

OUTCOMES OF PERICARDIECTOMY IN TERTIARY TEACHING HOSPITAL OF KHYBER PAKHTUNKHWA

Abdul Malik*, Ikramullah**, Muhammad Gibran khan***, Akhtar sheer****, S. Murad ali shah*

* Associate Professor
Cardiovascular Ward, Lady
Reading Hospital, Peshawar -
Pakistan

** Junior Registrar
Cardiovascular Ward, Lady
Reading Hospital, Peshawar -
Pakistan

*** Cardiovascular Ward, Lady
Reading Hospital, Peshawar -
Pakistan

**** Department of Cardiology,
Lady Reading Hospital,
Peshawar - Pakistan

Address for correspondence:

Dr Abdul Malik

Associate Professor
Cardiovascular Ward,
Lady Reading Hospital,
Peshawar - Pakistan

Abstract

Objective: The aim of this study was to find outcomes of patients undergoing Pericardiectomy in a tertiary care teaching hospital of Khyber Pakhtunkhwa.

Methodology: This was a Descriptive cross sectional study performed in Cardiovascular Department Lady Reading Hospital Peshawar. Data was collected from October 2009 to October 2014 with sample size of 103. Sampling technique was non probability consecutive. All patients with constrictive pericarditis were included in the study.

Results : Total 50 patients were studied in period of 5 years from October 2009 to October 2014. Out of total 30 (60%) patients were male. Mean age of the study population was 48 ± 12 years. Tuberculosis was the major cause of constrictive pericarditis in these patients. Mortality associated with pericardectomy was 10%. Morbidity and mortality was mostly related to low output stat with or without right heart failure.

Conclusion:- Pericardectomy is associated with high mortality and morbidity in spite of advances in pre and post surgical care.

Key words: Pericardectomy, CPB, CP, TB

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INTRODUCTION

Constrictive pericarditis (CP) is a chronic inflammatory process that leads to progressive pericardial fibrosis. The thickened and fibrotic pericardium causes reduced cardiac output as a consequence of impaired diastolic filling of the cardiac chambers. Symptomatic constrictive pericarditis that has failed medical management requires surgical intervention pericardiectomy and this procedure is performed on patients with significant comorbidities that make the outcomes less satisfactory. Although surgical management remains the only effective treatment for such patients, high rates of morbidity and mortality have been reported in association with pericardiectomy. The risk factors of pericardiectomy have been reported with limited data except for the etiology at risk.^{1,2}

Tuberculosis (TB) and idiopathic inflammation are still most common causes of CP in south East Asia.³ However, in last two decade there has been a shift in the causes of constrictive pericarditis: radiation,

uremia, postoperative, and neoplastic pericarditis are the prime causes of CP in the Western world.⁴⁻⁷ In some studies the etiology of pericarditis is idiopathic in 15 (48%) patients, tuberculosis in 9 (29%), following radiotherapy in 3 (9%), neoplasia in 2 (6%), and following heart surgery in 2 (6%).⁸

The nationwide data about pericardiectomy is associated with a high operative mortality rate of 10%.⁹ The composite operative mortality or major morbidity rate is also high as 15.0%.¹⁰ Pericardiectomy therefore remains a procedure of higher morbidity and death, despite recent advances in cardiac surgery. In the Stanford series, the operative mortality was 12%; a lower mortality rate of about 6% has been noted in patients who underwent pericardiectomy between 1977 and 2000 at the Mayo Clinic, the Cleveland Clinic, the Johns Hopkins Hospital, or the All India Institute.^{11, 12} The risk is increased by calcification and involvement of the visceral pericardium.

Preoperative chronic lung disease and an advanced

NYHA class had a significant negative effect on the surgical outcomes. In addition, renal failure, previous cardiac operation, and the use of CPB were predictors of a worse outcome. In addition, atrophy of myocardial cells may develop during the long-term compression by the thickened pericardium. Therefore, if severe clinical symptoms were present for a longer period before the operation, even a complete pericardiectomy might not achieve a total restitution. In such cases, “prerenal” renal failure if present is another predictor of a worse surgical outcome.¹³

The importance of an early diagnosis and indications for the operation has therefore been discussed in previously published guidelines.¹⁴ Based on several studies pericardiectomy should at least be considered when or before a patient develops NYHA functional class III heart failure. However, the diagnosis of constrictive pericarditis can be a challenging process. It seems advisable that constrictive pericarditis should be considered in patients with heart failure with a preserved left ventricular function. In general, the right and left ventricular diastolic pressures are equalized in this disease, symptoms of right-sided heart failure are likely to dominate. Careful history taking and physical examinations, as well as the appropriate use of Doppler echocardiography and high-resolution computed tomography, may help in the early diagnosis.¹⁵

However, cardio pulmonary bypass (CPB) certainly aids in the surgical dissection by emptying the ventricular cavities to clearly define the appropriate plane of dissection and also facilitates the management of inadvertent cardiac injury. Use of CPB is an independent risk factor of a worse outcome, the benefits and risks of CPB should be assessed carefully according to each patient's condition.

We planed to look into various adverse outcomes related to pericardectomy that will guide us to identify

the outcomes in our local population

METHODOLOGY

This was a retrospective cross sectional study performed in cardiovascular department Lady Reading Hospital Peshawar. Data was collected from October 2009 to October 20014. Total 50 patients were studied. Sampling technique was non probability consecutive sampling. The diagnosis of constrictive pericarditis was confirmed by clinical presentation, chest X-ray, echocardiographic study, and chest computed tomographic (CT) scan. Informed consent was obtained from all the patients. All the pericardial specimen and fluid were sent to pathology department for histopathological examination. TB was diagnosed on basis of clinical background, histopathological features, and bacteriologic studies using the polymerase chain reaction (PCR) test on the pericardial fluid or tissue for evidence of mycobacterium tuberculosis.

All patients diagnosed as constrictive pericarditis was included in study irrespective of age and sex. Patients having renal failure (defined as creatinin more than 1.5mg/dl or on dialysis), post valvular replacement, impaired left ventricular function (EF <50%) were excluded from study as these are confounders and can affect study results. All patients were approached via median sternotomy. We do not use CPB routinely for pericardectomy. Dissections were started from diaphragm followed by left and right ventricle, both superior and inferior vena cava, and finally aorta and pulmonary artery. Anterior pericardium was resected from phrenic nerve to phrenic nerve. Pleura were opened if pleural effusion was noted in the per operative chest x-ray. All procedures were performed by same surgeon and experienced surgical team.

Data was analyzed on SPSS version 14. Mean \pm SD were calculated for quantitative variables like age. Frequencies and percentages were calculated for

Table 1: Base Line Characteristics of Study Population

Base line characteristics	Number	Percentage %
Male	30	60
Smoking	15	30
Hypertension	15	30
COPD	4	8
CABG	3	6
DIABETES	7	14

FIGURE 1: CAUSES OF CONSTRICTIVE PERICARDITIS

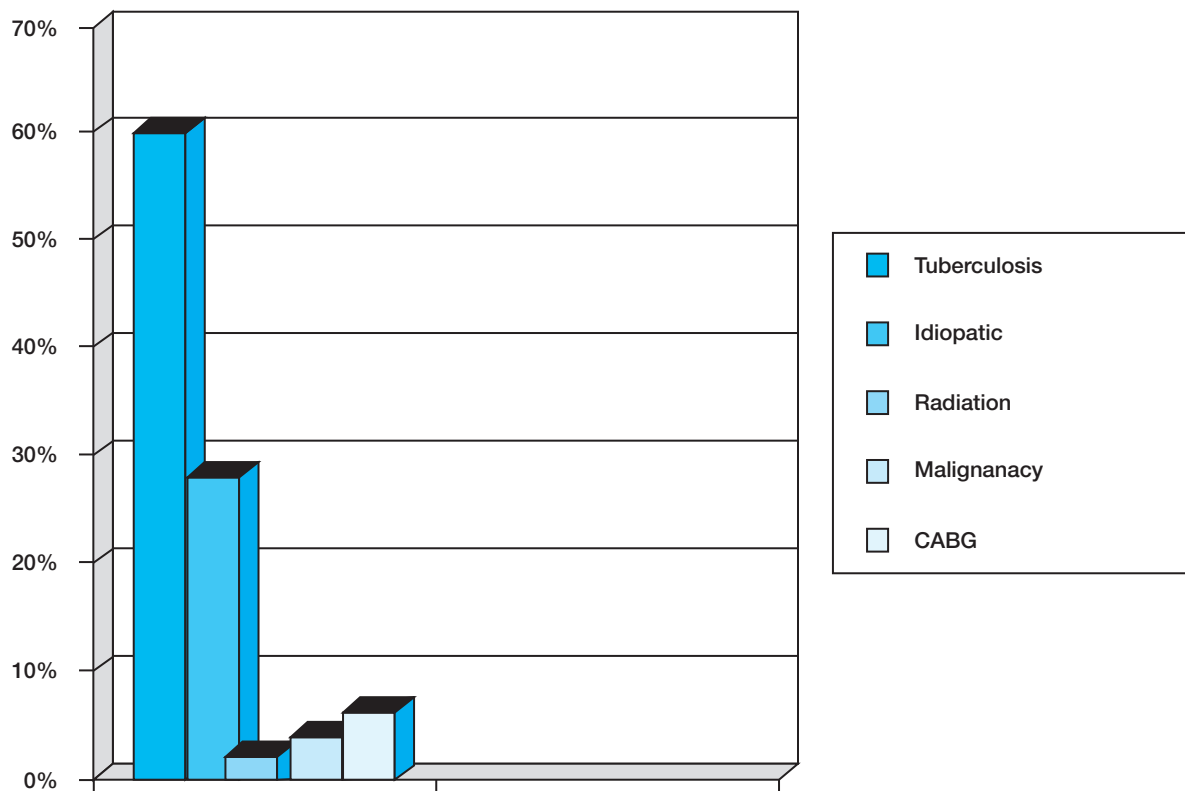


Table 2: Outcomes of Pericardictomy

VARIABLES	NUMBER (n)	PERCENTAGE (%)
Mortality	5	10 %
Reoperation for bleeding	1	2 %
Hemodialysis	3	6 %
Atrial Fibrillation	5	10 %
Septicemia	1	2 %
TIA/Stroke	1	2 %
RV perforation	1	2 %
LAD perforation	1	2 %
Wound infection	2	4 %
Shock/RV failure	5	10 %

categorical variables like gender and mortality.

RESULTS

Total 50 patients were studied in period of 5 years from October 2009 to October 2014. Among total 30 (60%) patients were male. Mean age of the study population was 48 ± 12 years. Base line characteristics of patients are given in table 1.

Tuberculosis was the major cause of constrictive pericarditis in 30 (60%) patients. Malignancy was diagnosed in 2 (4%), radiation in 1 (2%), post CABG

3(6%) and idiopathic constrictive pericarditis was diagnosed in 14 (28%) patients. (Figure 1)

The mortality rate after pericardictomy is 5 (10%) among 5, 3 patients were having low output state, 1 was having septicemia and 1 was having stroke. Morbidity was mostly related to low output stat with or without right heart failure (Table 2).

DISCUSSION

Constrictive pericarditis is a chronic disease which severely impairs quality of life. Pericardictomy is

associated with high mortality and morbidity but it's the only way to improve patient status.¹²

With more advances in diagnostic modalities most of the time etiological factors are identified. Previously most of the cases were diagnosed as idiopathic which has declined now.¹⁶ In our local population the most common cause is tuberculosis.¹⁶ We found that tuberculosis was associated in 60% cases of constrictive pericarditis (CP) undergoing surgery.¹⁷ Peset AM et al⁷ found that 29% cases were diagnosed as tuberculous CP after pericardiectomy. Our finding of 60 % case of tuberculous CP is higher than Peset AM et al since Tuberculosis prevalence is higher in our country.

Mortality associated with pericardiectomy is still very high despite advances in surgical and post surgical techniques. We found 10 % mortality that is similar with an international study of 5 to 15 %.¹⁸ Tirilomis T et al¹⁹ found that mortality following pericardiectomy is 5.6 %. A study in Japan by Tokuda Y et al found 10 % mortality for pericardiectomy.²⁰ Similarly Peset AM et al⁸ found that mortality following pericardiectomy was 16%. In a local study by Sinha LK et al²¹ found 11% mortality.

The other findings of post pericardiectomy outcomes in this study are found to be consistent to other International studies. It is found that 6% patients developed renal failure and went for dialysis and wound infection was 4 %. Similarly, TIA was 2%, Septecemia was 2% and Atrial fibrillation was 10 %. Such findings were observed by Tokuda Y et al.⁹

STUDY LIMITATION

Although the findings of our study are consistent to other published data, but yet having several limitations. As our sample size is small that could affect the inferred outcomes and larger sample size might be needed for more precise and consistent findings.

Since all samples in our data are of CPB, therefore it's not clear that CPB could affect the outcomes or not. In addition to that we only observed hospital based outcomes of the surgery that would affect our knowledge of short and long term outcomes of Pericardectomy.

CONCLUSION

Pericardectomy is associated with high mortality of 10 % in this study.

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