


Follow-Up at 2 years After Emergency Surgery for Constrictive Pericarditis Complicated With Gastrointestinal Bleeding

INQUIRY: The Journal of Health Care Organization, Provision, and Financing
Volume 59: 1–6
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DOI: 10.1177/00469580211064462
journals.sagepub.com/home/inq


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Abstract

Chronic constrictive pericarditis (CCP) is one of the common causes of cardiogenic cirrhosis; it is rare for a patient to have both CCP and recurrent black stool, so we consider that CCP causes cardiogenic cirrhosis. Cardiogenic cirrhosis caused portal hypertension which then resulted in gastrointestinal bleeding. Herein, we report a case of a 40-year-old Chinese woman suffering from CCP who had upper gastrointestinal bleed and had to undergo emergency surgery. Two years after the emergency surgery, multiple reexaminations showed significantly improved cardiac functions, hemoglobin, and WBC levels and gastrointestinal functions.

Keywords

chronic constrictive pericardium, cardiogenic cirrhosis, gastrointestinal bleeding, pericardiectomy

As a doctor who has been practicing cardiac surgery for a long time, I would like to share some experience through the case report. On the one hand, it is unusual that complexity and severity of the patient before surgery. On the other hand, based on the results of the long-term postoperative review, the surgical treatment is instructive.

1. What do we already know about this topic?

We already know the importance of excision scope of pericardiectomy for CCP. For this special patient, preoperative intervention is very important.

2. How does your research contribute to the field?

To bring a new way of thinking to the treatment of this special patient.

3. What are your research's implications toward theory, practice, or policy?

Surgical treatment of heart disease should be personalized. I think keeping this particular disease within safe limits can have a great impact on the outcome of surgical treatment

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Introduction

Chronic constrictive pericarditis (CCP) is caused by tuberculosis, surgery, trauma, and other reasons. CCP is an important cause of cirrhosis, particularly in South Asia where tuberculosis is still endemic; chronic inflammation of the pericardium can lead to thickening and calcification of the parietal pericardium that limits the diastolic function of the heart and affects the blood circulation of the whole body.¹⁻³ At present, the incidence of pericardial disease is about 2728/100 000 in South Asia, accounting for about .1% of the total number of inpatients.^{4,5} Their reasons of CCP could be divided into the following: idiopathic or viral (42%~49%); cardiac surgery (11%~37%); radiotherapy (9%~31%); connective tissue disease (3%~7%); tuberculous or purulent pericarditis (3%~6%); and others (10%) in malignant tumors, trauma, drug, asbestosis, and uremia, but in developing

countries, especially in South Asia, tuberculous pericarditis is the main cause.⁶

Case

A 40-year-old female patient was admitted to the hospital because of recurrent black stools and abdominal distension for more than 3 months. The patient had no prior history of viral hepatitis or other etiology leading to cirrhosis. Thirty years ago, in another hospital, she had pericardial excision due to CCP. Recurrent black stools and abdominal distension appeared intermittently within the last 2 years. CT scan of the transverse thoracic section performed in my hospital on Sep, 2019, combined with contrast-enhanced scan suggested (Figure 1) multiple fibrosis lesions in both lungs. Chronic pericarditis, pericardial effusion, and encapsulated pleural effusion are considered: Right pleural thickening with a small



Figure 1. Preoperative chest transsection scan showed markedly thickened pericardial tissue.

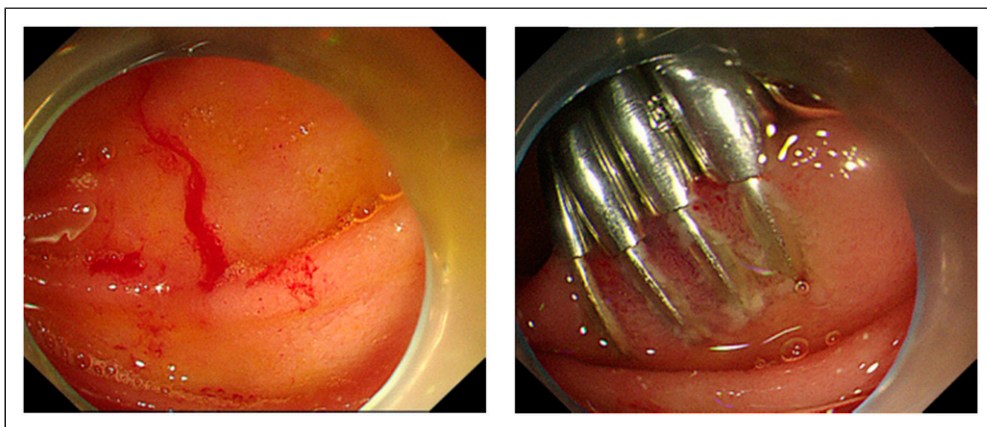


Figure 2. Preoperative endoscopic therapy, thermocoagulation, and titanium clip therapy.

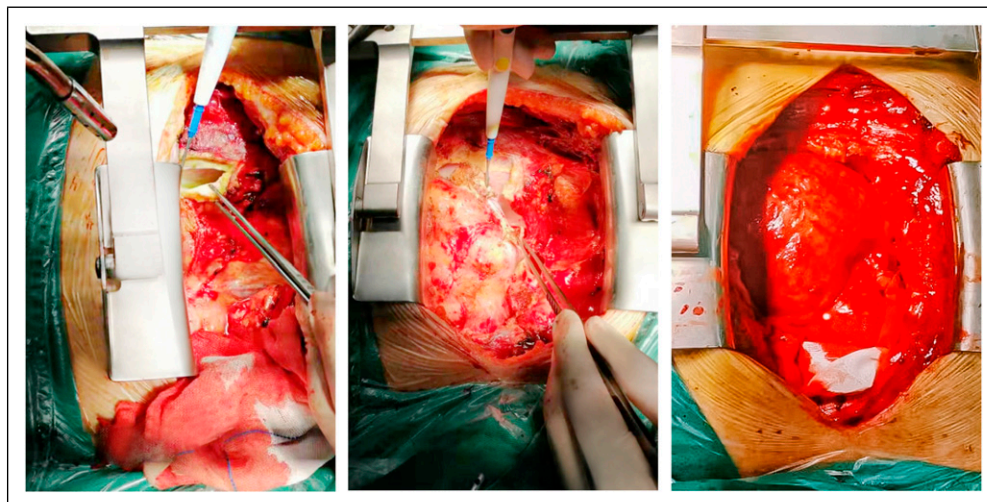


Figure 3. The procedure of pericardial exfoliation.

amount of pleural effusion, cirrhosis, and portal hypertension. Considering the patient had long-term gastrointestinal bleeding and her hemoglobin was constantly maintained at about 70 g/L, the endoscopic therapy was performed (Figure 2). However, repeated endoscopic therapy did not effectively improve the gastrointestinal bleeding. It also suggests that the conservative medical treatment is feeble. Before surgery, heart function, hemoglobin, and liver function of the patient still remained low.

So, let me describe the procedure of the emergency surgery. The operation was performed from the middle of the chest into the chest. It was found that the great vessels of the heart were bound by the thickened pericardium, and the heart pulsation was limited fearfully. The diseased pericardium was separated from the left ventricular outflow tract; blunt and sharp methods were used to separate the diseased pericardium. The diseased pericardium was gradually separated, and the myocardium can be seen jumping vibrantly. It was gradually separated to the right ventricular outflow tract, and then constraints of the superior inferior vena cava were released. The central venous pressure decreased from 27 cm water column to 10 cm water column. So far, the main procedure of surgery was completed; the surgical area was explored and hemostasis was perfected, and drainage tubes were placed in the pericardium and mediastinum, respectively (Figure 3). No postoperative adverse reactions such as hemorrhage, infection, atelectasis, ARDS, arrhythmia, and heart failure occurred. Postoperative pericardial pathology indicated tuberculous pericarditis (Figure 4). Chest CT reexamination after surgery indicated postoperative changes of the sternum and the right margin of pericardium, and a small amount of subcutaneous gas in the anterior

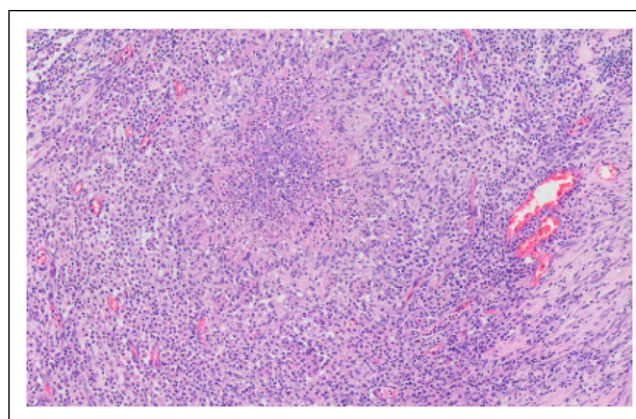


Figure 4. Pericardial pathology showed tuberculous pericarditis.

mediastinum and the right anterior chest wall, double-lung pneumonia, and multiple fibrosis. The pleura was thickened on the right side with a small amount of pleural effusion and a small amount of pleural effusion on the left side and cirrhosis (Figure 5). Postoperative endoscopy indicated no active bleeding in the duodenum (Figure 6). Chest CT reexamination 6 months after surgery indicated postoperative pericardial changes. Cirrhosis and splenomegaly improved compared with previous images (Figure 7). Chest and abdominal CT reexamination a year and a half after surgery indicated postoperative pericardial changes. Cirrhosis and splenomegaly improved compared with images from a year ago. Portal hypertension was better than the previous images (Figure 8). For a long time after surgery, the patient did not show symptoms of recurrent black stools, and the hemoglobin level was maintained above 90 g/L in regular reexamination. Routine

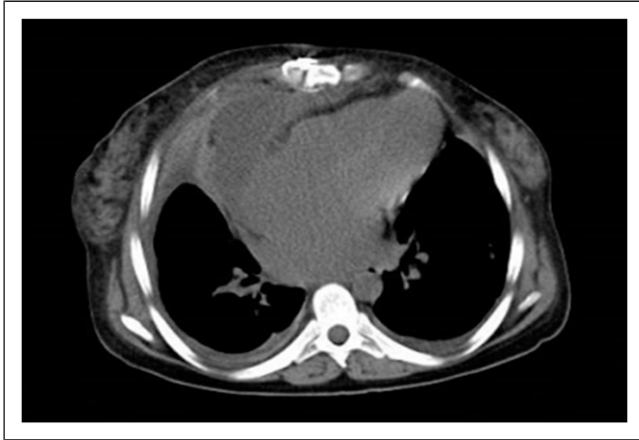


Figure 5. Chest CT reexamination after emergency surgery showed there were changes after pericardiectomy. There is no evidence of pericardial regrowth.

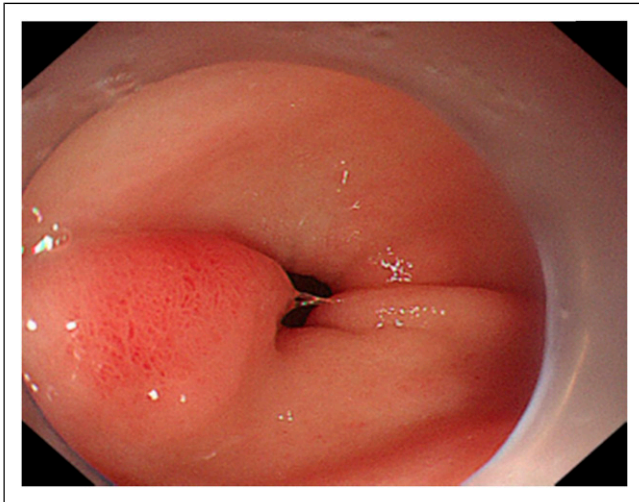


Figure 6. Postoperative endoscopy showed that no active bleeding was seen.

reexaminations a year and a half after surgery indicated white blood cells, red blood cells, hemoglobin, and liver function all returned to normal levels (Table 1). Besides, the cirrhosis index decreased after surgery (Table 2).

Discussion

Pericardiectomy to relieve the pressure of the diseased pericardium is currently considered to be the best treatment. Research has shown that the long-term survival rate of CCP patients via early pericardial excision was significantly better than that of patients who had surgery later.⁷ The latest research on the extent of surgical resection indicated that incomplete intraoperative resection could increase the recurrence rate of CCP and reduce the success rate of surgery and postoperative survival rate. In a study, 41 patients

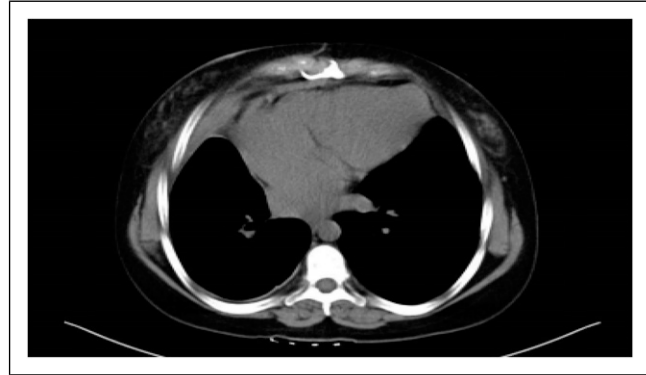


Figure 7. Chest CT reexamination 6 months after surgery showed that no recurrent pericardial lesions were observed.

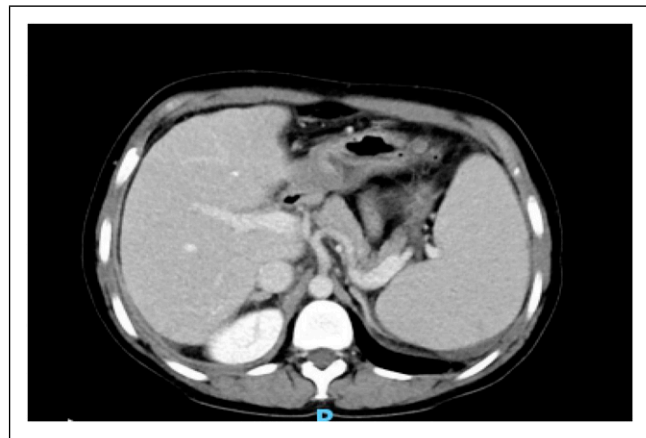


Figure 8. Chest and abdominal CT reexamination a year and a half after surgery showed that no recurrent pericardial lesions were observed, and the imaging findings of cirrhosis were better than before.

with CCP were collected between 1991 and 2016, 24 of whom underwent radical pericardiectomy and 17 of whom underwent subtotal pericardiectomy. The 10-year survival rate was 94% for the former, and 55% for the latter.⁸

For this patient, before surgeries, we had taken some measures: (1) We performed multiple blood transfusions on the patient to keep the hemoglobin and red blood cells within a safe range for surgery. (2) Before the surgery, we worked hard to improve the liver function and the heart function of the patient so that the patient could tolerate surgery. (3) We asked patients to strengthen their physical fitness prior to surgery in order to strengthen their cardiopulmonary tolerance for the surgery.

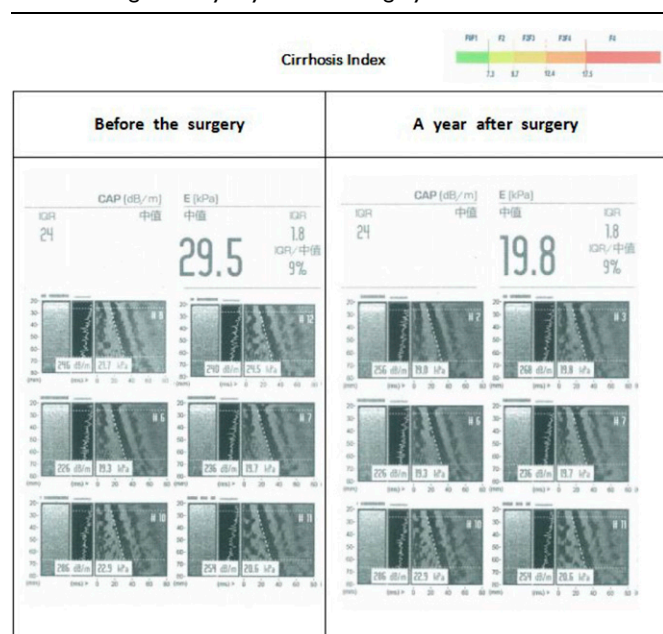
The particularity of this case report lies in the patient's long-term gastrointestinal bleeding and CCP. In this case, on account of the chronic restriction of function of cardiac diastole, the venous circulation reflux is chronically under a state of high stress. Chronic vena cava hypertension eventually leads to portal hypertension; the long-term

Table 1. We chose 3 time points before and after surgery. Six indicators were compared. We can see that after the surgery, the patient is doing better.

	Before the surgery (After many times of medical treatment)	Half a year after surgery	Year and a half after surgery
WBC	2.72*10 ⁹ /L	3.29*10 ⁹ /L	3.61*10 ⁹ /L
RBC	2.78*10 ¹² /L	5.03*10 ¹² /L	5.38*10 ¹² /L
HGB	74.0 g/L	124.0 g/L	140.0 g/L
TP	46.7 g/L	62.3 g/L	69.8 g/L
ALB	31.3 g/L	42.1 g/L	45.3 g/L
GLB	15.4 g/L	20.2 g/L	24.5 g/L

Abbreviations: TP, total protein; ALB, serum albumin; GLB, serum globulins; WBC, white blood cells; RBC, red blood cells; HGB, hemoglobin.

Table 2. Cirrhosis index. This is a popular liver cirrhosis testing instrument in China. The higher the number, the more severe the degree of cirrhosis. It can be seen that the cirrhosis index decreased significantly 1 year after surgery.



effects of portal hypertension lead to cardiogenic cirrhosis. In the end, the vessel pathway, full of blood, which exists in the lower esophagus and fundus of the stomach becomes tortuous, and dilated, and flimsy. This is why the patient could see significant improvement in gastrointestinal bleeding after pericardiectomy.

Postoperatively, more follow-up visits proved what is special about this case; few reports were found in the past that pericardiectomy was performed for a patient with CCP which generated portal hypertension combined with upper gastrointestinal bleeding, and the postoperative gastrointestinal bleeding, general condition, and multiple review indicators of the patient had ideally improved.

Conclusion

We reported a 40-year-old Chinese woman suffering from CCP and chronic gastrointestinal bleeding. After emergency surgery, regular review of cardiac function, hemoglobin, liver function, and gastrointestinal bleeding improved significantly. Combining imaging data with the whole diagnosis and treatment process, we considered that CCP chronically caused high portal pressure for the patient, leading to gastrointestinal vasodilation and rupture, and the portal pressure was effectively relieved after pericardiectomy.

Authors' Contributions

CL, XM, YZ, GL, FW, and GL analyzed and interpreted the patient data regarding the valvular heart disease and the tricuspid valve replacement via transcatheter. XZ was a major contributor in writing the manuscript. All authors read and approved the final manuscript.

Funding

This study was supported in part by grants from National Natural Science Foundation of China (81660074). Funder: Feng Wang. In this article, he provided clinical data, clinical images, and writing guidance.

Ethics Approval

The clinical case was established according to the ethical guidelines of the Helsinki Declaration and was approved by the Human Ethics Committee of Affiliated Hospital of Zunyi Medical University

Consent to Participate

Written informed consent was obtained from individual or guardian participants.

Consent for Publication

Because the patient thought that they had a good outcome after the surgery, and the patient was willing to share her illness and treatment experience, we obtained verbal consent from the patient to present this case report.

Availability of Data and Material

All data generated or analyzed during this study are included in this published article.

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References

1. Depboylu BC, Mootosamy P, Vistarini N, et al. Surgical treatment of constrictive pericarditis[J]. *Tex Heart Inst J*. 2017; 44(2):101-106.
2. Welch TD, Oh JK. Constrictive pericarditis. *Cardiol Clin*. 2017; 35(4):539-549.
3. Magnani I, Spadotto A, Paolisso P, et al. Subacute pericardial abscess after aortic valve replacement: a case report. *BMC Infect Dis*. 2020;20(1):342.
4. Imazio M, Gaita F. Diagnosis and treatment of pericarditis. *Heart*. 2015;101:1159-1168.
5. Adler Y, Charron P, Imazio M, et al. 2015 ESC Guidelines for the diagnosis and management of pericardial diseases: The Task Force for the Diagnosis and Management of Pericardial Diseases of the European Society of Cardiology (ESC) Endorsed by: The European Association for Cardio-Thoracic Surgery (EACTS). *Eur Heart J*. 2015;68(12):702-738.
6. Adler Y, Charron P, Imazio M, et al. 2015 ESC guidelines for the diagnosis and management of pericardial diseases: the task force for the diagnosis and management of pericardial diseases of the European Society of Cardiology (ESC) Endorsed by: The European Association for Cardio-Thoracic Surgery (EACTS). *Eur Heart J*. 2015;36(42):2921-2964.
7. Huang WJ, Yang YH, Song CHY, et al. The value of CT crescent-sign in the diagnosis of non-calcified contractive pericarditis[J]. *J Sun Yat-sen Univ (Soc Sci Ed)*. 2018;39(2):292-329.
8. Nozohoor S, Johansson M, Koul B, Cunha-Goncalves D. Radical pericardiectomy for chronic constrictive pericarditis. *J Card Surg*. 2018;33(6):301-307.