

EFFUSIVE CONSTRICTIVE PERICARDITIS CONFIRMED AT CREATION OF PERICARDIOSTOMY WINDOW.

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ABSTRACT

Aim: This was to evaluate our experience with patients who were diagnosed on table whilst undergoing tube pericardiostomy.

Methods: This is a 6-year retrospective study of all patients who had evident visible visceral constrictive pericarditis at tube pericardiostomy in the University of Benin Teaching Hospital. The study was for all cases seen from January 2013 till December 2018.

Results: A total of 21 patients had tube pericardiostomy done during the period under review, whilst 13 patients had visualized thickened visceral pericardium with effusion making 61.9% of all cases of pericardiostomy seen within the period. The mean age was 38.9 years with a male: female ratio of 1.3:1. All had serosanguinous pericardial effusion with debris and fibrinous material. The epicardium was visualized through the subxyphoid incision. All patients had irrigation of the pericardial space, creation of a pericardial window and the harvested pericardium sent for histological analysis. They also had tube pericardiostomy which was subsequently connected to an underwater seal drainage bottle. Only 4 of those with ECP subsequently had pericardiectomy.

Conclusion: Preoperative diagnosis of effusive pericarditis is the norm, however in circumstances of limited diagnostic resources, visualization during tube pericardiostomy is advocated.

Keywords: effusive constrictive pericarditis, tuberculosis, constrictive pericarditis

INTRODUCTION

Effusive constrictive pericarditis is the presence of features of cardiac tamponade in a patient with constrictive pericarditis from a

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coexisting pericardial effusion.¹ This subset of patients mainly present with features of impending or established cardiac tamponade and are mainly evaluated and treated as patients with restrictive cardiac pathology.¹⁻³ They demonstrate the classic Beck's triad with features of venous hypertension and fluid retention and are majorly seen in the medical emergency where they are reviewed as patients with cardiac failure.⁴ It is thought that the presence of an exudative effusion leads to fibrinous material deposits around the heart, which coalesce to form a thin band around it,

effectively establishing a constrictive fibrous band.^{2,4,5} Therefore the drainage of the pericardial effusion may only produce a reduction in the patient's symptoms without resolution if the constrictive visceral band is not removed. This is because the visceral pericardium here is the main pathology.^{5,6,7} However, it is important to note that surgical intervention should only be done after further review and recovery from the initial cardiac tamponade as pericardial irrigation has been reported to resolve constriction in some early cases. Essentially a tube pericardiostomy is indicated in the setting of haemorrhagic or fibrinous pericardial effusion where a large bore tube is placed within the pericardium after suctioning of the effusion and irrigation of the space.^{2,5,7}

Effusive constrictive pericarditis may be diagnosed preoperatively by echocardiography, which would show the classical features of cardiac tamponade in the presence of a thickened pericardium around the heart. However, its elucidation by echocardiography is tenuous and may be operator dependent.⁸ Various reports have suggested the addition of cardiac catheterization as well as the use of MRI to help to confirm the diagnosis.^{5,9} This is very important because the treatment for restrictive pericarditis is fundamentally different from that for constrictive pericarditis. Whereas, constrictive pericarditis would be treated by pericardiectomy, surgical treatment for restrictive disease is unwarranted and may actually cause the death of the patient.^{5,6}

Previous studies⁶ had identified the need to look out for a constricting band of visceral pericardium in patients with effusive pericarditis and the necessity of pericardiectomy as definitive treatment. With

cardiac catheterization and routine pressure measurements, effusive constrictive pericarditis has been elucidated as sustained intra-atrial or central venous pressure in the presence of reduced intrapericardial pressure following pericardiocentesis.³ Its diagnosis may be missed in patients with cardiac tamponade¹⁰, necessitating intra-atrial and pericardial pressure measurements whilst these patients are having pericardiocentesis. However, some of these are not immediately available in our setting, hence the reliance on visualization of the fibrous bands at tube pericardiostomy placement.

The study aims at evaluating our experience with patients who were diagnosed on table whilst undergoing tube pericardiostomy.

Materials and Method

This is a descriptive cross-sectional survey involving retrospective analysis of all patients treated by tube pericardiostomy in the cardiothoracic unit of the University of Benin Teaching Hospital, Benin City from January 2013 till December 2018. The clinical data were gleaned from their cases notes, theatre and ward records. The indication for tube pericardiostomy was cardiac tamponade. All patients were investigated and prepared prior to emergency surgery, which included Electrocardiogram (ECG), Echocardiography and Chest x-rays. Other routine investigations included Full Blood Count and differentials, Serum electrolytes and urea, and urinalysis. All were referred to the unit by cardiologists as cases of imminent or evident cardiac tamponade.

Tube Thoracostomy was by way of a subxyphoid incision to visualize the fibrous pericardium which was subsequently incised with a patch

taken as biopsy for histology. The pericardial space was entered and effusion drained, including manual breakdown of any loculations and saline irrigation of the space. The effluent were collected for cytology, microscopy and culture, acid and alcohol fast bacilli and biochemistry. A tube was subsequently placed at the diaphragmatic surface of the pericardial space and connected to underwater seal drainage bottle.

The diagnosis of effusive pericarditis was based on visualization of visceral constrictive bands at the time of tube thoracostomy. These were the patients included in the study. Patients who had percutaneous pericardiostomy using Seldinger technique to insert a size 7 French gauge 2 or 3 way catheters under echocardiographic guidance were excluded from the study, since the procedures were different and visualization by naked eye of the pericardium was impossible.

Their demographics, presentation, surgical findings, treatment and outcome were recorded. Outcome measures included resolution of cardiac failure, presence of features of constrictive disease and need for further surgical intervention by way of pericardiectomy.

The data was entered in Microsoft Excel spreadsheets and analysed for simple percentages.

Results

There were 21 patients who had tube pericardiostomy within the study period. Of these, only 13(61.9%) had ECP diagnosed intra-operatively. Only four patients subsequently had pericardiectomy. Their mean age was 38.9years with a male: female ratio of 1.3:1.

Table 1: Age Distribution

Gender	Had Pericardiostomy	Tube Pericardiostomy	Effusive Constrictive Pericarditis	Pericardiectomy
Mean age ± SD	38.9 ± 20.6		48.2 ± 15.4	44.8 ± 9.7
Female	12		7	1
Male	9		6	3
Total	21		13	4

Table 1: showing the gender distribution of the patients with their mean ages and standard deviation.

Figure 1: Yearly Incidence of Effusive Constrictive Pericarditis

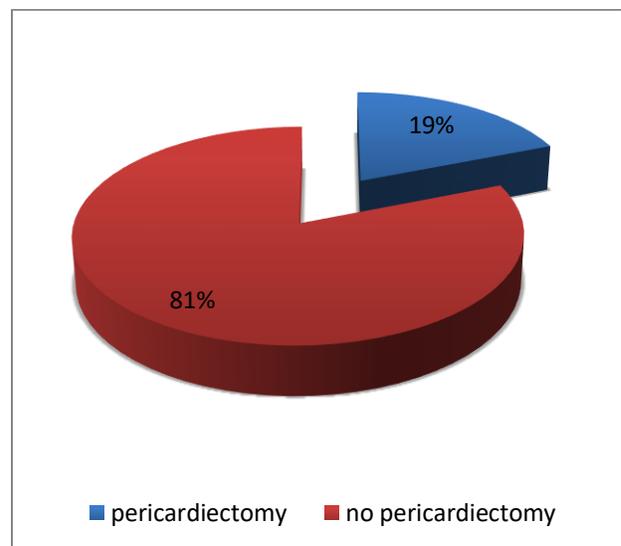
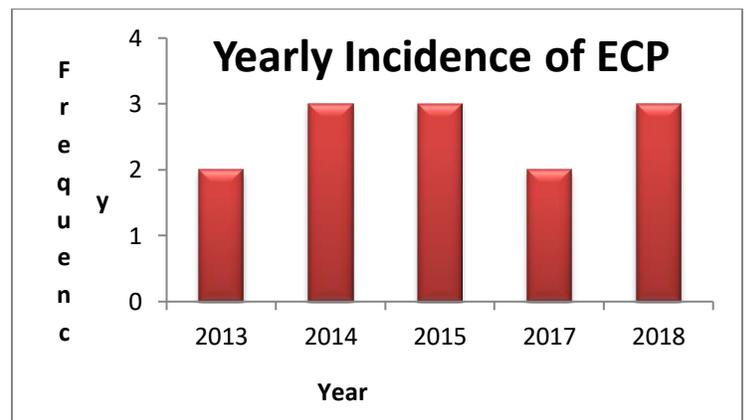
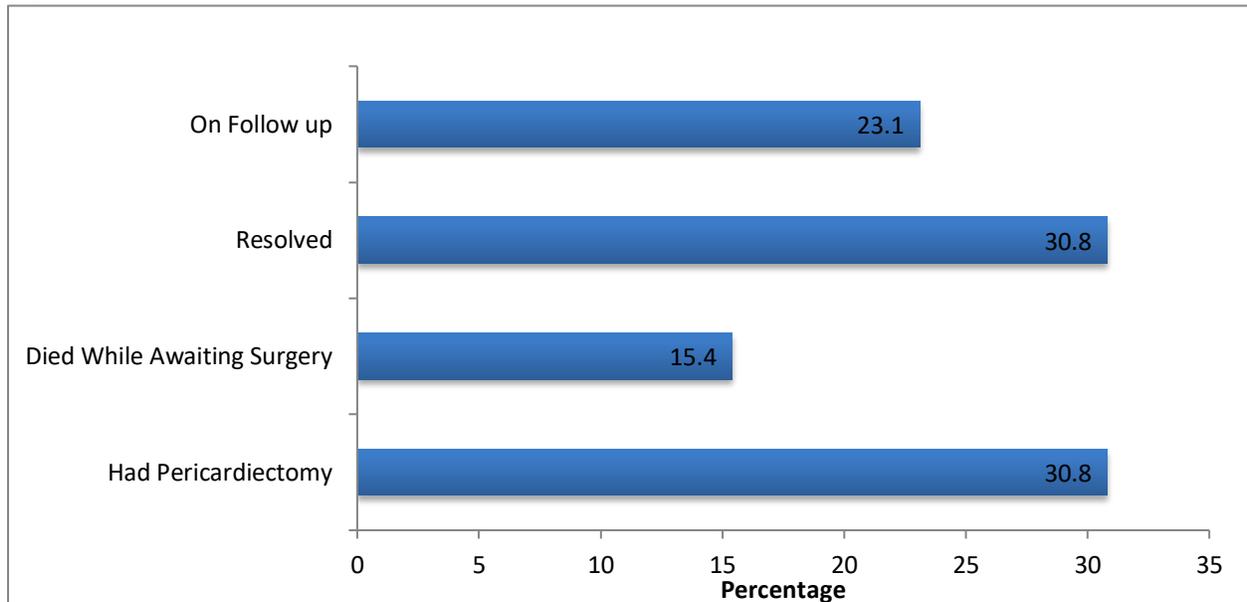


Figure 2: showing the number of pericardiectomies done within the study period.

Effusive constrictive pericarditis is essentially a disease of the young and middle aged, which

Figure 3: The outcome of patients with ECP



following tube pericardiostomy

is similar to that from other studies.¹⁻⁵

Discussion

Our results show that a significant percentage of patients presenting for tube thoracostomy have effusive constrictive pericarditis (61.9%), this is important because these patients require further evaluation and treatment as a significant number would go on to have complications or even die from constrictive pericarditis. This finding is similar to those from other studies.¹⁻⁶ Our tube pericardiostomy rate appears low for the number of cases of pericardial effusion possibly because as stated in the methodology we excluded all guided placements and some of these ECP patients had had multiple or failed percutaneous drainage. Also, the effusion was exudative and haemorrhagic and larger tubes were needed hence the tube placement.

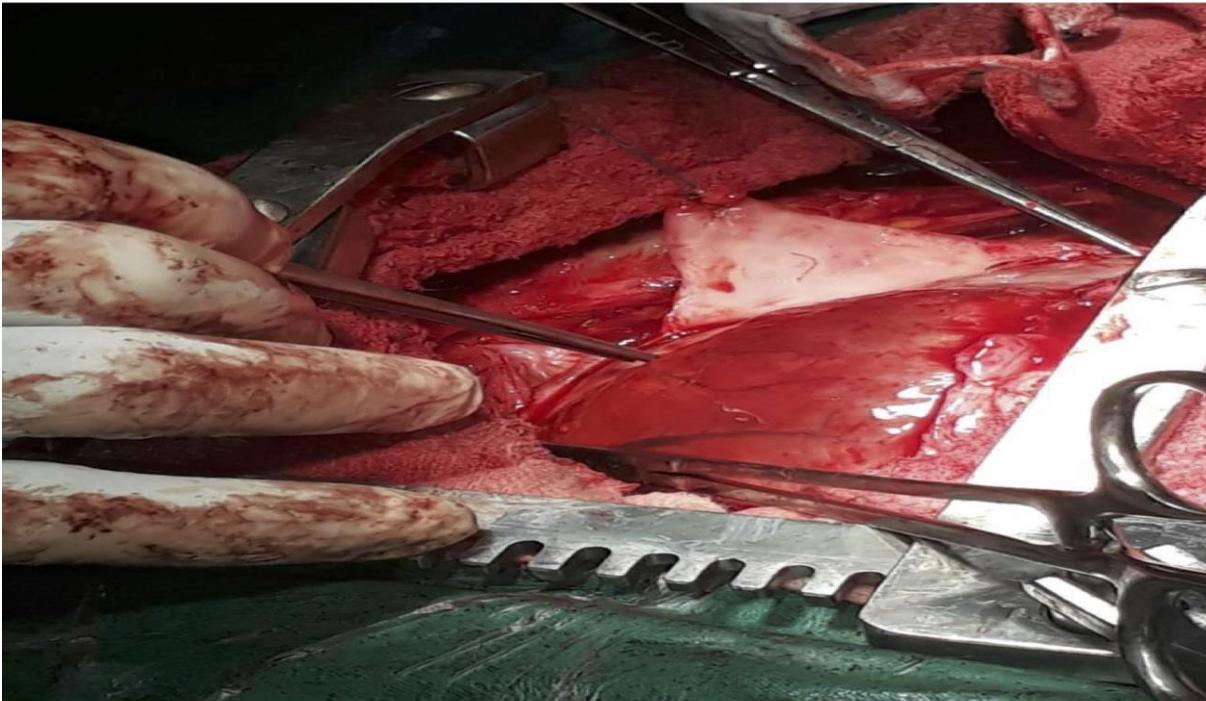
It has a male preponderance, which is also corroborated by other studies.^{2,5}

The presence of serosanguinous effluent suggests a chronic inflammatory lesion likely tuberculous.⁶ The pericardial histology was essentially depicting chronic inflammatory process without demonstrating evident active tuberculous infection. Tuberculosis was the commonest aetiology in the studies by Syed⁵ and Nsekhet.⁶ It would seem that these patients have active tuberculous infection and require standard anti-TB drugs.^{11,12} This may help with clinical resolution of the constriction.

A finding of 61.9% of all cases of cardiac tamponade treated by tube pericardiostomy suggests that exudative effusions cause a high percentage of cardiac tamponade with tuberculosis as a main aetiology.¹²

Only 30.8% of the patients subsequently had pericardiectomy¹³, the others either had some significant relief of their symptoms to require no further surgery, or they were lost to follow up or died. Reports from other studies show that the inflammatory process may be halted by the pericardiostomy and some patients may show resolution.^{6,7,8}

Fig 4: The thin visceral pericardial constrictive band.



Others have advocated the use of fibrinolysis by streptokinase to further breakdown the fibrinous deposits.^{11,13} Irrigation of the pericardium with Manual breakdown of loculi and suctioning is noted to help in the resolution of the constriction.¹³

Whilst the mere presence of pericardial thickening does not automatically confer the need for immediate surgical intervention, it does provide strong evidence for decision making in the face of non-recovery after pericardiocentesis. Various studies have emphasized the need for steroid and anti

tuberculous medications in the resolution of the visceral constriction.^{5,6} However, there are noted failures of resolution, which necessitate pericardiectomy.^{6,13} Indeed the period of relief may not be long and intervention may be required in some cases early.

Further study areas: The syndrome of effusive constrictive pericarditis is actively evolving as more knowledge is being gleaned, on table measurements of intra-atrial pressures as well

as central venous pressures should be done in these patients with clearly visualized evident visceral constriction at tube pericardiostomy to further see those at risks for developing full blown constriction.⁶

Active follow-up of these patients were not undertaken as its possible some of them may have simply sought medical help elsewhere. The study is a retrospective work and thus active interventions were not done.

Preoperative diagnosis of effusive pericarditis is the norm, however in circumstances of

limited diagnostic resources, visualization during tube pericardiostomy is advocated.

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