

Original article:

Survey of Penetration Injuries Caused to Major Operation on Patients Refer to Tonekabon Shahid Rajaei Hospital, Mazandaran North of Iran during 2015-2016

Pouya M¹, Khodadadi. B^{2*}, Khodadadi. V³

Abstract:

Introduction: Trauma is considered as one of the major causes of mortality in the World and in Iran. Which, many people die each year. The aim of study we evaluated penetrating traumas as Specific reason of deaths among affected patients. **Materials and Methods:** In this cross-sectional retrospective study, 73 patients with penetrating traumas visiting Shahid Rajaei hospital of Tonekabon in 2015-16 were evaluated, then, the files were extracted from hospital archive files and information of patients such as age, sex, The type of agent and the cause of the injury, the reasons for the surgery and the type of surgery were recorded from the archived files, then, The data were statistically analyzed by the SPSS software. **Results:** Based on the findings, over the 60 (80 %) of patients were males, that was a significant relationship between sex and *penetrating trauma*. Also, the most common were *penetrating trauma* in the age group of 21-35 years old. There was a significant relationship between age and penetrating traumas ($p < 0.05$), it should be noted that, other variables in this studies were not related significantly with the *penetrating trauma* in patients. ($p > 0.05$). **Conclusion:** The more common causes of *penetrating traumas* among young are Damage from driving accidents which require better Facilities to manage them. Also, the role of emergency rooms and the provision of equipment to reduce mortality from penetrating trauma can be mentioned.

Keywords: trauma; major surgeries; penetrating.

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Introduction

Trauma is a harm that damage to one of the biological organs by a foreign body¹. Any trauma, injury, shock, injury, or collision to the body in the medical science of trauma is considered to be due to the fact that it has been injected from the outside and the internal agent is not the cause of injury, in other words, the trauma is any injury due to increased energy input to the body, this energy may be of the type of shock, mechanical, thermal burn, chemical or other types. In developing countries, trauma is the first cause

of youth deaths. Also, the most important cause of decommissioning of health-related economic injuries is in most countries. Considering the high prevalence of trauma in society, its complications and costs are one of the main problems of people and threatening public health². Traumas are divided into penetrating and non-penetrating categories. Penetrating trauma is a damage that cuts the outer body of the skin and penetrates into the underlying tissue. There is injury and impaction in non-traumatic trauma, but there is no skin cut or damage to the underlying tissues. In the

1. M Pouya, Assistant Professor, Thoracic and General Surgeon, Faculty of Medicine, Tonekabon Branch, Islamic Azad University, Tonekabon, Iran.
2. Babak Khodadadi, Young Researchers and Elite Club, Khorramabad Branch, Islamic Azad University, Khorramabad,
3. V. Khodadadi. Faculty of Medicine, Tonekabon Branch, Islamic Azad University, Tonekabon, Iran.

Correspondence to: Babak Khodadadi, Young Researchers and Elite Club, Khorramabad Branch, Islamic Azad University, Khorramabad, Iran. Email: khodadadi.b@lums.ac.ir, Address: Lorestan University of Medical Sciences. Khorramabad. Lorestan. Iran

penetrating trauma of the outer body, it may remain in the cutting area, remove it from the cut surface, or move in the path of the injury and leave the other side³. Penetrating traumas are very important in cases of head, abdominal and abdominal cramps. Although traumatic injuries account for a lower percentage of penetrating traumas, it is important because most of them die before moving to treatment centers⁴. Trauma to the chest have a large part of the penetrating trauma and less than 10% mortality⁵. The injuries to the abdomen are important because vital organs are present in the abdominal cavity, especially in the posterior part of the abdomen, which can heavily hemorrhage, and the abdominal cavity is able to keep a large amount of blood in it³. In a US statistical analysis, the results indicate that injury to the chest caused 25% of all deaths due to trauma, of which about 50% were due to fatal accidents⁶. Unfortunately, 75% of these deaths occurred after reaching the emergency department⁷. Nevertheless, an emergency surgery is required in less than 15% of the chest injuries. In other injuries, only adequate supportive measures and initial treatments are sufficient⁸. There are many factors for causing penetrating trauma, such as car crashes, falling from height, sports incidents, damage caused by warm and cold weapons and others⁹. Depending on the severity and extent of the injury, the type of treatment in these patients is different and may lead to surgery. In a descriptive study conducted by Dr. Rajaei et al., 114 patients hospitalized for penetrating abdominal trauma at Gorgan Azad Hospital during the years 2002 to 2007 revealed that 114 of the patients with penetrating abdominal trauma were the most common (78.9 %) The penis-abdominal traumatic device was a knife. In 53 patients (46.5%), the traumatic agent had penetrated or crossed the peritoneum¹⁰. In another study, performed by Dr. Grand Nia and his collaborators in a clinical trial, 94 patients had received the results According to the study, the most important cause of trauma is accidents (55.3%)¹¹. Diagnostic measures for trauma can be obtained from history, physical examination, ultrasound, CT scan, laparoscopy and IVP¹². Laparoscopy is one of the most important diagnostic measures in children's trauma¹³. Emergency recovery and rapid transfer of injured to the hospital have led to an improvement in the number of patients, and it is possible to reduce the mortality rate and morbidity by correctly identifying the type of trauma causing injury. The statistics show that many studies have been conducted in the direction reduced incidence

of penetrating trauma in the international community as well as Iran. Therefore, these studies have led us to carry out a study to determine the frequency of penetrating trauma leading to major surgery in Tonekabon Shahid Rajaei Hospital in 1394-1395.

Material and Methods

This is a descriptive cross-sectional study that was performed on 73 patients from the case. Investigating the damage caused by penetrating trauma leading to major surgery in Shahid Rajaei Hospital of Tonekabon in 2015-2016. This study was carried out during the years 2015-2016. In this study, the files of trauma patients by referring to the office of operating room and finding patients who were registered as penetrating trauma with regard to ethical considerations were studied. The entrance of all units to study was considered with satisfaction. The units were assured that all the information obtained was completely confidential. The criteria for entering the study were: penetrating trauma in patients referred to Tonekabon Shahid Rajaei Hospital, which resulted in surgery. Patients' files were then extracted from hospital archives and information was collected on subjects including age, sex, type of agent and cause of injury, surgical reasons and type of surgery. Also, people who died in the emergency department were excluded from the comprehensive survey. This information was recorded in predefined forms and then analyzed by SPSS 21 software.

Results

In this study, 73 patients with trauma were studied in terms of the variables studied. Of the 73 participants in this study, 60 men (82.2%) and the rest were women (Table 1).

Table 1: Frequency of penetrating trauma according to the gender of patients

(%)	Frequency	Sex
82.2	60	Male
17.8	13	Female
100	73	Total

Also, there was a significant relationship between age and penetrating trauma, so that the highest rate of penetrating trauma occurred in 31 patients aged 21-35 years (P < 0.05) (Table 2).

Table 2: Frequency of penetrating trauma according to age of patients

(%)	Frequency	Age
21.9	16	< 20
42.5	31	21-35
24.6	18	36-50
11	8	>50
100	73	Total

According to other components, there was a significant different between these cases and penetrating trauma in hospitalized patients ($P < 0.05$). Penetrating trauma was more in the neck region. 19 (26%) and the lowest in the lower and upper extremities of one person (1.4%) were studied in only one patient. Chest tube was installed. The majority of patients under routine repair of organs and injured (Table 3,4 and Diagram 1).

Table 3: Frequency distribution of penetrating trauma according to the injured area in patients.

(%)	Frequency	Situs
12.3	9	Abdomen
15.1	11	Chest
20.5	15	Upper Limb
17.8	13	Lower Limb
26	19	Head and Neck
1.4	1	Upper limb and chest
1.4	1	Upper and lower extremities
5.5	4	Upper limb, head and neck
100	73	Total

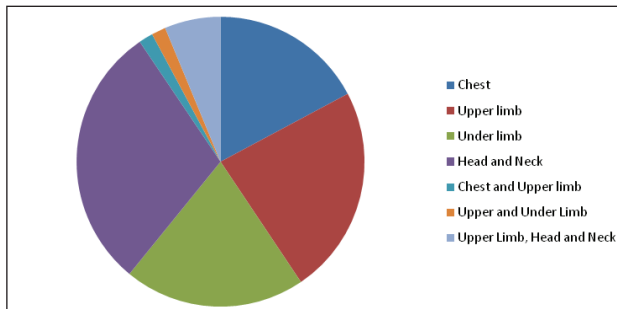


Diagram 1: Frequency of Penetrating Trauma Based on Damaged Area in Patients

Table 4: Frequency of penetrating trauma according to the type of therapeutic treatment performed for patients

(%)	Frequency	Situs
11	8	Laparotomy
13.7	10	Chest tube intubation
41.1	30	Restoration in organs
28.8	21	Restoration on the head and neck
1.4	1	Chest tube and limb restoration
4.1	3	Restoration of the limb and head and neck
100	73	Total

According to the results, the most traumatic penetrating lesions were primarily with the knife and then the glass (38.4% and 32.9%, respectively, and one case (1.4%) were exposed to firearms) (Table 5). Also, after accidents, the most common cause of penetrating trauma in patients (37%), conflict and involvement can be mentioned as the second most common cause in hospitalized patients (31.5%) (Table 6).

Table 5: Frequency of penetrating trauma according to traumatic cause

(%)	Frequency	The cause of the trauma
1.4	1	Firearm
38.4	28	Knife
32.9	24	Glass
2.7	2	Wood
24.7	18	Others
100	73	Total

Table 6: Frequency of penetrating trauma according to the cause of trauma

(%)	Frequency	The reason of creation
31.5	23	Conflict
16.4	12	Home events
37	27	Accidents
15.1	11	Others
100	73	Total

Discussion

In this descriptive-analytical study, 73 patients were evaluated for non-inferior trauma-related trauma in patients admitted to Shahid Rajaee Hospital in Tonkabandar city in 2015-2016. According to the results of this study, more than 60 of patients (80%) were men and the rest were women, which found a significant relationship between sex and penetrating trauma that was consistent with various studies^{14,15}. The findings from the study; based on the findings from the study of Mablaghiet al.,¹⁶ in Besat Hospital in Sanandaj in 2011. In this study, the prevalence of penetrating trauma among men was 68.6% much higher than that of women (31.4%), and with a study by Salami et al¹⁷ who trained and operated at the Sina Hospital on the Epidemiology of Urogenital Trauma in Iran in 2000-2004 in 8 cities, the results showed that the proportion of penetrating trauma in men is 4 times that of women. This study was also performed by the findings of Abdali and Memarzadeh¹⁸

studying the severity of injury in trauma patients in Alzahra Hospital in Isfahan has been consistent. Also, the results of this study indicate that most of the incidence of penetrating trauma (31 cases) occurs in the age group of 21-35 years, which is a significant difference between age and penetrating trauma. Soroush et al,¹⁹, who in 2008. The aim of this study was to determine the pattern of injury in Shiraz. In this study, the average age was 33 years old and the study by AhmadiAmoli et al,²⁰ showed that the mean age of the subjects was 35 years, which is consistent with the results of the study. According to the results of the study, young walks are the most frequent incidents, and because of the importance of this range of communities in the future of the country and employment, need to be addressed and planned. The results of our study show that penetrating trauma was the most in the neck region (19 cases: 26%), and the lowest in the lower and upper limbs. By studying DorabiDolatabadi et al²¹ on trauma due to violence and conflict in the referrals to the emergency department, the results of the study indicated that the prevalence of trauma due to violence and strife in the neck region was consistent with the results of the study of Memarzadeh et al,²² which had the most anatomical location of the trauma head with 38.5%, multiple traumas with 34.3% and organs with 18.9% are required. The results of this study indicate that the majority of patients under routine repair of damaged organs, and only one patient was admitted to the chest tube. This study was performed by Hussein Pour et al,²³ on trauma-induced colonic rupture in educational hospitals of Isfahan and Kashan during the years 2005-2007. The results of this study indicated that the prevalence of initial repair by type of treatment was much higher than

other treatments have been. Also, our study results show that; the most traumatic penetrating lesions were first with a knife then glass (38.4% and 32.9% respectively) and one was also hit by firearms. The study of ZohrehHeratian et al,²⁴ is consistent with our findings. Because of the prohibition of the use of firearms in Iran, the frequency of trauma caused by the use of firearms is much less than the use of a knife and is justifiable. Also, after accidents, the most common cause of penetrating trauma in patients (37%). It can be mentioned that conflict and conflict are the second most common cause in hospitalized patients (31.5%), which was investigated by Rasulli et al,²⁵, which investigated vascular damage in lower limbs, indicating that traffic accidents and accidents are 57% of the cause of the trauma, as well as the study by Labor and colleagues¹⁴. The results indicate that the most common cause of accidents is accidents. According to the findings of our study, we demand the necessity of planning to reduce the trauma resulting from accidents and the use of a knife as a major dilemma in the country. On the other hand, more precise rules are needed to prevent the use of a knife.

Conclusion

The most common cause of penetrating trauma in young patients is injury due to driving accidents, which requires serious planning, as well as the role of hospital emergency and equipment to reduce mortality from penetrating trauma.

Conflict of interest statement

The authors have no conflict of interest to declare.

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