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Research Article

**ROLE OF POSTERIOR PERICARDIOTOMY IN PREVENTION  
OF PERICARDIAL EFFUSION AND ATRIAL FIBRILLATION  
AFTER CORONARY ARTERY BYPASS GRAFTING SURGERY**<sup>1</sup>Dr. Rida Yaqoob, <sup>1</sup>Dr Muhammad Danish Tamoor Ghazi, <sup>2</sup>Rumsha Shafi<sup>1</sup>Faisalabad Medical University, <sup>2</sup>THQ Hospital Sadiqabad.

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**Abstract:**

**Objectives:** The objective of this research was to assess the adequacy of Posterior Pericardiotomy in diminishing the event and advancement of Pericardial Effusion and related Atrial Fibrillation (AF).

**Patients and Methods:** This Randomized Control Trial was carried out at Sir Ganga Ram Hospital, Lahore (January 2018 to February 2019). This planned randomized research was performed in the initial 100 patients experiencing coronary supply route sidestep uniting medical procedure (CABG). Patients were randomized into two groups, Posterior Pericardiotomy was performed in 50 patients before discharging aortic cross brace (Group I); staying other 50 patients filled in as the control (Group II). The longitudinal entry point was made parallel and back to one side phrenic nerve, stretching out from the left second-rate pneumonic vein to the stomach in Group I.

**Results:** The difference between the two treatment groups, with regards to age, sex, number of bypass grafts, duration of the cross clamp, total perfusion time and hospital stay time were not statistically significant. Atrial Fibrillation was noted in 02 (4%) patients in Group I and 12 (24%) patients in Group II ( $p < 0.004$ ). Pericardial Effusion was present in 03 patients in Group I and 16 patients in Group II ( $p < 0.001$ ). Atrial flutter and other supraventricular arrhythmias were not statistically significant.

**Conclusion:** Back Pericardiotomy demonstrated to be in fact simple and effective technique in diminishing the event and advancement of Pericardial Effusion and related Atrial Fibrillation (AF).

**Keywords:** Posterior Pericardiotomy, Trial, CABG, Discharge, Pneumonic, Stomach, Nerve, Stretch and Atrial Fibrillation.

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## INTRODUCTION:

Pericardial Effusion, for the most part, happening in seven days after coronary supply route sidestep joining medical procedure (CABG) is little in sum and immaterial hemodynamically. In any case, if sufficiently enormous, circumferential and pooling in the vital zone may block cardiovascular filling, prompting heart tamponade and diminished cardiovascular yield. Brief administration decreases the high death rate related to this problem [1]. The frequency of Atrial Fibrillation (AF) after coronary vein sidestep joining medical procedure (CABG) shifts from 5% to 40% [2]. Despite the fact that generous, yet might be embroiled in causing hemodynamic flimsiness, dragging out medical clinic remain and expanding the expenses of the board. It can once in a while incline to a cerebrovascular episode [3, 4]. A large portion of the Pericardial Effusions break up immediately, be that as it may; some are implicated in the improvement of supraventricular tachycardia (SVT) [5]. Studies have demonstrated that patients, with Pericardial Effusion, had a higher occurrence of AF [6 – 8]. Back Pericardiectomy has been accounted for as a helpful system to diminish supraventricular arrhythmias after CABG [9, 10]. The occurrence of Pericardial Effusion may reach up to 40% after heart medical procedure in the Control Group and to 8% in Pericardiectomy Group [8, 11]. The point of this forthcoming investigation was to evaluate the adequacy of the Posterior Pericardiectomy strategy in diminishing the predominance of Pericardial Effusion and dynamic AF.

## MATERIAL AND METHODS:

This Randomized Control Trial was carried out at Sir Ganga Ram Hospital, Lahore (January 2018 to February 2019). It was led on 100 patients out of 158 patients who experienced an elective CABG activity. They were arbitrarily doled out to two Groups (I and II). A sum of 49 patients with hyperthyroidism (n=2), ceaseless obstructive pneumonic malady (n=16), renal brokenness (n=2), left ventricular aneurysm (n=1), extreme left ventricular brokenness (n=16), or history of AF or past CABG and patients with joined valvular illness (n=12) were excluded to forestall scatters that could be related with an expansion occurrence of AF. Patients with the thick grip of the lung were additionally prohibited (n=9). The investigation, before initiation, was endorsed by the Hospital Ethical Committee. The targets and convention for the research were disclosed to every one of the patients/members and a composed assent was acquired from each.

### Posterior Pericardiectomy:

Middle sternotomy was the standard methodology for the presentation of heart and incredible vessels in all patients. While the group left interior mammary artery (LIMA) left pleural space was entered. Cardiopulmonary detour (CPB) was set up after anticoagulation with heparin (3mg/kg body weight) to an initiated thickening time of 400 seconds or at least double the preoperative control, with inversion by protamine (3mg/Kg body weight) toward the finish of the activity. CPB was built up by cannulation of the climbing aorta with Sarns 24 French cannula and the correct chamber (twofold stage Sarns 36 French single cannula), moderate hemodilution (hematocrit, 20% to 26%) and moderate fundamental hypothermia (32°-34°C). Antegrade warm blood cardioplegia organization by means of aortic root was utilized as myocardial insurance along with aortic venting. Every distal anastomosis was performed in a solitary cross cinch period. The left inner mammary conduit (LIMA) was utilized in all patients. Right inward mammary artery (RIMA) was utilized in one patient who was in Group I. Top closures of vein joins were anastomosed to proximal rising aorta after the arrival of the cross clasp. Back pericardiectomy was performed in 50 patients just before discharging aortic cross clasp (Group I) and other 50 patients filled in as the Control (Group II). The longitudinal entry point was made parallel and back to one side phrenic nerve, reaching out from the left second rate aspiratory vein to the stomach utilizing diathermy in Group I as portrayed by Mullaney et al10. Back Pericardiectomy was not performed in Group II. Two chest channels of 28 French size were put, one in the left pleural pit and the other one in the front mediastinum; and the pericardium was left open anteriorly in the two Groups. Analgesic drug and careful strategies were comparative in each Group. After the routine conclusion of the chest, persistent suction of 10 mm of Hg was connected to the channels which were drained at 60 min interim to guarantee tube patency. The volume of blood depleted was estimated. The chest tubes were expelled when the waste was under 20 ml/hr. for 04 back to back hours. Patients were weaned off the ventilation when they indicated hemodynamic dependability, no real dying, normothermia and cognizance with satisfactory torment control12. Potassium and magnesium supplements were given as important to keep up electrolyte balance inside the typical range. The nearness of Pericardial Effusion was evaluated by 2-dimensional echocardiography, which was performed on post usable days 3, 5, preceding release and on the first visit (eleventh thirteenth postoperative day). The nearness of pericardial emanation on 2-dimensional

echocardiography was surveyed with criteria as recently portrayed by Martin et al<sup>13</sup>. The most extreme diastolic partition among pericardium and epicardium was estimated at the dimension of the tip of the mitral valve flyer. Any radiation more noteworthy than 1 cm was viewed as huge. In all patient's electrocardiogram was observed consistently for the initial 48 hrs. for identifying arrhythmias after activity. Extra electrocardiograms were acquired every day. Arrhythmias (supraventricular) were thought clinically huge when they kept going longer than 20 minutes without hemodynamic trade-off. The investigation of information was finished with Statistical Package for Social Sciences (SPSS) variant 15. Quantitative

factors were communicated as mean  $\pm$  SD (standard deviation). Subjective factors were communicated with recurrence and rates. Free examples t-test was utilized to look at quantitative factors between both the Groups. Subjective factors were looked at utilizing the chi-square test. The dimension of measurable criticalness for all tests was set to  $p < 0.05$ .

### RESULTS:

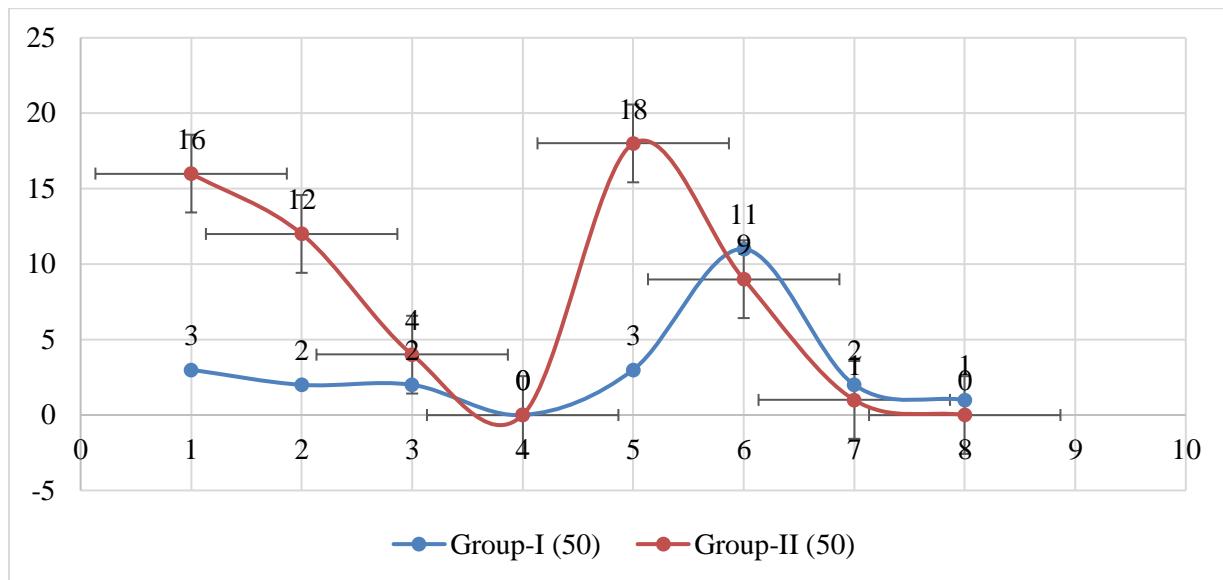
The differences between the treatment Groups with regard to age, gender, number of bypass grafts, duration of cross-clamp, duration of cardiopulmonary bypass and hospital stay time were not statistically significant (Table I).

**Table – I:** Demographic and Operative Data

Parameters	Group 1 (N=50) Mean $\pm$ SD	Group I (N=50) Mean $\pm$ SD	P-value
Gender M/F	36/14	34/16	0.663
Age (Years)	54.3 $\pm$ 8.4	54.3 $\pm$ 8.8	>0.72
LVF Good EF $\geq$ 50	23	21	0.687
Moderate EF=30.50	27	29	
Preoperative MI	24	27	0.548
No. of Grafts	2.90 $\pm$ 0.54	2.92 $\pm$ 0.49	0.847
Cross Clamp Time (min)	37.08 $\pm$ 5.8	37.76 $\pm$ 6.3	0.578
CPB Time	56.50 $\pm$ 5.58	54.96 $\pm$ 4.13	0.100
LIMA	50	50	1
RIMA	1	0	0.315
Duration of drainage (hrs)	32.98 $\pm$ 2.04	38.02 $\pm$ 4.95	<0.001
Amount of drainage (ml)	1045.10 $\pm$ 106	1072.22 $\pm$ 85	0.162

**Table – II:** Post-operative Data

Parameters	Group-I (50)	Group-II (50)	P-Value
Total Arrhythmias	3	16	0.001
Atrial Fibrillation	2	12	0.004
Atrial Flutter	2	4	0.40
Supraventricular Tachycardia	0	0	
Pericardial Effusion	3	18	<0.001
Pleural Effusion	11	9	0.617
Pulmonary Complications	2	1	0.558
Sternal Dehiscence	1	0	0.315
Hospital Stay (days)	5.32 $\pm$ .94	5.38 $\pm$ .90	0.748



There was no demise in either Group. There were likewise no huge contrasts between two Groups concerning the span of mechanical ventilation or amendment for dying. Re-investigation was done in two cases in each Group. In Group I from LIMA bed and in Group II from side tributary of Saphenous vein join. In our research the Control Group II had higher pleural waste than Group I; distinction did not accomplish measurable essentialness ( $1072.22 \pm 85$  versus  $1045.10 \pm 106$ ). The span of seepage in our research was more in Group II than Group I and it was found measurably critical also ( $p < 0.001$ ). The number of patients with pericardial emanation was altogether lower in Group I than Group II for example (3 versus 18,  $p < 0.001$ ). Atrial fibrillation was found in 2 patients in Group I and 12 patients in Group II ( $p 0.004$ ). Atrial shudder created in 02 patients in Group I and in 04 patients in Group II. The vast majority of the arrhythmias happened in the initial five post usable days. There was no noteworthy distinction while thinking about pleural radiation ( $p 0.617$ ). Sternal dehiscence created in one patient in Group I in which both LIMA and RIMA was utilized as a result of sternal injury disease. Arrhythmia was likewise fundamentally more normally connected with the nearness of pericardial emanation ( $p < .001$ ). There was no noteworthy distinction in the recurrence of pneumonic entanglements ( $p 0.558$ ) and medical clinic remain 5.32 versus 5.38 days ( $p 0.748$ ) between the two Groups.

### DISCUSSION:

AF is the most widely recognized arrhythmia after CABG and happens in up to 30-half of instances of various investigations with the significant event 2 days after operation [14 – 17]. Proof recommends its frequency may increment in spite of upgrades in

analgesic and careful systems [18, 19]. Etiological factors, for example, age, postural changes of the atria identified with hypertension, right coronary course contribution, volume over-burden, peri-usable myocardial localized necrosis, renal disappointment, electrolyte uneven characters and pericardial injuries are thought to assume a job in the pathogenesis of post employable AF [18, 20]. The improvement of Atrial fibrillation can't be ascribed to a solitary reason and there is no dependable prophylaxis known [14, 21]. The worry of open heart medical procedure expands the thoughtful tone of the patient and this may incline to the advancement of AF [18]. Thoughtful actuation additionally diminishes atrial reflectiveness favouring the propagation of AF [22]. Pericardial emanation has additionally been involved in the improvement of AF [5]. Angelini et al. introduced obstinate (to medicine and cardioversion) supraventricular arrhythmias because of Pericardial Effusion following open heart medical procedure, which reacted well to the clearing of the radiation and a subsequent sinus cadence. Muly and associates have exhibited a decrease in both pericardial radiation and related supraventricular arrhythmias with back pericardiectomy (8 versus 36%) [10]. Hasan Ekim et al. likewise demonstrated a noteworthy decrease in the frequency of pericardial radiation and AF in back pericardiectomy, and the slipped by time for the event of AF was additionally unique for back pericardiectomy [24]. Asimakopoulos et al. and Arbatly et al. have appeared Posterior Pericardiectomy was increasingly powerful for pericardial seepage, yet they had additionally demonstrated that AF pervasiveness was not essentially diminished in research with their Control Group [3, 24]. In any case, in our investigation, there was a huge decrease in the rate of Pericardial Effusion and AF in Group I. They additionally brought up that pericardiectomy

group have essentially higher blood misfortune, however, we didn't discover critical complete blood misfortune distinction between the two Groups - rather pleural seepage was marginally higher in the Group II in our research out of the blue and term of waste was fundamentally more in Group II. Radiation seemed, by all accounts, to be related with deficient blood waste and was decreased, however not completely kept away from by the utilization of two chest channels, one in front and one behind the heart [5]. Following the coronary medical procedure, the space front to the heart may oblige liquid, yet behind the heart, grips between the substandard surface of the heart and the stomach, may make an encased space. Additionally, the chest channel behind the heart can't be routinely utilized as a result of mechanical disturbance and the vicinity to the detour unites. In our research, we had the option to show that by making a back pericardiotomy, the liquid could be depleted uninhibitedly in the left pleural space in this manner diminishing altogether the rate of pericardial radiation. Supraventricular arrhythmias were additionally altogether less normal in patients getting a back pericardiotomy than Control Group II. The back pericardiotomy entry point likewise makes repetitive the requirement for a chest tube behind the heart, which is especially protected in circumstances where join set on the sub-par surface of the heart may come into contact with the cylinder.

### CONCLUSION:

Posterior pericardiotomy is a protected and powerful procedure which decreases the occurrence of pericardial emission and related Atrial fibrillation following coronary corridor sidestep uniting medical procedure (CABG). We prescribe its utilization in all patients in whom the left pleural space has been opened amid a group of left inside mammary supply route. Extra imminent investigations are required to build up the careful connection among the frequencies of AF, pericardial emission and back pericardiotomy.

### REFERENCE:

1. Chuttani K, Pandian NG, Mohanty PK, Rosenfield K, Schwartz SL, Udelson JE. Left ventricular diastolic breakdown: an echocardiographic indication of territorial heart tamponade. *Dissemination* 1991; 83:1999-2006.
2. Lauer MS, Eagle KA, Buckley MJ, De Sanctis R W: Atrial fibrillation following coronary corridor sidestep medical procedure. *Prog Cardiovasc Dis*, 1989; 31: 367-78.
3. Asimakopoulos G, Santa R D, Taggart D P: Effects of back pericardiotomy on the rate of atrial fibrillation and chest waste after coronary revascularization: a forthcoming randomized

preliminary. *J Thorac Cardiovasc Surg*, 1997; 113: 797-9.

4. Piers L A, Wagshal A B, Lancey R, Huang S K: Arrhythmias and conduction unsettling influence after coronary supply route sidestep uniting medical procedure: the study of disease transmission, the executives, and visualization (audit). *Am Heart J*. 1995; 129: 799-808.
5. Angelini G D, Penny W J, El-Ghamary F: The frequency and noteworthiness of early pericardial emission after open heart medical procedure. *Eur J Cardiothorac Surg*, 1987; 1: 165-8.
6. Arbatly H, Demirsoy E, Aytekin S et al. The job of back pericardiotomy on the frequency of atrial fibrillation after coronary revascularization. *J Cardiovasc Surg*, 2003; 44: 713-17.
7. Bryan AJ, Angelini GD. Pericardial emission after open heart medical procedure. *Thorax*, 1990; 45: 655-56.
8. Ikaheimo M J, Huikuri H V, and Airaksinen K E, Korhonen U R. Pericardial emanation after cardiovascular medical procedure: rate, connection to the kind of medical procedure, antithrombotic treatment, and early coronary detour unite patency. *Am Heart J*. 1988; 116: 97-102.
9. Farsak B, Günaydın S, Tokmakođlu H et al. Back pericardiotomy decreases the occurrence of supraventricular arrhythmias and pericardial emission after coronary conduit sidesteps uniting. *Eur J Cardiothorac Surg*.2002; 22: 278-81.
10. Mulay A, Kirk A J B, Angelini G D et al. Back pericardiotomy lessens the occurrence of supraventricular arrhythmias following coronary supply route sidestep medical procedure. *Eur J Cardiothorac Surg*. 1995; 9: 150-52.
11. Erdil N, Nisanođlu V, Kořar F et al. Impact of back pericardiotomy on ahead of schedule and late pericardial radiation after valve substitution. *J Cardiac Surg*, 2005; 20: 257-60.
12. Auer J, Weber T, Berent R et al. Hazard components of postoperative atrial fibrillation after a cardiovascular medical procedure. *J Cardiac Surg*. 2005; 20: 425-31.
13. Martin R P, Rakowski H, French I, Popp R L: Localization of pericardial emission with wide point staged exhibit echocardiography. *Am J Cardiol*. 1978; 42: 904-12.
14. Curzon N, Poole W P. Atrial tachyarrhythmias and coronary course sidestep medical procedure quiet. *Br J Cardiol*. 1994;1: 57-59.
15. Fuller IA, Adams G, Buxton B. Atrial fibrillation after coronary detour uniting. *J Cardiovascular Surgery*. 1989;19: 821-25.
16. Parker F B, Granier-Hays C, Bove EL. Supraventricular arrhythmias following coronary

- supply route sidestep the impact of preoperative digitalis. *J Thoracic Cardiovasc Surgery* 1983; 86: 594-600.
17. Tyras DH, Stothert J C, Kaiser G L. Supraventricular tachyarrhythmias after coronary vein revascularization: a randomized preliminary of prophylactic digitalisation. *J Thorac Cardiovascular Surg* 1979; 77: 310-4.
  18. Auer J, Weber T, Berent R et al: Risk variables of post usable atrial fibrillation after a cardiovascular medical procedure, 2005; 20: 425-31.
  19. Creswell LL, Schuster RB, Rosen bloom N, Cox JL. Dangers of post employable atrial arrhythmias. *Ann Thorac Surg*. 1993; 56: 539-49.
  20. Aranki SF, Shaw DP, Adams DH et al. Forecasts of atrial fibrillations after coronary conduit medical procedure: current patterns and effect on emergency clinic assets *Circulations*, 1996; 94: 390-97.
  21. Cujec B, Johnson D, Bhardwaj B. Cardiovascular tamponed by finding pericardial hematoma following open heart medical procedure: finding by transesophageal echocardiography. *Can J Cardiol*. 1991; 7: 37-40.
  22. Waldo AL. Component of atrial fibrillation, atrial ripple, and ectopic atrial tachycardia-short audit dissemination. 1987; 75: (suppl 3): 37-40.
  23. Arbatly H, Demirsoy E, Aytakin S et al. The job of back pericardiotomy on the rate of atrial fibrillation after coronary revascularization. *J Cardio Surg*. 2003;44: 713-17.
  24. Hasan E, Vessel K, Abdussemed H et al. Impacts of back pericardiotomy on the frequency of pericardial radiation and atrial fibrillation after coronary revascularization. *Medications Sci Monit*. 2006; 12 (10): CR 431-34.