the posterior wall of the heart, emerging on the obtuse border and passing just anterior the root of the aorta and pulmonary artery, before passing the acute border into the inferior wall of the heart.

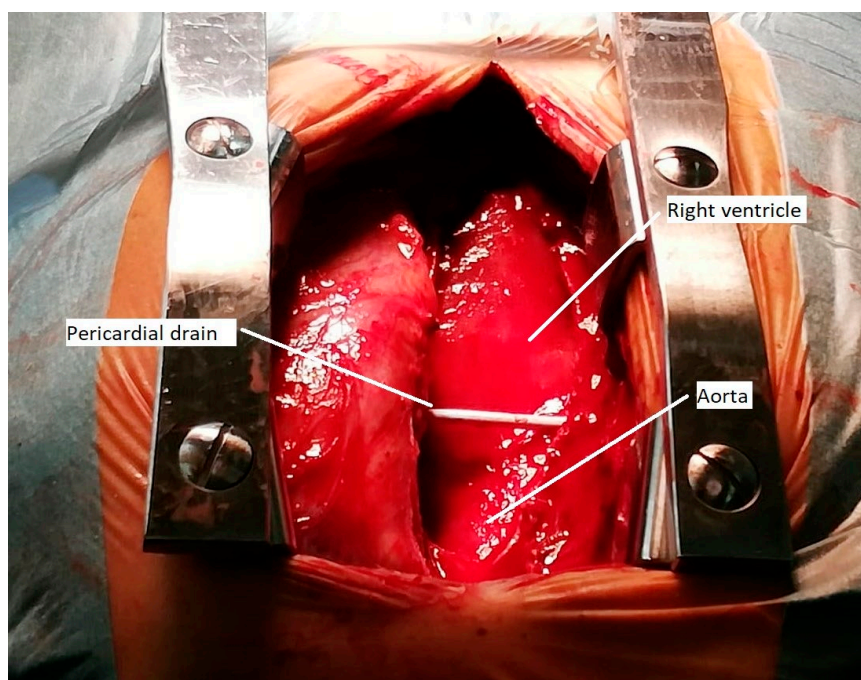
Still, in most of these cases, the pulling of the drain does not induce pain, much less hemodynamic instability.

At this point it must be asked what to do next?

Either a new echocardiogram or a CT-scan was warranted. As the hospital had no Cardiologist on call, a CT scan was performed, showing the complete surrounding of the root of the great vessels. As such, as the drain was

pulled, it compressed the roots, diminished the cardiac output, leading to pain and hemodynamic instability.

Given that the effusion was significant only 24 hours earlier and had been drained within the same time period, the pericardial thickening and adherence to the myocardium was unexpected, implying a greater surgical risk.

**Figure 2**

Medial sternotomy showing a thickened pericardium completely adherent to the heart. The drain is visible crossing in front of the aorta and right ventricle.