

Penetrating Stab Wound Of The Right Ventricle

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ABSTRACT

18 years old male patient was admitted to our emergency unit with a penetrating stab wound to the right ventricle. A stab wound to the right ventricle was found to be 3 cm in diameter. The bleeding was controlled by insertion of a Foley catheter and inflation of the balloon. The stab wound had transected distal acute marginal side of the right coronary artery. A successful repair was performed with the use of a foley catheter and application of the Medtronic Octopus Tissue Stabilization System. The wound was closed with pledgeted mattress sutures. The distal acute marginal side of the right coronary artery was ligated. In this presentation, the surgical intervention method was reported and followed by a discussion of emergency surgical procedures of the heart.

Key Words: Penetrating stab wound, right ventricle

ÖZET

Sağ Ventriküle Penetre Eden Yaralanma

18 yaşında erkek hasta sağ ventriküle penetre eden yaralanma sonrası acil kliniğimize başvurdu. Sağ ventriküle penetre eden yaralanmanın 3 cm çapında olduğu tespit edildi. Kanama, Foley sondanın yaralanma bölgesinden sağ ventriküle doğru konulması ve şişirilmesi sayesinde kontrol altına alındı. Bu yaralanma sağ koroner arterin akut marjinal dalının distal kısmını transekte etmişti. Sağ ventrikül tamiri Foley sonda ve Medtronic Octopus Tissue Stabilization System kullanılarak başarılı bir şekilde gerçekleştirildi. Sağ ventrikül üzerindeki yaralanma teflon destekli matris dikişlerle tamir edildi. Sağ koroner arterin distal akut marjinal dalı bağlandı. Bu olgu sunumunda, uygulanan cerrahi yöntem anlatımı eşliğinde, kalbe acil cerrahi girişimler konusu tartışılmaktadır.

Anahtar Kelimeler: Penetre bıçak yarası, sağ ventrikül

INTRODUCTION

Penetrating wounds to the heart are among the most lethal of all injuries to a human being and a major cause of death. (1) Cardiac injuries to the heart require close cooperation between interdisciplinary specialists. Penetrating wounds with associated coronary vessel injuries are highly lethal. (2) While extracorporeal circulation provides a method for salvage, it is not required in every case. (2,3) We present a case of penetrating stab wound that is successfully repaired with an application of off-pump surgical technique.

CASE REPORT

18 years old construction worker fell over an iron piece which has a thickness of 18 inches that caused a stab wound entrance around the subxiphoid region (Figure 1).

Immediately after this accident, the co-workers removed the massive iron piece from the body and they saw a massive bleeding coming through the wound. They put their gloves into the hole and made a pressure over the chest. He was brought to the emergency unit. On his clinical examination, arterial pulses were weak and the blood pressure couldn't be measured. He was immediately prepared for the operation and while cardiopulmonary resuscitation was performing with collaborative work of anesthesia and surgical teams, a median sternotomy was done. After opening of the pericardium, a large amount of coagulated blood was removed. The surgical exposure revealed a hole with a diameter of 3 to 4 cm at the acute marginal side of the right ventricle. The bleeding from the right ventricle was controlled by insertion of a Foley catheter and inflation of the balloon. The Medtronic Octopus Tissue Stabilization System (Minneapolis, MN: Medtronic, Inc.; 1998) was used for stabilization of the wound edges. The wound was repaired by interrupted pledgeted mattress sutures (Figure 2).

The distal acute marginal side of the right coronary artery was ligated. On the electrocardiographic examination no signs of ischemia were seen. The postoperative echocardiographic evaluation was within normal values for all chambers. He was discharged home after a total of five days of hospital stay. He had no additional cardiac or neurological problems (Figure 3).

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Figure 1: Construction iron

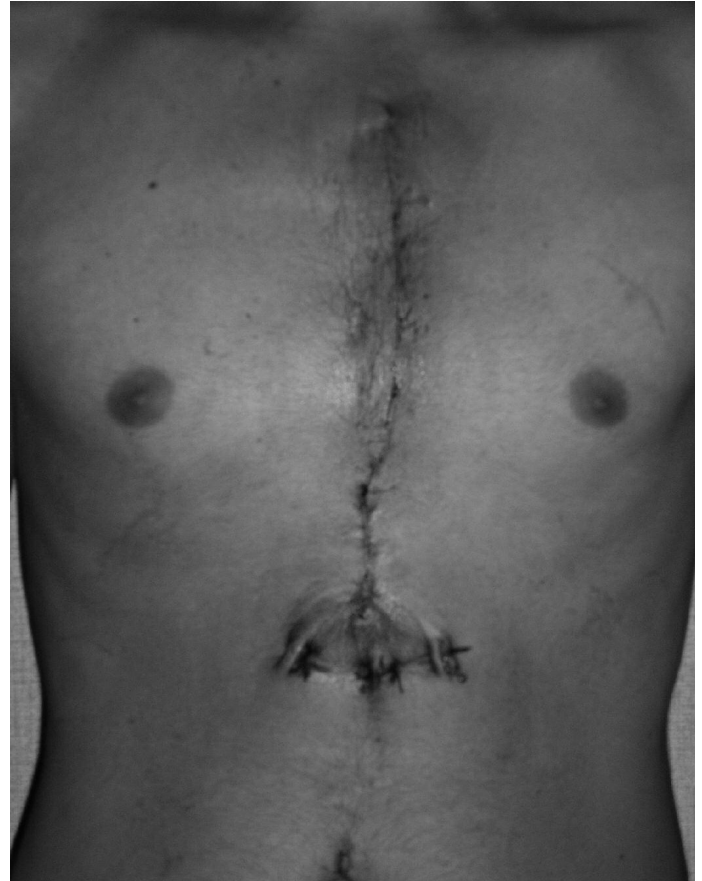


Figure 3: View after the operation

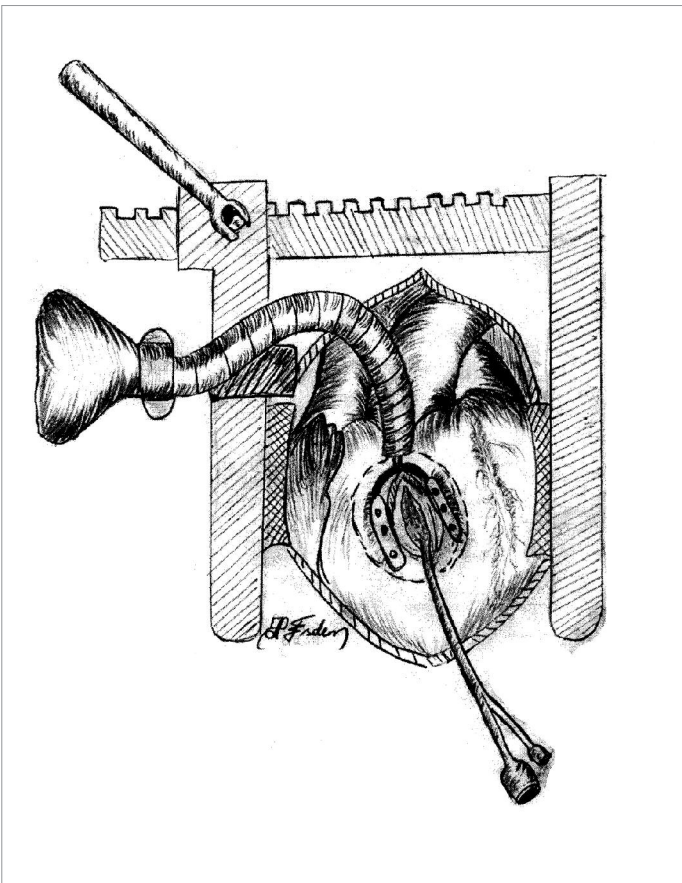


Figure 2: Schematic discription of the surgical procedure

DISCUSSION

Penetrating wounds to the heart can be caused with knives, bullets and needles (4, 5) Construction related accident to the heart has not been reported in the literature before. During emergency surgical interventions involving the heart and other related organs of the anterior chest, patients are more susceptible to the development of a pericardial tamponade and they have a better survival rate than patients who have no signs of a tamponade. (6) As in our case, the right ventricle was injured secondary to the stab wound and the left ventricle was spared during this traumatic event.

After removal of the coagulated blood from the pericardium, surgical view was obtained and we realised that 3-4 cm stab wound at the acute marginal side of the right ventricle. In these circumstances, the use of cardiopulmonary bypass have been shown to be beneficial for better performance during the surgical intervention related to the wound in the heart. However, as bleeding is usually intense in penetrating wounds to the chest and heart, the introduction of the arterial and venous cannulas to the heart is difficult to perform and also cardiopulmonary bypass is time consuming. Therefore, application of off-pump technique was considered in our case. In 9 % of stab wound cases, coronary artery injury involvement was reported. If the peripheral branches of the coronary arteries are damaged, the ligation of the artery can be performed and it is not associated with myocardial injury. If the main coronary arteries are involved, the coronary bypass surgery would be

preferred to preserve the myocardial functions. During the operation and after the procedure, we haven't encountered any coronary artery related problems despite ligation of the distal part of acute marginal branch of the right coronary artery.

The surgical procedure which was used herein with the help of foley catheter and cardiac stabilizer, gave us a chance to stabilize surgical field and a bloodless area during cardiac repair.

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