

MINI-FOCUS ISSUE: INTERVENTIONAL CARDIOLOGY

INTERMEDIATE

IMAGING VIGNETTE: EDITOR'S HIGHLIGHTS

Successful Radical Pericardiectomy for Porcelain Constrictive Pericarditis



Yusuke Hamada, MD, Koichi Toda, MD, Noriyuki Kashiya, MD, Shigeru Miyagawa, MD, Yoshiaki Sawa, MD

ABSTRACT

We report the case of a patient with severely calcified constrictive pericarditis and liver cirrhosis who underwent successful off-pump radical pericardiectomy. The cardiac parameters significantly improved without severe complications. We demonstrate the usefulness of off-pump surgical treatment for constrictive pericarditis with liver cirrhosis. (**Level of Difficulty: Intermediate.**) (J Am Coll Cardiol Case Rep 2021;3:816-7) © 2021 Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

A 77-year-old man presented with dyspnea and leg edema with stasis dermatitis. His blood pressure was 118/50 mm Hg, heart rate was 100 beats/min, and oxygen saturation while breathing room air was 99%. Computed tomography (CT) revealed severe calcification of the pericardium surrounding the heart (**Figures 1A and 1B**), a finding suggesting porcelain constrictive pericarditis (CP) (1). There was also a moderate amount of ascites, splenomegaly, and a nodular surface of the liver, suggesting liver cirrhosis. Cardiac catheterization demonstrated elevated right-sided (right atrial pressure of 27 mm Hg) and left-sided (pulmonary capillary wedge pressure of 33 mm Hg) filling pressures, and equalization of right ventricular (RV) and left ventricular end-diastolic pressures within 5 mm Hg. The RV pressure waveform exhibited a dip pattern. Laboratory data showed decreased liver function and coagulopathy with a total bilirubin level of 1.4 mg/dl, serum cholinesterase level of 101 U/l, international normalized ratio of prothrombin time of 1.64, and decreased renal function with a serum creatinine level of 2.27 mg/dl.

His Child-Pugh scores was 8 with class B. The patient was at a high risk for cardiac surgery assisted by cardiopulmonary bypass because of liver cirrhosis. Off-pump pericardiectomy therefore was planned.

The thickened pericardium was reached through median sternotomy. The thickened pericardium was dissected, milky fluid was drained (**Video 1**), and the parietal pericardium was resected smoothly. The visceral pericardium (epicardium) was covered with calcified disks and severely adhered to the heart (**Figure 1E**). Each incision and removal released the restricted motion of the heart and improved ventricular diastolic function. Pericardiectomy was performed radically over the phrenic nerve to the dorsal side of the heart (**Videos 2 and 3**).

The post-operative course was uneventful, without significant complications during the hospitalization. Post-operative CT revealed that the calcified pericardium was almost completely resected (**Figures 1C and 1D**). Cardiac pressure study showed significant improvement in right atrial pressure (27 to 9 mm Hg), pulmonary capillary wedge pressure (34 to 13 mm Hg), cardiac index (2.02 to 2.65 l/min), and mixed venous oxygen saturation (45.4% to 67.2%). Three months after surgery, his functional status was New York Heart Association functional class I to II, with complete resolution of ascites. No microorganisms were detected in the milky

From the Department of Cardiovascular Surgery, Osaka University Graduate School of Medicine, Osaka, Japan.

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pericardial fluid. Histopathological examination of the resected pericardium confirmed chronic inflammation without any specific findings. The patient has been doing well in an outpatient clinic without any hepatic complications.

This case highlights the effectiveness of radical pericardiectomy extending over the phrenic nerve for CP and off-pump cardiac surgery in patients with liver cirrhosis (2,3).

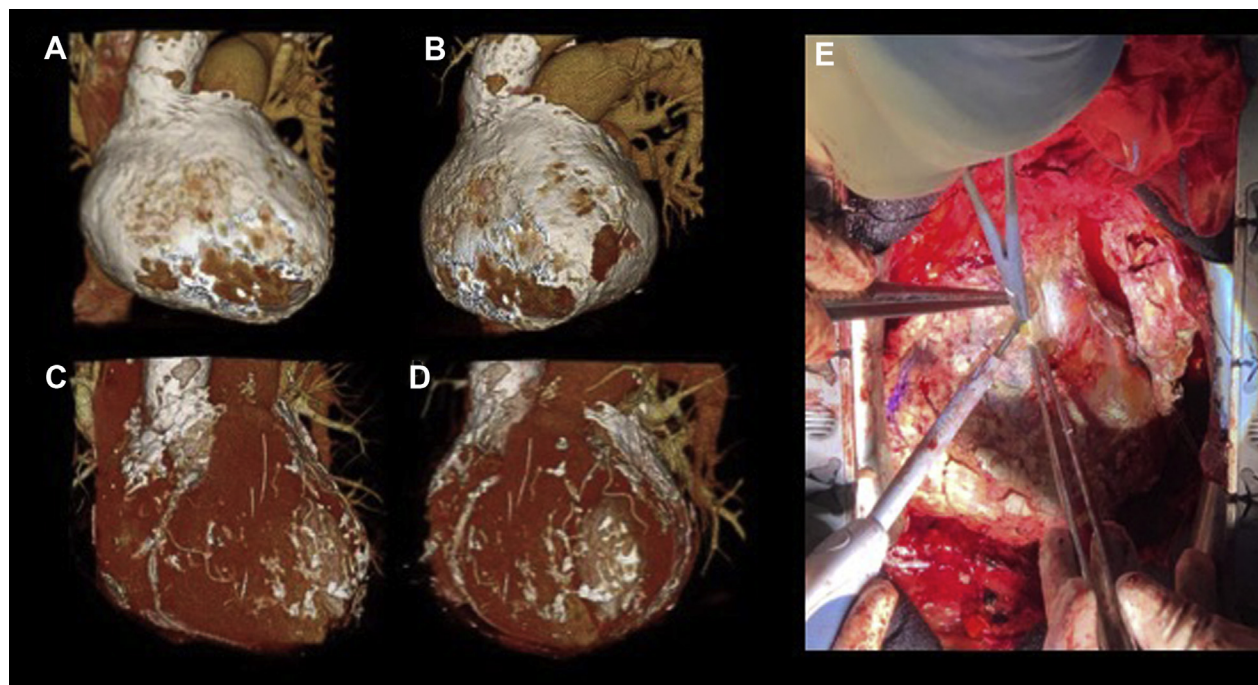
ABBREVIATIONS AND ACRONYMS

CP = constrictive pericarditis

CT = computed tomography

RV = right ventricular

FIGURE 1 Clinical and Intraoperative Findings



(A and B) Computed tomography on admission. (C and D) Post-operative computed tomography. (E) Thin calcified disk covering the epicardium.

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ADDRESS FOR CORRESPONDENCE: Dr. Yoshiki Sawa, Department of Cardiovascular Surgery, Osaka University Graduate School of Medicine, Yamadaoka, 2-2, Suita-city, Osaka 565-087, Japan. E-mail: sawa-p@surg1.med.osaka-u.ac.jp.

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APPENDIX For supplemental videos, please see the online version of this paper.