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# Localized constrictive pericarditis compressing and obstructing the right ventricular inflow tract due to a giant anterior calcified cardiac mass. A case report



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## ABSTRACT

**INTRODUCTION:** Localized pericardial constriction is a rare form of constrictive pericarditis CP. Depending on the CP location, clinical presentation may be variable, including compression and obstruction of right ventricular inflow tract (RVIT), coronary obstruction, or pulmonary stenosis.

**CASE PRESENTATION:** A 72-year-old man presented a 2-year history of dyspnea and atrial fibrillation. A contrast enhanced angio computerized tomography clearly demonstrated a large spherical mass about  $11 \times 9 \times 4$  cm in the anterior pericardium, presenting as a mediastinal tumor causing compression and obstruction of the RVIT. The patient underwent surgical procedure. The outer calcified layer of the pericardial mass was a thick layer of calcification surrounding an inner amorphous low density material. The inferior calcified layer of the pericardial mass which was extremely adherent with the epicardium, was carefully excised, without employment of cardiopulmonary bypass, from the aorta and pulmonary artery origin to the diaphragm and all areas between the right and left phrenic nerves. The final diagnosis was idiopathic CP.

**DISCUSSION:** The clinical presentation was due to right ventricular free wall compression and obstruction of the RVIT by a giant calcified anterior cardiac mass. The differential diagnosis with other calcified masses in the anterior mediastinum such as teratoma, hemopericardium after blunt trauma and idiopathic or tuberculous CP should be considered.

**CONCLUSION:** Herein we report a very rare case with localized CP causing compression and obstruction of RVIT due to a giant anterior calcified cardiac mass, treated successfully with pericardectomy. Careful dissection is mandatory for a successful procedure.

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## 1. Introduction

Constrictive pericarditis is a rare disorder, characterized by thick pericardial fibrosis and calcification that causes progressively impaired diastolic filling of the heart with associated symptoms of heart failure [1]. The most common cause of this disease in underdeveloped areas of the world is either viral or bacterial, and when bacterial, it is likely related to be tuberculosis. Localized pericardial constriction was reported as a rare form of constrictive pericarditis [2,3]. Depending on the location of pericardial constriction, clinical presentation may be variable, including compression and obstruction of the right ventricular outflow tract, coronary obstruction, or pulmonary stenosis [4]. Obstruction of the right ventricular inflow is rarely reported. Small fluid collections are commonly observed

between adhesions in patients with constrictive pericarditis; however large amount of hematoma are extremely rare. We report in line with the SCARE criteria [5] a case with localized anterior calcified constrictive pericarditis with a large hematoma formation, compressing and obstructing the right ventricular inflow tract.

### 1.1. Case presentation

A 72-year-old man presented a 2-year history of dyspnea and atrial fibrillation. During the last three months, the patient exhibited occasional paroxysmal nocturnal dyspnea and two-pillow orthopnea. The patient denied any chest pain, history of myocardial infarction or thoracic trauma in the past. Physical examination revealed moderate elevation of jugular venous pressure and mild hepatomegaly without other gross features of heart failure, and no pericardial knock or rub could be heard. A contrast enhanced angio computerized tomography clearly demonstrated a large spherical mass about  $11 \times 9 \times 4$  cm in the anterior pericardium, presenting as

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**Fig. 1.** (A) Contrast enhanced angio CT demonstrating an anterior mass obstructing the right ventricular inflow tract. (B) The mass has two calcified layer and some fluid collection extending from the diaphragmatic aspect to the right ventricular infundibulum. (C) Preoperative echocardiography demonstrating the anterior localized mass. Legend: CP = Constrictive pericarditis, RV-Right ventricle.

a mediastinal tumor and compressing right ventricle inflow tract (Fig. 1A and B). At this time, the origin of the mass was unclear. However, the differential diagnosis included constrictive pericarditis and teratoma. A transthoracic echocardiogram identified the anterior cardiac mass and revealed again the presence of partial compression of the right ventricular free wall (Fig. 1C). The echocardiographic data are given in Table 1. Cardiac catheterization was performed to better elucidate the hemodynamic effect of suspected constrictive pericarditis on right ventricle filling, through observation of dynamic respiratory changes that occur in the heart during cardiac catheterization of the right cardiac side. During the same procedure the coronary angiography was performed and non coronary stenosis was identified.

With evidence of constriction confirmed, the patient underwent pericardiectomy and resection of the mass. Before sternotomy, the central venous pressure was 20 mmHg. Upon gross examination before removal, the mass was noted to extend from the diaphragm to the top of the right atrium, and from the right phrenic nerve to the anterior interventricular groove and right ventricular infundibulum (Fig. 2A). The pericardium was thick. The dissection was started from the anterior surface of the right ventricle toward the mass on the right atrioventricular groove (Fig. 2B). The outer calcified layer of the pericardial mass was a thick layer of calcification surrounded an inner amorphous low density material. This layer was easily opened and the contents of the mass appeared like old coagulated blood (Fig. 2C) which was evacuated with a sterile spoon (Figs. 2D and 3A). Then the inferior calcified layer of the pericardial mass which was extremely adherent with the epicardium, was carefully excised, without the use of cardiopulmonary bypass, from the origin of the great vessels to the diaphragm and all areas between the right and left phrenic nerves (Fig. 3B). The removed speci-

**Table 1**  
Echocardiographic data.

Variables	Preoperative	Postoperative
Left ventricular ejection fraction (%)	43	60
Mitral E velocity in inspiration (cm/s)	82	112
Mitral E velocity in expiration (cm/s)	98	125
Percent change in mitral E velocity	32	14
Lateral e' velocity (cm/s)	12	9
Medial e' velocity (cm/s)	13	7
E/A ratio in inspiration	1.5	2
E/A ratio in expiration	1.9	2
Deceleration time expiration/inspiration	1.3	1
Hepatic veins systolic reversal velocity in inspiration(cm/s)	2.2	2
Hepatic veins systolic reversal velocity in expiration (cm/s)	16	23
Hepatic veins diastolic velocity in inspiration (cm/s)	17	34
Hepatic veins diastolic velocity in expiration (cm/s)	24	33
Hepatic veins diastolic reversal velocity in inspiration(cm/s)	50	70
Hepatic veins diastolic reversal velocity in expiration (cm/s)	17	49
Percent change in superior caval vein velocity	1.4	0.6
Tricuspid regurgitation velocity max (m/s)	2.2	1

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