

EMBOLISATION OF A LEAFLET OF A PROSTHETIC MITRAL VALVE TO THE RIGHT COMMON ILIAC ARTERY: A CASE REPORT

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ABSTRACT:

INTRODUCTION: THE embolisation of prosthetic heart valve is an extremely rare condition and when occurred is considered as a surgical emergency.

Presentation of the Case: In this report, we describe a 38 year old female patient presented to the hospital with carcinogenic shock. Exclusion of arrhythmias and myocardial infarction was done. Also, pulses were equal on both lower limbs. The medical history of the patient showed surgical replacement of the mitral valve with a prosthetic one since two years. Echocardiography showed a malfunctioning mitral valve. CT scan showed presence of a leaflet of the mitral valve in the right common iliac artery. The mitral valve was re replaced, and then escaped leaflet was retrieved surgically.

Discussion: The embolisation of part of mitral valve was reported previously a rare surgical emergency. The extraction of the embolised valve was described.

Conclusion: In this paper, we document with medical imaging a rare case of prosthetic mitral valve embolisation. The importance of echocardiography and CT scan in the diagnosis has been emphasised. The urgent management of the case including the retrieval of the mitral leaflet from the right coronary artery is described.

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المخلص العربي:

إنصمام منشور صمام قطنسي صناعي في الشريان التاجي الحرقفي الأيمن
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المقدمة: إن إنصمام قطعة من الصمامات الاصطناعية نادرة جداً، وتعد حالة جراحية طارئة. عرض الحالة: في هذا التقرير نصف حالة امرأة في الثامنة والثلاثين من العمر جاءت إلى المستشفى في صدمة قلبية. تم استبعاد اضطراب النظم وإحتشاء القلب، وكان النبض متساوياً في كل من الطرفين السفليين. تاريخ الحالة المرضية بين أن المريضة أجريت لها عملية استبدال الصمام القطنسي منذ سنتين. سونار القلب أظهر اضطراب في وظائف الصمام القطنسي. الأشعة المقطعية أظهرت إنصمام منشور من الصمام القطنسي في الشريان الحرقفي الأيمن.

المناقشة: لقد تم وصف إنصمام جزء من الصمام المترالي الصناعي كحالة جراحية طارئة، ووصف انتشارال الجزء المنضم من الصمام كعلاج الحالة.

الاستنتاجات: في هذه الورقة نوثق بالصور الطبية لحالة نادرة لإنصمام جزء من الصمام المترالي الصناعي. ونبين أهمية استخدام السونار القلبي والأشعة المقطعية. ونصف طارئاً الحالة بما في ذلك انتشارال الجزء المنضم من الصمام القطنسي.

INTRODUCTION:

Embolisation of a prosthetic cardiac valve disc produces sudden pulmonary oedema for which aggressive surgical therapy is necessary to prevent death¹. Acute prosthetic valve dysfunction is a critical condition, which is associated with a high morbidity and mortality rates and requires immediate surgery². Hence, the rapid and exact diagnosis of valve dysfunction is of a vital importance². This identification should allow immediate surgical intervention for the prosthetic valve replacement

THE CASE REPORT:

A 38-year old female was presented to the emergency room complaining of shortness of breath preceded with an episode of a sudden palpitation. The patient was restless and sweaty. By examination, she was a febrile, severely dyspnic, assessed as NYHA class 4, tachypnic with a respiratory rate of 30 cycles/minute), tachycardic, with a heart rate of 130 bpm, hypotensive with a blood pressure of 80/60 mmHg, and femoral, popliteal and paedal pulses were all palpable on both sides. The patient was non smoker, with no alcohol intake, no history of myocardial infarction, no previous stenting, no history of diabetes mellitus or hypertension. She underwent surgical replacement of the mitral valve 2 years ago after a rigorous 5 years history of progressive symptomatic mitral valve. The surgery was done two years ago. The patient’s clinical condition is markedly improved. Two years after the operation, the patient presented us with these pictures. Investigations of the patient in the form of ECG, troponin, CK.MB with exclusion of myocardial infarction and arrhythmia were carried out. The patient was admitted and medically controlled to be hemodynamically stable. Echocardiography was done, which revealed a malfunctioning mitral valve. Multidetector CT scan was done on the chest, the abdomen and the pelvis with an amazing finding. There was a leaflet of prosthetic mitral valve detected in the right common iliac artery, Fig. 1 and 2.



Figure 1. The Leaflet of prosthetic valve in the right iliac artery



Figure 2. Reconstructed image shows the leaflet of the prosthetic valve lodged in the right iliac artery

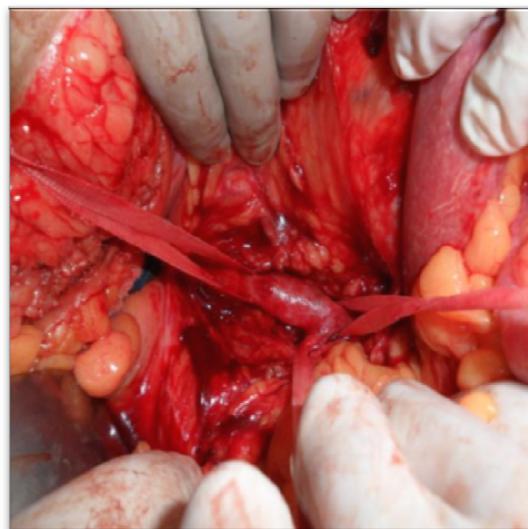


Figure 3. Bulge in the right iliac artery (the valve)

The patient was exposed to another cardiac surgery with another mitral valve replacement. The patient fortunately passed the operation without complications. The patient was referred to the vascular surgery department and underwent another surgery for extraction of the valve from the iliac artery. Midline incision was done. The valve was felt at common iliac artery bifurcation with bulge seen at the anterior wall of the common iliac artery near its bifurcation to the external and the internal iliac artery. Transverse arteriotomy was done and valve was extracted smoothly then arteriotomy was closed, Fig 3 and 4. No post-operative complications were detected and the patient was discharged from the hospital.

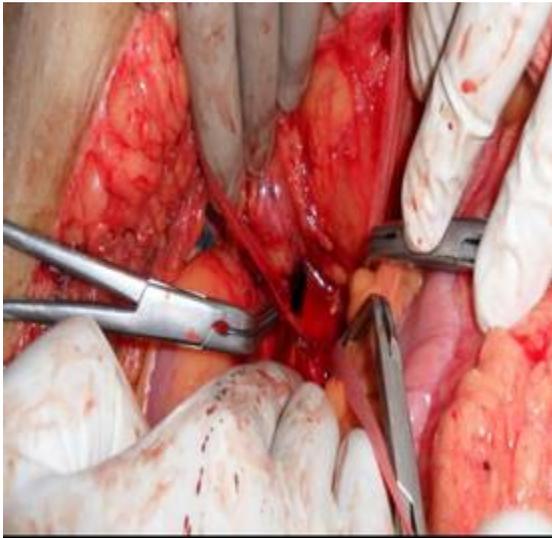


Figure 4. The valve extracted from the artery (black color)

DISCUSSION:

Primary structural failure of currently available mechanical valves is extremely rare. Leaflet escape from a prosthetic valve has been reported following both mitral and aortic valve replacement surgery at variable intervals of time ranging from days to several years after the date of operation³. Leaflet escape due to fracture of a mechanical valve prosthesis has been previously reported for monoleaflet (Omnicarbon and Bjork-Shiley convex-concave valves), bileaflet mechanical prostheses (Edwards-Duromedics and Edwards-Tekna) and recently for Tri-technologies prostheses valve.⁴ Acute prosthetic valve dysfunction is a critical condition which is associated with a high morbidity and mortality rate and requires immediate surgery.² The usual mode of presentation is with acute severe shortness of breath, often after a period of activity. Clinically, the picture is of acute left ventricular failure and pulmonary edema with cardiogenic shock, due to severe valvular incompetence. Possible differential diagnosis that needs to be ruled out are myocardial infarction, para prosthetic valvular leak, malignant arrhythmia

and pulmonary embolism⁵. Echocardiography is not always diagnostic of the leaflet escape and may be interpreted as showing obstructed closure of the prosthetic valve or a paravalvular leak⁵. Timely diagnosis and emergency surgical replacement of the damaged prosthetic valve is indicated. Delay in diagnosis or treatment may prove to be detrimental. It is sometimes difficult to locate the missing leaflet which may have embolized more distally in the aorta or iliac artery³. Plain radiographs often fail to visualize the disc as they are not sufficiently radio opaque.

Ultrasound and CT scan are more accurate at localizing the dislodged leaflet in most reported cases.⁶ Fluoroscopy has also been used in some cases to localize the leaflet. In the reported literature, it has been considered mandatory to retrieve the embolised disc at the same time or shortly after valve replacement. Rarely the leaflets eluded all attempts at localization and were discovered only at autopsy⁵. Open vascular surgery traditionally offered the “gold standard” with respect to durability and efficacy. However, it was associated with the typical morbidity and mortality of all open surgical procedures⁷. With advances in catheter-based technology, endovascular therapy is now the first option in most clinical situations. Endovascular intervention is less invasive, and patient recovery is rapid⁷. As endovascular techniques are performed more frequently, the number of interventionalists increases, and the array of endovascular techniques continues to expand, we will increasingly encounter complications from these procedures. Some of these complications are simply a function of the access: arteriovenous fistula (AVF), bleeding, and pseudoaneurysm⁸. Other complications include dissection, embolisation and perforation may also occur⁹. Major systemic complications include contrast nephropathy, atheroemboli, heparin-induced thrombocytopenia (HIT), allergic reactions, and myocardial infarction¹⁰. In our case, the decision taken with the extraction surgically because the relatively large size of the prosthetic valve as an intravascular embolised foreign body, with difficulty in the endovascular extraction, and expected increased rate of complications in this case, if retrieved by the endovascular methods. Most of the reports about the embolised valves in the aorta or iliac arteries proved that there is no hemodynamic disturbance resulted from the presence of the leaflet of the valve in these sites. However, most of the authors emphasize that it is mandatory to remove the foreign body due to the risk of thrombosis, migration, erosion and infection at the site of lodgment.

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