

# HOMICIDAL DEATH AND INJURIES BY BOMB BLASTS IN DERA ISMAIL KHAN

Muhammad Humayun, Fasseh uz Zamman, Jahanzeb Khan, Zahida Parveen, Masud uz Zaman

Department of Forensic Medicine, Gomal Medical College D.I.Khan,  
Frontier Institute of Medical Sciences Abbottabad, and  
Khyber Girls Medical College Peshawar, Pakistan

## ABSTRACT

**Background:** Bombs are explosive devices used for homicidal purposes. The present study was conducted to know about the death and injuries due to bomb blasts in Dera Ismail Khan.

**Material & Methods:** This descriptive study was conducted from January 2007 to December 2008. The data was collected from autopsy and medico-legal records of all dead and injured persons at DHQ Teaching Hospital and Department of Forensic Medicine Gomal Medical College, D. I. Khan.

**Results:** Three hundred & forty-one un-natural deaths were reported and subjected to autopsy examination during the study period. Homicidal deaths constituted 256 (75%) of all autopsies. Out of homicidal deaths 82 (32.96%) were caused by blast injuries. Similarly 2153 injured persons were examined and recorded in the medico-legal register. Out of whom 253 (11.75%) were due to bomb blasts.

In death cases, 461 injuries were found in various body regions giving an average of 5.62 injuries per person, and in injured person the number of injuries was 659, with average of 2.6 injuries per person. Lower extremities sustained the highest number of injuries both in dead and injured ones, followed by the head & neck injuries in dead and upper extremity injuries in the injured ones.

**Conclusion:** Death due to bomb blasts are the second major cause of homicidal deaths after firearm in Dera Ismail Khan. Lower extremity injuries are the commonest in both dead and injured persons, followed by the head & neck injuries in dead and upper extremity injuries in the injured ones.

**Key Words:** Bomb blast, Homicidal death, Blast injury, Suicide bomber.

## INTRODUCTION

Bombs are explosive devices of different sizes and shapes used for homicidal purposes. An explosive is a substance that produces a volume of rapidly expanding gas exerting sudden pressure on its surroundings.<sup>1</sup> The first chemical explosive used was gunpowder, or black powder, a mixture of charcoal, sulfur, and potassium nitrate (saltpeper). Chinese invented it approximately 1,000 years ago. For hundreds of years, gunpowder was used mainly to create fireworks. By thirteenth century gunpowder was used more often to make war than to make fireworks in the West. It remained the only explosive for 300 hundred years, until 1628, when another explosive called fulminating gold was discovered.<sup>2,3</sup> Alford Nobel discovered the high explosive dynamite in the 1860s.<sup>4</sup>

Through out the world there have been millions of deaths and disabilities due to bomb blasts as a result of two world wars and wars among many countries. Only in the 2<sup>nd</sup> world war 20 million people, both soldiers and civilians were killed, more than 50% due to bomb blasts. Pakistan

fought three wars against India and the number of casualties due to bomb blasts was in thousands.

Death and injuries from explosive substances or devices occur in both civil and military circumstances, though the later now includes a considerable proportion because of terrorist activities rather than conventional wars, as in Afghanistan, Iraq, Pakistan, and Sri Lanka.<sup>5,6</sup>

In Pakistan terrorism started since 1989 with the Soviet Union intervention in Afghanistan and retaliation with the help of USA in Pakistan till withdrawal of Soviet Union and in the 2<sup>nd</sup> phase till date by occupation of Afghanistan by USA and NATO forces. Previously terrorism in Pakistan was sponsored by Soviet Union and now by Americans, Allied forces and India. From 2002 to 2008, More than 141 suicide bombers and more than 100 remote control and car bombs have struck Pakistan<sup>7</sup>

The present study was conducted to know about the death and injuries due to bomb blasts in Dera Ismail Khan.

**MATERIALS AND METHODS**

This descriptive study was conducted at Department of Forensic Medicine and DHQ Teaching Hospital, Gomal Medical College D.I. Khan, Pakistan, from January 2007 to December 2008. Data of all the medico-legal autopsies and injuries from medico-legal register was collected.

Cases of homicidal deaths were selected from the records. Victims and injured were grouped on the basis of gender, blast injuries and the region of the body injured. External examination of the body was performed for the presence of blast injuries. The injuries were numbered, chartered their size, shape and site related to fixed anatomical land marks. Diagnostic characteristics of blast injuries were noted. The injuries were examined with the naked eye as well as magnifying glass lens. Internal examination of the body included the examination of viscera and organs in the main cavities. The data was entered on a proforma and results summarized.

**RESULTS**

There were 8 bomb blasts during the study period, out of which 6 were suicide bomber attacks and 2 remote control bombs. Three hundred & forty-one un-natural deaths were reported and subjected to autopsy examination during the study period. Homicidal deaths constituted 256 (75%) of all autopsies. Out of homicidal deaths, 82 (32.96%) were caused by bomb blasts. (Table-1) The demographic data of autopsies of bomb blast is shown in Table-2.

**Table-1: Manner of deaths in autopsies. (n=341)**

Manner of Death	Number of cases	Percentage
Homicide	259	75
1. Firearm	153	59.75
2. Bomb blast	82	32.96
3. Other Cases	24	9
Accidental	59	17.13
Drowning	13	3.8
Electrocution	3	0.8
Un-determined	3	0.8
Suicide	2	0.5
Burns	1	0.02
Starvation	1	0.02
Poisoning	0	0

Similarly 2153 injured persons were examined and recorded in the medico-legal register. Out of these 253 (11.75%) persons were injured due to bomb blasts. (Table-3 & Figure-1) The demographic data of persons injured by bomb blasts is shown in Table-4.

**Table-2: Demographic data of autopsies of bomb blast. (n=82)**

Variables	Number of cases	Percentage
Age Group (years)		
1-15	2	2.43
16-30	37	45.12
31-45	26	31.70
46-60	11	13.41
61-75	6	7.31
Gender	All males	100

**Table-3: Distribution of manner of injuries. (n=2153)**

Manner of Injuries	Number of cases	Percentage
Homicidal	2116	
1. Blunt	993	46.12
2. Bomb blast	253	11.75
3. Firearm	176	8.17
4. Sharp	144	6.68
5. Sharp /blunt	67	3.11
Accidental	495	22.99
Electrocution	2	0.09
Poisoning	2	0.09
Burn	2	0.09
Sexual offences	35	1.625

In death cases, 461 injuries were found in various body regions giving an average of 5.62 injuries per person, and in injured person the number of injuries was 659, giving an average of 2.6 injuries per person. (Table-5 & 6) Lower extremities sustained the highest number of injuries both in dead and injured ones, followed by the head & neck injuries in dead and upper extremity injuries in the injured ones.



Fig.1 & 2: Dead body of failed suicide bomber with injuries to the left upper limb and chest due to hand grenade.

Table-4: Demographic data of injured persons (n=253)

Variables	Number of cases	Percentage
Age (Year)		
1-15	20	7.9
16-30	121	47.82
31-45	94	37.15
46-60	18	7.11
Gender	All males	100

Table-5: Distribution of blast injuries on dead persons.

Region	Number of injuries	Percentage
Lower extremities	150	32.53
Head & neck	134	29.06
Abdomen	77	16.70
Chest /Thorax	49	10.62
Upper extremities	44	9.54
Buttock	5	1.08
Lumbar	2	0.43
Total	461	100

Table-6: Distribution of blast injuries on injured persons.

Region	Number of injuries	Percentage
Lower extremities	229	34.74
Upper extremities	125	18.96
Head & neck	103	15.62
Abdomen	91	13.80
Chest /Thorax	55	8.34
Lumbar	37	5.61
Buttock	19	2.88
Total	659	100

**DISCUSSION**

Bomb blast victims and survivors have characteristic injuries, blast effect depend upon the distance from epicenter, and shock waves velocity. Blast injuries are divided into four classes: primary, secondary, tertiary, and quaternary.

Primary injuries are due to high-order explosive over-pressurization shock wave as it moves through the body targeting gas-containing organs such as the ears, lungs, and gastrointestinal tract. In general, primary blast injuries are characterized by the absence of external injuries; thus internal injuries are frequently unrecognized and their severity underestimated. There is general agreement that spalling, implosion, inertia, and pressure differentials are the main mechanisms involved in the pathogenesis of primary blast injuries. The majority of prior research focused on the mechanisms of blast injuries within gas-containing organs/organ systems such as the lungs, while primary blast-induced brain injury remained underestimated. Blast lung refers to severe pulmonary contusion, bleeding or edema with damage to alveoli and blood vessels, or a combination of these.<sup>8</sup> It is the most common cause of death among people who initially survive an explosion.<sup>9</sup>

Secondary injuries are due to bomb fragments and other objects propelled by the explosion. These injuries may affect any part of the body and result in penetrating trauma with visible hemorrhage. At times the propelled object may become embedded in the body, obstructing the loss of blood to the outside, however, there may be extensive blood loss within the body cavities.

Tertiary injuries result when a person becomes a missile and is thrown against other objects. The injuries sustained are similar to those by blunt trauma, including bone fractures and coup contrecoup injuries.

Quaternary injuries are all other injuries not included in the first three classes. These include burns, crush injuries and respiratory injuries.<sup>10</sup>

Tissue damage from bomb blast wave or primary blast injury can be an important cause of occult trauma to the ocular, oral, pulmonary, cardiovascular, musculoskeletal and neurological systems. Awareness of the extensive corporal effects of the blast wave is essential. Ocular trauma is very common in survivors of blast injuries. In a study in Guys hospital London, UK,<sup>11</sup> 12 patients treated for ear injuries in London Bridge bomb blast on February 1992 were reviewed. Among these there were four perforated ear drum, two (50%) closed spontaneously. Three patients had a persistent mixed hearing loss and 9 patients had acute sensori-neural hearing loss and /or tinnitus only. Four of these resolved completely by 4 hours, another one by 48 hours and 2 by 4 weeks. Two patients had a residual high frequency hearing loss. In total 5 patients (42%) have a persistent hearing loss. None of patient suffered from balance problems. In summary, the ear is very susceptible to bomb blast injury, but there is a high rate of spontaneous closure of perforation and improvement of sensori-neural hearing loss and tinnitus.

Traumatic amputation by explosive blast is very common pattern of injury in victims and survivors.<sup>12</sup> In our study also the lower extremity injury were the commonest in both dead and injured persons.

The high incidence of blast injuries and deaths during 2007 & 2008 is due to the wave of terrorism in Pakistan. Once it is settled, the situation will change. Another finding in our study was that 100% dead and injured persons were males. This is mainly due to the blasts occurring in locations of gatherings which are mostly occasions of males in our society.

## CONCLUSION

Death due to bomb blasts are the second major cause of homicidal deaths after firearm in Dera Ismail Khan. Lower extremity injuries are the

commonest in both dead and injured persons, followed by the head & neck injuries in dead and upper extremity injuries in the injured ones.

Prevention of terrorism needs multi-faceted strategies. The root causes of terrorism need to be identified and resolved. Increasing the literacy rate, socio-economic development leading to reduction in poverty and un-employment may help to solve the problem.

## REFERENCES

1. <http://inventors.about.com/b/2005/03/10/the-history-of-explosives.htm>.
2. <http://science.jrank.org/pages/2634/Explosives-History.html>.
3. [http://inventors.about.com/od/dstartinventions/a/Alfred\\_Nobel.htm](http://inventors.about.com/od/dstartinventions/a/Alfred_Nobel.htm).
4. Text Book of Forensic Medicine & Toxicology by Niaz Baloch Page 255.
5. Pekka Saukko, B. Knight. Forensic Pathology 3<sup>rd</sup> Edition 2004 Annold London Page 274.
6. Masson JK, The Pathology of Trauma. 2<sup>nd</sup> Edn. Annold London 1995 Page 79.
7. [http://www.allvoices.com/contributed\\_news/207564-61-sucied-attack-in-2008889-killed-2072-hurt](http://www.allvoices.com/contributed_news/207564-61-sucied-attack-in-2008889-killed-2072-hurt).
8. Sasser SM, Sattin RW, Hunt RC, Krohmer J. Blast lung injury. Prehosp Emerg Care 2006; 10: 165-72.
9. Born CT. Blast trauma: The fourth weapon of mass destruction. Scandinavian Journal of Surgery 2005; 94: 279-85.
10. Primary Blast Injury: update on diagnosis and treatment. Critical Medicine 2008; 36: supply.
11. Walsh RM, Pracy JP, Huggon AM, Gleeson MJ. Bomb Blast injuries to Ear: the London Bridge incident series. J Accident & Emergency Medicine 1995; 12,194-8.
12. Hull JB. Traumatic amputation by explosive blast: Pattern of injuries in survivors. Br J Sug 1992; 79: 1303-6.

## Address for Correspondence:

Dr. Jahanzeb  
Assistant Professor Forensic Medicine  
Gomal Medical College, D.I. Khan,  
Pakistan