

Observational Study

# Posterior pericardiotomy in heart valve surgery; is it still performed or neglected?

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## Abstract

**Background:** Posterior pericardiotomy (PP) is helpful to prevent arrhythmia; especially atrial fibrillation (AF), and cardiac tamponade postoperative cardiac valve surgery. The incidence of postoperative AF is increased due to postoperative pericardial effusion (PE). This study aimed to investigate the early outcome of PP after heart valve surgery.

**Methods:** In this prospective study, 120 patients underwent elective valve heart surgery at our center from January 2020 until April 2022. Patients were followed up for AF and pericardial effusion, and reopening due to tamponade.

**Results:** The mean age of patients was 35.26 years, 70.2% were female and 29.8% were male. Surgery was elective and all were valve surgery. The incidence of postoperative AF was 2%, and pericardial effusion was seen in 1% of patients. Tamponade was not seen in any case. Left PE needed intervention tube drainage of 2%.

**Conclusion:** Posterior pericardiotomy is a simple and safe procedure during valve heart surgery, and it is effective in reducing the incidence of atrial fibrillation, pericardial effusion, and tamponade.

## More Information

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**Keywords:** Posterior pericardiotomy; Atrial fibrillation; Pericardial effusion; Tamponade



## Introduction

Open heart surgery especially valve replacement or repair is very common [1]. Atrial fibrillation (AF) is the most common complication after cardiac surgery. Pericardial effusion (PE) is seen in more than 65% of patients. Even small amounts of Postoperative PE may trigger atrial arrhythmias due to local inflammation and oxidative damage. Posterior left pericardiotomy allows prolonged drainage of pericardial fluid into pleural space. It may be accumulated to cause hemodynamic impairment (tamponade) and may be severe enough to cause tamponade [2].

Postoperative posterior PE is very difficult to be drained. A long-standing hospital stay is required to follow up pericardial effusion with transthoracic echo (TTE). Medication is added to avoid increasing PE, and it may affect the coagulation profile of the patient. However, in the case of tamponade, an emergency sternotomy is needed [3].

Posterior pericardiotomy (PP) is a safe procedure that can be performed during surgery to prevent PE and its complications [4].

## Patients and methods

Posterior pericardial window or posterior pericardiotomy (PP) was performed in 120 patients who underwent elective heart valve surgery (single or double or triple valve repair or replacement) from January 2020 until April 2022. We evaluated the early outcome of PP. The mean age of patients was 35.26 years, 70.2% were female and 29.8% were male. The incidence of postoperative AF, pericardial effusion, tamponade, and left pleural effusion needed chest tube drainage were followed up. Exclusion criteria included the presence of preoperative AF, heart failure, renal impairment, coagulation disorders, and chronic liver disease.

Posterior pericardiotomy, a 4-cm window is made posterior and parallel to the left phrenic nerve from the left inferior pulmonary vein to the diaphragm, creating an oval opening into the left pleural cavity like a siphon mechanism. It may be performed on cardiopulmonary bypass before aortic cross clamped or at the end of valve surgery according to hazards of elevated heart, especially in case of mitral valve replacement. Another drain was inserted in the left 5<sup>th</sup> intercostal space mid-axillary line to drain the left pleura space (Figure 1).

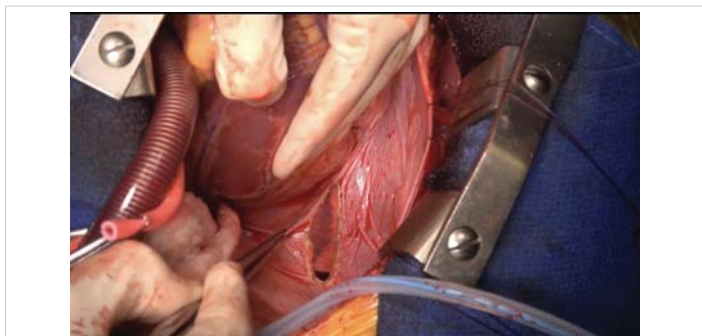


Figure 1: Posterior pericardial window.

## Results

Out of the total 120 patients, the mean age of patients was 35.26 years, 70.2% were female and 29.8% were male. Surgery was elective and all were valve surgery. The incidence of postoperative AF was 2%, and pericardial effusion was seen in 1% of patients. Tamponade was not seen in any case. Left PE needed intervention tube drainage of 2%. The average chest drain discharge was 235.35 ml; the mean ICU stay and total hospital time were 1.5 and 6.12 respectively. There was no prolonged mechanical ventilation time, no reopening for tamponade, and no readmission for pericardial effusion follow-up.

## Discussion

Postoperative pericardial effusion and arrhythmia (especially AF) are the most important, and serious postoperative complications [2]. PE is a common complication post-cardiac surgery especially heart valve surgery, and its incidence is 43-74% of cases [3]. All pericardial effusion after the operation is usually drained in the left pleural space and absorbed. So, the risk factor of AF is decreased in addition to decreasing the incidence of AF.

Post-cardiac valve surgery, AF has an impact on ICU, hospital stay, and readmission [4]. So, we perform a safe and simple procedure, which is decreasing the cost and improving the care of patients.

The incidence of AF in the PP study group was 20% and in the control group was 26%, which is not a significant decrease; however, a significant reduction in pericardial effusion was

recorded [5]. We managed all other causes and risk factors of arrhythmias to observe the outcome affected by only one variable.

Posterior pericardiotomy significantly reduced the incidence of pericardial tamponade [6]. We did not perform sternotomy for emergency tamponade in our cases.

## Conclusion

Posterior pericardiotomy is a simple and safe procedure avoiding atrial fibrillation and tamponade.

## Limitations

In our study, posterior pericardiotomy was used in all patients and therefore there was no control group, moreover not all open-heart surgery cases but only valve surgery

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