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Research Article

### SURGICAL INTERVENTIONS AND THEIR OUTCOMES IN PATIENTS WITH CARDIAC INJURIES

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**Abstract:**

**Objective:** The aim of this research work is to assess the medical results, surgical intervention and their outcomes in the patients who got admission in our hospital with cardiac injuries. The injuries of the heart injury are the cause of serious like taking condition because of cardiac tamponade and/or the process of losing the blood.

**Methodology:** We evaluated the data of twenty patients who underwent surgical intervention in the duration of ten years from 2010 to 2019 because of penetrating heart injuries. All the patients of this research work were males from 14 to 65 year of age with an average age of  $33.20 \pm 14.15$  years.

**Results:** The age of the patients of this research work was from 14 to 65. We diagnosed 18 patients with the injuries in the right ventricular whereas two patients were available with the injuries to the left ventricular. Clinical examination, ECG, CT, echo CG, and radiography were in use to diagnose the complication. Total 4 patients who got admission in the emergency service were in agony situation, four patients were in shock, 6 patients were available with hypotensive hemodynamic and only 4 patients were available with stable hemodynamic. We applied the right anterior thoracotomy to the 4 patients who were in agony in the emergency unit. Two among these patients cannot survive. No other patients died in this research work. We followed all the patients after the surgery with echo-cardiograph. We identified the post-pericardiotomy syndrome in only one patient.

**Conclusion:** The findings conclude that early detection and fast intervention through surgery are very important features influencing the survival of the patients after penetrating cardiac injuries. There is very rate of mortality due to these complications. The rate of the mortality in the patients with agony can be up to 80.0%. Fast intervention in unit of emergency can be life saving for these serious patients.

**KEYWORDS:** Cardiac, Penetrating, Methodology, ECG, Mortality, Radiology, Diagnosis, Tamponade.

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**INTRODUCTION:**

The interest of the professionals in the cardiac injuries is not new. Homer in his Iliad described the heart injuries. Edwin Smith Papyrus stated the penetrating thoracic damages in seventeen hundred BC. Cappelen made the first attempt for the repair of heart injury for the very first time in 1896 but that patient died after the surgery. Von Rehn made the first successful attempt in 1997 with the repair of the injury in the right ventricle. Hill successfully repaired the wound of a stab in the left ventricular for the very first time in 1902. Pool in the year of 1912 described the methods of surgeries in the administration of the heart surgeries. Beck stated the need of the careful ligation of proximal coronary blood vessels in the injuries linked with the structures in 1942.

Clinical intervention differs from the occurrence of the complication, injury size, presence of the heart tamponade, and loss of the intravascular volume having association with agony to stable condition. Though, it is very important to save the lives to react immediately with the surgical intervention in the case of noon-visible injuries, it is very important to transfer the patients immediately for the establishment of the rapid diagnosis and go for the surgery to decrease the mortality rate.

**METHODOLOGY:**

The information about the age, gender, condition of emergency, type of injury, histories of the

examinations, surgeries and their procedures and after surgery follow ups of the twenty patients available with penetrating heart injuries in Allied Hospital Faisalabad from 2010 to 2019 reviewed retroactively. The categorization of the patients carried out into four groups depending upon the medical condition as prescribed by Ivatury from the time of the admission to the provision of the emergency services. The patients with no important findings and in unconscious state, or in agony were available in the Group-1 (4 patients), and patients with half consciousness were in Group-2, and patients whose BP was eighty mmHg or less within conscious state were in Group-3 and patients with stable and useful findings in the Group-4. We followed up all the patients after surgery for one year.

The accomplishment of the repair of the ventricular injuries carried out with the help of mattress suture of 3.0-0 poly-prolene tied over Teflon and/or pericardial pledgets. The very 1<sup>st</sup> mattress suture placement performed in the just mid of the injury in a big wound as available in Figure-1. We controlled the wounds of arteries by the placement of the finger into the defective site. After the completion of suturing, we transferred the patients to the cardiac ICU. We took 2 dimensional ECGs of all the survive patients before their discharge and during the period of follow up after two months of the discharge of the patients.



*Figure 1: Intra operative view of the repaired right ventricle.*

**RESULTS:**

Total seventeen males and three females were the part of this research work. The average age of the patients was  $33.20 \pm 14.15$  with a range of 14-65 years. All the patients appeared with the penetrating injuries of stab due to other person were the part of this research work. All the patients came in the emergency department in critical situation. Ivatury categorized those patients into 4 groups depending upon their medical condition as appeared in the department of emergency as presented in Table-1.

**Table-I: Ivatury Classification**

Group	Sayi	Clinical Status
1	4	Unconscious, No vital sign, agony
2	6	Slight Unconscious, philiphorm pulse, no tension arterial
3	6	Whether tension arterial 80mm/Hg' or low, Conscious
4	4	Stable, tension arterial 80mm/Hg' diagnosed during operation

Intubation of the endotracheal, replacement of the volume, intubation of chest as needed for patients performed immediately and we took the patients to the surgery room. Clinical course of the patients diagnosed the patients of 1<sup>st</sup> and 2<sup>nd</sup> group and we ignored the other methods. For the diagnosis of the patients in 3<sup>rd</sup> and 4<sup>th</sup> group, we got the support of computed tomography or echocardiography.

The application of right anterior thoracotomy performed on 3 patients of 1<sup>st</sup> group. One patient met his death among these patients. Hypovolemic shock caused the death of that patient. Total 4 out of 5 patients in 3<sup>rd</sup> and 4<sup>th</sup> groups appeared with prolonged pericardial shadow in lung graph of PA (40.0%). In 50.0% patients, the standard of voltage was less in echocardiography. Except one patient who met his death, all the patients appeared with the findings of cardiac tamponade. 12 patients got exposure to injuries from left 6<sup>th</sup> costa, 2 from left 5<sup>th</sup> costa and 6 from the 6<sup>th</sup> costa junction with sternum and peripheral areas. We applied the left anterior thoracotomy to 35.0% (n: 7) patients, right anterior thoracotomy to 15.0% (n: 3) and median sternotomy to 50.0% (n: 10) patients. Ten percent patients (n: 2) appeared with intercostal laceration of arteries as well as heart injury. Ten percent (n: 2) patients appeared with the injuries of the left ventricular whereas 60.0% (n: 12) patients appeared with injury of the right ventricular, while twenty percent (n: 4) patients appeared with the injuries of the right atrium and ten percent (n: 2) patients appeared with the injuries of left atrium (Table-2). The average stay of the patients

in the hospital was fourteen days.

**Table-II: Locations of the Cardiac Injuries**

Location	No of injured cardiac chamber	Percent
Right ventricle	12.0	60.00
Left ventricle	2.0	10.00
Right Atrium	4.0	20.00
Left Atrium	2.0	10.00

**DISCUSSION:**

The rate of survival with penetrating heart injury can differ depending upon the injury size, the application of the first aid, the time to reach at the emergency service, the 1<sup>st</sup> resuscitation, the requirement of the surgery and the availability of the cardiac tamponade. About 10.0% of the heart injuries are those piercing into the thorax. Regardless of being less in the penetrating thorax damages, 50.0% of all the mortality emerges from heart injuries. The etiological reason of the heart penetrating damages was available with relation to the injuries with stab with greater than 75.0%. The injuries due to gun short are very less in our country or the other fact is such cases cannot reach to the services in appropriate time. The emergence of severe complication is possible after the surgery. Some of these complications are sepsis, myocardial ischemia, encephalopathy and arrhythmia. Coagulopathy and encephalopathy are the fatal conditions.

Moreno stated that tamponade availability in right or the left ventricle augmented the rate of survival in the patients of stabbing and shooting. The rates of survival in the patients present with cardiac tamponade were 73.0% but only 11.0% in patients with non-availability of the cardiac tamponades. There is suggestion that ordinary suture, when needed Teflon or support of peri-card and patch used for the repair of myocardial. Majority of the patients who reached at hospital within initial 4 hours of the incidence died due to trauma and about 80.0% patients who were under proper procedures of therapy survived. Heart injuries in the penetrating thorax damages were about 10.0%. Regardless of the less rate of mortality, heart injuries are responsible for about 40.0% deaths because of the injuries of thorax. In current years, recovery of the patients from first aid before the hospital care as well as fast transport and use of promising thoracotomy, the survival rates of those patients with penetrating heart injuries have

developed regularized. If the patients present with the life signs in the duration of transport, or in severe state be proximately taken for the application of thoracotomy, we can obtain the god results.

### CONCLUSION:

With the increase in the rate of crimes and the aggressive behavior, there is an increased danger of acquiring heart injuries. In those patients, immediate transportation and surgical intervention in extreme hospital care is very necessary to save the life of these patients.

### REFERENCES:

1. Bjørnnes, A. K., Parry, M., Lie, I., Fagerland, M. W., Watt-Watson, J., Rustøen, T., ... & Leegaard, M. (2017). The impact of an educational pain management booklet intervention on postoperative pain control after cardiac surgery. *European Journal of Cardiovascular Nursing*, 16(1), 18-27.
2. Verevkin, A., von Aspern, K., Leontyev, S., Lehmann, S., Borger, M. A., & Davierwala, P. M. (2019). Early and long-term outcomes in patients undergoing cardiac surgery following iatrogenic injuries during percutaneous coronary intervention. *Journal of the American Heart Association*, 8(1), e010940.
3. Corredor, C., Thomson, R., & Al-Subaie, N. (2016). Long-term consequences of acute kidney injury after cardiac surgery: a systematic review and meta-analysis. *Journal of cardiothoracic and vascular anesthesia*, 30(1), 69-75.
4. Guo, P. (2015). Preoperative education interventions to reduce anxiety and improve recovery among cardiac surgery patients: a review of randomised controlled trials. *Journal of Clinical Nursing*, 24(1-2), 34-46.
5. Xu, J. R., Zhu, J. M., Jiang, J., Ding, X. Q., Fang, Y., Shen, B., ... & Ronco, C. (2015). Risk factors for long-term mortality and progressive chronic kidney disease associated with acute kidney injury after cardiac surgery. *Medicine*, 94(45).
6. Billings, F. T., Hendricks, P. A., Schildcrout, J. S., Shi, Y., Petracek, M. R., Byrne, J. G., & Brown, N. J. (2016). High-dose perioperative atorvastatin and acute kidney injury following cardiac surgery: a randomized clinical trial. *Jama*, 315(9), 877-888.
7. Hunt PA, Greaves I, Owens WA. Emergency thoracotomy in thoracic trauma - a review. *Injury* 2006; 37:1-19.
8. Arikan S, Yucel AF, Kocaku<sup>o</sup>ak A, Dadük Y, Ada<sup>o</sup> G, Onal MA. Retrospective analysis of the patients with penetrating cardiac trauma. *Ulus Travma Acil Cerrahi Derg* 2003; 9:124-128.
9. Gao JM, Gao YH, Wei GB, Liu GL, Tian XY, Hu P, et al. Penetrating cardiac wounds: Principles for surgical management. *World J Surg* 2004; 28:1025-1029.
10. Cothren CC, Moore E. Emergency department thoracotomy for critically injured patient: Objectives, indications and outcomes. *Word J Emeg Surg* 2006; 1:4.
11. Degiannis E, Loogna P, Doll D, Bonanno F, Bowley DM, Smith MD. Penetrating cardiac injuries: Recent experience in South Africa. *World J Surg* 2006; 30:1258-1264.
12. Gunay K, Taviloglu K, Eskioglu E, Ertekin C. Factors Affecting Mortality in Penetrating Cardiac Injury. *Turkish J Trauma and Emergency Surgery* 1995;1(1):47-50.
13. Uludag M, Yetkin G, Celayir F, Citgez B, Basaran C, Baykan A. Penetrating Cardiac Injuries. *Turkish J Trauma and Emergency Surgery* 2007;13(3):199-204.
14. Cihan HB, Ege E, Gulcan O, Yasaroglu O, Turkoz R. Penetrating Cardiac Injuries. *Turkish J Thoracic and Cardiovascular Surgery* 1998; 6:217-220.
15. Hu, J., Chen, R., Liu, S., Yu, X., Zou, J., & Ding, X. (2016). Global incidence and outcomes of adult patients with acute kidney injury after cardiac surgery: a systematic review and meta-analysis. *Journal of cardiothoracic and vascular anesthesia*, 30(1), 82-89.
16. Doering, L. V., McGuire, A., Eastwood, J. A., Chen, B., Bodán, R. C., Czer, L. S., & Irwin, M. R. (2016). Cognitive behavioral therapy for depression improves pain and perceived control in cardiac surgery patients. *European Journal of Cardiovascular Nursing*, 15(6), 417-424.
17. Candilio, L., Malik, A., Ariti, C., Barnard, M., Di Salvo, C., Lawrence, D., ... & Kolvekar, S. (2015). Effect of remote ischaemic preconditioning on clinical outcomes in patients undergoing cardiac bypass surgery: a randomised controlled clinical trial. *Heart*, 101(3), 185-192.
18. Moore, E., Tobin, A., Reid, D., Santamaria, J., Paul, E., & Bellomo, R. (2015). The impact of fluid balance on the detection, classification and outcome of acute kidney injury after cardiac surgery. *Journal of cardiothoracic and vascular anesthesia*, 29(5), 1229-1235.