

Influences of Posterior Pericardiotomy in Early and Late Postoperative Effusion of Pericardium.



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Abstract:

Background: Pericardial effusion resulting in cardiac tamponade is uncommon after open heart surgery and is associated with significant morbidity and mortality.

Methods: In a clinical randomized trial 80 patients that have undergone CABG, were divided in two groups, posterior pericardectomy group and control group. Both groups were evaluated after operation by TEE and clinical parameters for early and late postoperative pericardial effusion.

Results: In this study 45% of control group and 5% in study group developed postoperative pericardial effusion, also the incidence of late pericardial effusion was 10% in study group and 57% in control group. Age, Gender, Smoking, Diabetes Mellitus and the Number of grafts didn't have any effect on the incidence of pericardial effusion.

Conclusion: Posterior pericardiotomy as a safe and simple procedure can significantly reduce the incidence of early and late pericardial effusion.

Key words: Pericardial effusion, posterior pericardiotomy.

Introduction

Clinically insignificant pericardial effusion is common following CABG and other open heart surgeries (1), cardiac tamponade; a potentially lethal complication occurs in a minority of patients and is associated with increased perioperative mortality and morbidity (2). Depending on the methodology used for its detection, pericardial effusion have been reported in 4.7 to 85% and cardiac tamponade in 0 to 8.8% of patients(3) early pericardial effusion defined accumulation of fluid in pericardial sac during the first 3 days and late pericardial effusion after 5 to 7 days of CABG, it is often loculated and can result in hemodynamic compromise, pre operative and post operative anticoagulation therapy, comorbid disease such as renal failure and hepatic insufficiency are considered to be major contributing factors to the development of pericardial effusion and

cardiac tamponade after an open heart surgery(4).

Material and methods:

This study considered a prospective analysis of 80 adult patients that have undergone CABG due to ischemic heart disease over 1 year period from 2009 to 2010.08 CABG patients randomly divided in two equal groups, posterior pericardiotomy group and control group. Posterior pericardiotomy is a 4 to 6 cm incision along the posterior length of left phrenic nerve and initiated near the origin of left inferior pulmonary vein and extended to diaphragm. Patients with the past history of coagulation disorder, renal and hepatic insufficiency and previous open heart surgery and anticoagulation drugs usage were excluded from this study. Echocardiography was performed in all patients to confirm the diagnosis of pericardial effusion or tamponade after surgery. There

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were no risk factors and statistical differences like: age, sex, smoking, DM, HTN, hyperlipidemia, number of grafts and types of grafts for the development of pericardial effusion in both groups. All demographic data were collected in sheets and were analyzed with SPSS 15th version software and examined with T_test and K2, significant P_value was 0.05.(Table.1)

Table 1: Demographic data in two groups

	Case	Control	P_Value
Mean age	60.68+ 8.49	60.3+ 12.6	0.1
Sex	31(77.5)	32(80%)	0.12
Hyperlipidemia	30(75%)	18(45%)	0.006
DM	26(65%)	15(37.5%)	0.014
Cigarette Smoking	26(65%)	8(20%)	0.01

Results:

Echocardiography was performed in all patients to confirm the diagnosis of pericardial effusion or tamponade. Among 40 patients in control group 18 developed early pericardial effusions in contrast to 2 patients in pericardiotomy group. Also 57% of control group patients developed late effusion Vs 10% in case group (Table 3).

There was no case of readmission for pericardial drainage in 2 groups; anticoagulation drugs were not used in both groups after CABG.

Mean age was 60.5+ 10.7 years, mean pump time was 103.8+ 43.7 mins and mean cross clamp time was 48.6+ 24.9 mins. (Table 1) Number of grafts was the same in 2 groups (Table 2). Criteria for chest tube removal included: out-put less than 100 cc in the last 24 hours on third postoperative day. Mean total drainage of pericardial tubes after surgery was 411.8+ 333 cc.

Table 2: Number of grafts in two groups

Number of grafts	1	2	3	4	5	P_Value
Case	0	6(15%)	23(57.5%)	10(25%)	1(2.5%)	0.621
Control	2(5%)	6(15%)	17(42.5%)	11(27.5%)	4(10%)	

Table 3: Incidence of pericardial effusion after CABG in two groups

	Case	Control	P_Value
Pericardial effusion	2(5%)	18(45%)	0.01
Early PE	2(5%)	23(57.5%)	0.01
Late PE	1(2.5%)	20(50%)	0.01

Discussion:

Complete drainage of fluid and blood from pericardial and pleural cavity after cardiac surgery is very important because the residual blood in there, directly or indirectly, increases morbidity or mortality. The main goal of this study was to find the best method of pericardial and pleural drainage after cardiac surgery.

Pericardial effusion is common after CABG operations with an incidence as high as 85 % (5), few effusions however progress to become hemodynamically significant and results in cardiac tamponade (6).

With regard to high incidence of early and late post operative pericardial effusion, posterior pericardiotomy can be done as a safe and rapid technique at the end of operation in order to reduce the accommodation of fluid and blood in pericardial sac.

Conclusion:

We conclude to perform posterior pericardiotomy in all patients after CABG in order to diminish the amount of fluid and blood accumulation in pericardium, because this is a safe and rapid technique and can reduce early and late pericardial effusion after surgery.

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