

Research Article

# Results of Surgical Treatment of Post-Tuberculous Constrictive Pericarditis

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**Abstract:**

**Objectives :** To evaluate the results of surgical treatment of post-tuberculous constrictive pericarditis.

**Materials and methods:** This was a retrospective study of 08 cases of constrictive pericarditis of tuberculous origin observed between January 2015 and december 2019. These patients presented with right (3 cases) or bilateral (5 cases) adiaastolism. All patients underwent subtotal pericardectomy by vertical median sternotomy.

**Results :** There were no early deaths. Non-fatal complications included 3 cases of haemorrhage from a wound in the right atrium. The mean length of stay in intensive care was 2 +/- 0.5 days and the mean length of hospitalisation was 10 +/- 2 days. None of the 08 patients was lost to follow-up. After a mean follow-up of 28 +/- 6 months, 06 are currently at NYHA functional stage I (75%) and 02 at stage II (25%); the mean cardio thoracic ratio had become 0.58 +/- 0.2.

**Conclusion :** Pericardectomy remains the only life-saving procedure for any patient at the stage of constrictive pericarditis.

**Key words:** Constrictive pericarditis - Pericardectomy - Tuberculosis.

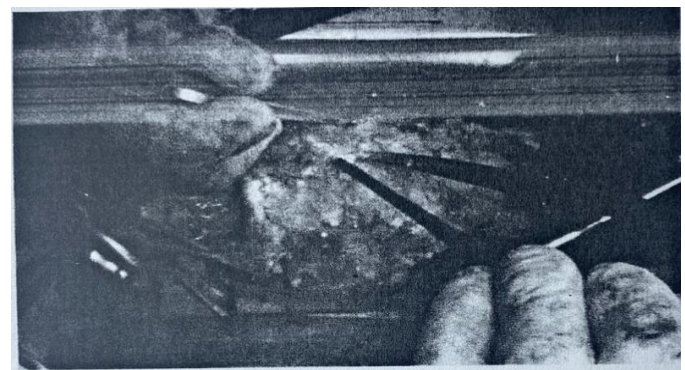
**Introduction :**

Tuberculosis is endemic in Africa, and pericardial localisations are increasingly common due to resistance to the usual anti-tuberculosis drugs. The spontaneous evolution of tuberculous pericarditis can lead to chronicconstrictive pericarditis [1]. The fibrous shell that forms around the heart prevents the passage of blood through the heart. diastolic filling of the heart. The onset of this condition is favoured by delays in diagnosis or by the absence of corticosteroid therapy during anti-tuberculosis treatment, especially in cases requiring pericardial drainage [2]. Pericardectomy remains the means of freeing the heart from this shell, in order to re-establish correct diastolic filling. The aim of this study is to evaluate the results of surgical treatment.

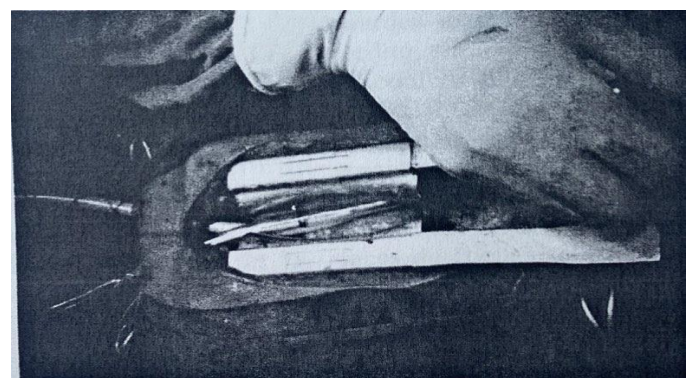
**Figure 1 : Pericardial stripping**



(A)



(B)



(C)

(A) : Sternotomy and exposure of the pericardial shell.

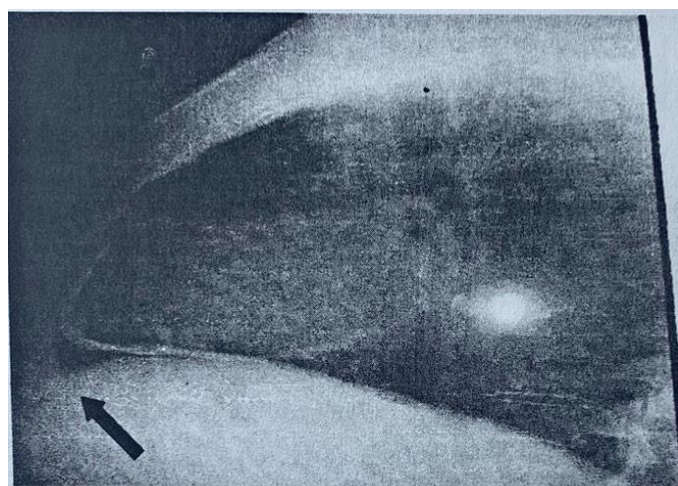
(B) : Beginning of decortication.

(C) : End of operation; placement of 2 drains.

## Patients and methods:

This was a retrospective study of 08 patients with tuberculous constrictive pericarditis managed from January 2007 to May 2009. The patients were 05 men (62.5%) and 03 women (37.5%), mean age 23 (range 19-32). Three patients had right adiastrale and five had bilateral adiastrale.

The presenting signs were non-radiating retro-sternal pain and dyspnoea; 7 patients (87.5%) were NYHA stage III and 1 patient (12.5%) NYHA stage IV. Fever was noted in 4 patients (50%). All patients showed signs of right heart failure: oedema of the lower limbs, hepatomegaly, spontaneous turgidity of the external jugular veins, and hepato-jugular reflux. The chest X-ray showed a mean cardiothoracic ratio of 0.55 +/- 0.2. Calcifications in the cardiac area were observed in 5 patients (62.5%). The electrocardiogram showed microvoltage in all patients, sinus rhythm in 2 patients (25%), and atrial fibrillation in 6 patients (75%). Echocardiography showed dry pericardium in all patients, and ejection fraction averaged 0.6 +/- 0.08 (range : 0.30 to 0.68). Cardiac catheterisation performed in all patients revealed right adiastrale in 03 cases, with a mean pressure of 17 mm Hg in the right atrium and 19 mm Hg in the right ventricle. In 05 cases, there was bilateral adiastrale, with a mean left ventricular pressure of 23 mmHg and right atrial pressures of between 16 and 20 mmHg.

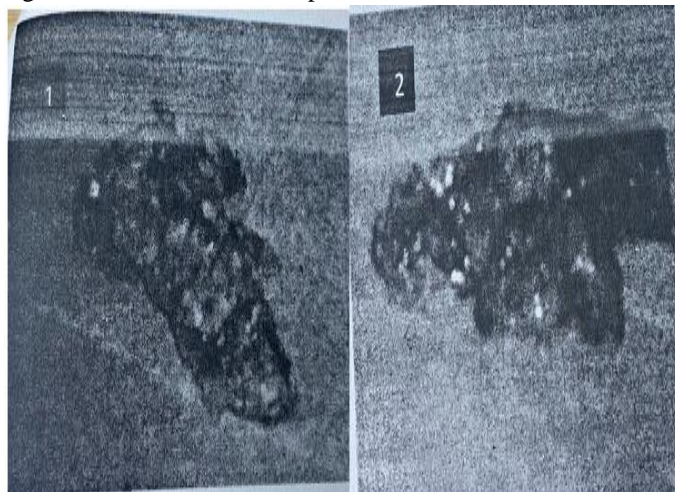


1/ Téléthorax de profil (gauche) : calcifications dans l'aire cardiaque



2/ Téléthorax de face : calcifications dans l'aire cardiaque

Tuberculosis etiology was confirmed by history of pulmonary tuberculosis, tuberculin antibody test (TST) and pathological examination of the pericardium. Vertical median sternotomy was the approach used in all patients. Subtotal pericardectomy from phrenic to phrenic was performed in all cases (Figure 1), starting with decortication of the ascending aorta, then the lateral faces of the ventricles, the pulmonary artery and the diaphragm, and finishing with the right atrium and vena cava. The average operating time was 120 +/- 30 min. The pericardium was calcified in 06 cases (75%) and fibrous in 02 cases (25%). Anti-tuberculosis treatment was continued postoperatively for at least 6 months. Categorical values were validated by the X2 test and means by the Student test, with a significance threshold set at  $p < 0.05$ .



1 and 2 : subtotal pericardectomy specimens .

## Results :

No early deaths were noted. Non-fatal complications included 3 cases of haemorrhage in the right atrium, which were repaired intraoperatively with no significant consequences.

The average transfusion was 1000 +/- 500cc. The average length of stay in intensive care was 2 +/- 0.5 days and the average length of hospitalisation was 10 +/- 2 days.

None of the 08 patients was lost to follow-up. After a mean follow-up of 28.6 months, 06 are currently at NYHA functional stage I (75%) and 02 at stage II (25%); the mean cardio thoracic ratio had become 0.58 +/- 0.2.

## Discussion :

The mean age of our patients was 23 years, which is lower than the mean ages

reported by Nilgun Bozbuga [3] and Haley [4], which are 32 and 49 years respectively.

All the cases we noted were of tuberculosis origin. This disease is endemic in African countries.

In contrast, in developed countries, the aetiologies of constrictive pericarditis are dominated by radiotherapy, cardiac surgery and idiopathic pericarditis [5,6,7] due to the reduced incidence of tuberculosis.

The clinical picture may suggest cardiomyopathy and delay diagnosis [8], which is however facilitated by colour Doppler echocardiography [4,7]. Clinical signs are generally signs of

right heart failure [9]. Treatment is essentially surgical, with good results [5]. Vertical median sternotomy gives good access to all sides of the heart except the posterior, and in most cases avoids opening the pleura. This is the only way to perform a subtotal pericardectomy and, if necessary, to install extracorporeal circulation easily in the event of haemorrhage due to invasion of the cavities heart. Haemorrhage is the main danger of this procedure [10].

Tearing of the right atrium, which is pellucid and fragile, may be the cause of death. Extra care and attention to detail must therefore be taken during this pericardial decortication procedure in order to limit, if not avoid, intraoperative incidents. Other approaches, such as left anterolateral thoracotomy alone or combined with vertical median sternotomy, have been used by other teams. Nevertheless, our immediate and late results are satisfactory, and are comparable to those of Bertog [6]. Secondary death from myocardial decay is due to inflammatory phenomena secondary to epicardial damage [11].

### Conclusion :

Pericardectomy is the only life-saving procedure for any patient at the stage of constrictive pericarditis. Nevertheless, it remains a delicate operation despite its apparent apparent simplicity. The results in terms of morbidity and mortality and postoperative functional benefits are highly satisfactory.

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