

Cut Throat Injuries: The Socio-Demographic Pattern, Causes, and Outcome at Tertiary Care Hospital of North India

Neha Rautela¹, Veerendra Verma², Shahab ali Usmani¹, Anupam Mishra², H.P. Singh³, Sunil Kumar³

ABSTRACT

Introduction: Cut throat injuries are quite common in north India. These injuries can occur from an accident, homicide, and suicide. Data and literature on the incidence and proper management of such injuries are lacking from this part of India. Our study is to analyse the clinical profile, type of injury, management, morbidity and mortality of such injuries and demographic factors of patients with neck trauma.

Material and methods: This prospective study was carried out in the Department of Otorhinolaryngology and Head Neck Surgery, King George Medical University Lucknow, Uttar Pradesh, India. The study included 30 Cut Throat injury patients who were brought to our department for treatment. The demographics of the patients, site, cause, and nature of the injury, and the type and outcome of treatment received were recorded and analysed.

Results: Thirty patients of cut throat injuries were included in the study. Age range varied from 4 years to 50 years. There were 27(89.9%) males were 3(11.1%) females patients. Male to female ratio was 9:1. Most patients belong to lower middle class (kuppusamy classification). The most common cause of cut throat was accidental 11(37%) followed by homicidal 10(33%) and suicidal 9(30%). Most patients had zone II injuries. An emergency tracheostomy was done in 15 cases. 28 patients were discharged without tracheostomy tube. Average hospital stay was around 3 weeks. One patient died in follow-up.

Conclusion: Cut throat injuries mainly involve young population and mostly males, thus has an economic impact in our society. Early tracheostomy not only secures the airway but prevents aspiration. Early and proper management in expert hands can prevent mortality and morbidity.

Keywords: Cut throat injury neck, Tracheostomy, Homicide, Suicide

INTRODUCTION

Neck being relatively unprotected anatomic region is a common site for injuries that are potentially dangerous and requires immediate management. There have some open or incised or incised looking injury in the neck inflicted by sharp elements such as razor, knives or broken bottle pieces or glasses which may be superficial or a penetrating in nature, may be described by the term 'cut-throat' injuries.¹⁻³ Injuries to the neck can be secondary to both blunt and penetrating trauma. A cut throat severity varies from simple to life threatening because of vital structures densely packed in the neck. It could be damage to airway leading to airway obstruction or haemorrhage from damaged blood vessels. Also, some cases presenting as innocuous wounds may not manifest clear signs or symptoms, while there may be the presence of potentially lethal injuries that could be easily overlooked.

Injuries of the neck are divided into three anatomic zones according to Roon and Christensen's classification. Zone I injuries occur at the thoracic outlet, which extends from the

level of the cricoid cartilage to the clavicles. Zone II is superior to zone I injuries occur in the area between the cricoid and the angle of the mandible. Injuries here are the easiest to expose and evaluate. Zone III injuries are between the angle of the mandible and the base of the skull. Although zones I and III are protected by bones and the vital structures in the zone II are not protected by bone, so the risk of injury is different in three zones.⁴

The causes could be homicidal, suicidal or accidental. The homicidal being the most common. Its motives include political conflict, land related disputes, dacoity (robbery), sex-related crimes, familial disharmony etc.⁸ Regarding accidental causes, most often due to fall on sharp objects, road traffic accidents. Suicidal is rarely without hesitation cuts. The cause includes mental illness and familial disharmony in most of the cases.

The location of the injury gives a clue of which structures may be involved. The variation in injuries could range from being asymptomatic to hoarseness, laryngeal stridor, or dyspnea secondary to airway compression or aspiration of blood. Injury to the great vessels may follow the cut throat injury and the patient typically present with visible external blood loss, neck hematoma formation, and in varying degrees of shock.

Tracheostomy should be performed when airway obstruction exists or there is suspected chance of aspiration into tracheobronchial tree. The importance of tracheostomy in the management of neck trauma/cut throat injury has been highlighted in the literature.⁵

The aim of the treatment is not only to saving a life but restoring airway, voice and swallowing. Victims of homicidal cut-throat need psychological support to overcome the trauma to their psyche, which may linger long after the neck wounds, have healed.⁶

All patients who attempted suicide should have a psychiatric consultation. This is because the act of suicide may be a sign of underlying mental illness and needs proper management. The ultimate aim is the rehabilitation of the patient back into the society with the help of a psychologist. The appropriate and prompt measures could save lives in the vast majority. It involves the rapid shifting of the victims to the hospital and proper management by the otolaryngologist and anaesthetist.

¹Senior Resident, ²Professor, ³Associate Professor, Department of ENT and Head and Neck Surgery, King George Medical University, Lucknow, India

Corresponding author: Shahab Ali Usmani, Senior Resident, Department of ENT and Head and Neck Surgery, King George Medical University, Lucknow, India

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Study aimed to assess clinical profile and demographic factors of patients with neck trauma, to observe type and pattern of injuries and their consequences and to observe the management and duration of hospital stay and morbidity.

MATERIAL AND METHODS

The study was conducted at King George Medical University, Uttar Pradesh, India. It is an apex tertiary care hospital of North India. The study period was 15 months from July 2014 to December 2015. The type of study is a prospective study. The ethical clearance was obtained from university ethical committee.

A total of 30 cases of cut throat were included in the study. All patients with neck injury or cut throat during the study period who came directly to ENT department or referred from other departments were included in the study. The consent was obtained from the patient or the next kin in case of a minor.

Data was categorised according to name, age, sex, address, mechanism of injury, cause of injury, site of injury, extent of the injury, socio-demographic pattern, hospital arrival delay, duration of hospital stay, treatment given and the final outcome of the patient. The Socio-economic classification was calculated based on education, occupation and monthly family income using Kuppusamy classification [figure 1]. A score of 26-29 is upper, 16-25 is upper middle, 11-15 is middle, 5-10 is lower upper and 0-5 is low socio-economic class.

The evaluation of a patient with cut throat injury should start with advanced trauma life support (ATLS), which begins with a primary survey giving importance to the airway, breathing, and circulation (ABC).⁷ To secure the airway tracheostomy was done when needed. After the stabilisation of the patient, a complete history is taken and through physical examination is done. These steps not only helped to save lives but also to identify the injury and to direct diagnostic test or management. Most of the patients were managed in minor operation theatre under local anaesthesia by infiltrating the margins with 2% xylocaine and adrenaline. The airway was anaesthetised with 10 % lignocaine spray. The superficial cut throats were managed with the simple layered closure of wound under aseptic precautions. All patients were given tetanus toxoid and antibiotics. Dirty wounds were cleaned first with a lot of saline followed by diluted Betadine and antibiotic solution. After thorough cleaning the injury is properly examined. The Laryngeal, pharyngeal and tracheal injuries were managed in minor OT after doing a tracheostomy. 2-0 proline was used to repair the laryngeal and tracheal defects. Muscles, thyroid gland, and soft tissues were approximated by 4-0 or 3-0 vicryl sutures. Skin is closed in two layers by 3-0 vicryl subcutaneous tissue and 4-0 nylon for the epidermis. Ryle's tube was placed cases with laryngeal and pharyngeal injuries. Average hospital stay was less than 2 weeks.

STATISTICAL ANALYSIS

The data was collected and analysed by descriptive statistical methods. All the data was presented in the following tables 2-8.

RESULTS

A total of 30 patients with cut throat injury were included in the study, in which males were 27(89.9%), females were 3(11.1%). Male to female ratio was 9:1 [figure 2]. Age ranged

from 4 years to 50 years (mean age 29.9 years). The majority of the patients were young adults aged ranged between 20-40 years [figure 3]. 5(16.6%) patients were below 10 years. 20 (66.6%) patients were from rural areas and 10 (33.33%) patients were from urban areas [figure 4]. Most of the patients were Hindu 24(80%) by religion followed by Muslims 6(20%) [Table 1]. The most common cause of cut throat was accidental 11(37%) followed by homicidal 10(33%) and suicidal 9(30%) [Table 2]. The wounds were classified as simple, grievous and dangerous for the medico-legal purpose [Table 3]. According to Anatomical classification, 4(13.3%) cases had zone I injury, 26(86.6%) patients had zone II injury where as no cases (0%)

Religion	Variable	Frequency	%
	Hindu	24	80%
	Muslim	6	20%

Table-1: religion wise distribution

Type of injury	Variables	Frequency	%
	Homicidal	10	33%
	Accidental	11	37%
	Suicidal	9	30%
	Total	30	100%

Table-2: distribution on basis of type of injury according to cause/motive

Zone of injury	Zone I	Zone II	Zone III
	4	28	0

Table-3: Distribution on basis of severity of injury

Zone of injury	Zone I	Zone II	Zone III
	4	28	0

Table-4: Distribution on basis of zone involved in injury

Type of wound	Frequency	Percentage	
Incised	17	56.66%	
Lacerated	4	13.33%	
Gunshot	1	3.33%	
Stab	1	3.33%	
Ligature mark	2	5	16.66%
Abrasion	3		
Sutured wound	2	6.66%	

Table-5: Distribution on basis of type of wound

Depth of structural involvement	Variables	Frequency	Percentage
	Skin and subcutaneous tissue	7	23.33%
	Soft tissue	8	26.66%
	Larynx/pharynx	15	50%

Table-6: Distribution according to the depth of structural involvement in neck trauma patients after evaluation

Psychiatric assessment	Variable	Frequency	Percentage
	Mentally sound	20	67%
	Psychotic symptoms or psychosocial stressor	10	33%

Table-7: Mental status of patients

with zone III injury [Table 4]. Out of 30 patients 15 patients were tracheostomised. Out of 15 tracheostomised patients, 13 were taken off tracheostomy tube and discharged without it. One patient had laryngeal stenosis and other had aspiration problem due to palsy and was discharged on request. Patient of laryngeal stenosis was kept in follow up for further repair. While the other patient was lost in follow-up and was found to be dead. Among 30 patients 26 patients had improved in follow-up with no complaint of alteration in voice. In five patients (one had a

tracheostomy tube in situ due to stenosis) had an alteration in voice and no complaint of difficulty in breathing, neck mobility limitation or difficulty in swallowing. In all the cases (100%) skin, soft tissue and small vessels were severed. The laryngopharyngeal injury was present in 15 cases [table 5]. The trachea was cut in 2 patients. The carotid injury was present in one case which was repaired by a microvascular surgeon. Internal jugular was injured in 2 cases which were ligated. Thyroid and its vessels were injured in 7 cases. Two patients were referred with sutured wound. Blood transfusion was given in five patients. The majority of patients reached the hospital between 6-10 hours.

Data on the treatment given in our hospital was analysed. Simple wound closure was done in 17 cases [Table 5]. Psychiatrist consultation was obtained in 19 cases which include both homicidal and suicidal injuries. 20 patients were mentally sound and 10 patients were found to have some mental illness [Table 8].

The hospital stay on an average was less than 3 weeks [Figure 5]. Common causes of morbidity included a change in voice, wound infections, change in voice, neck mobility limitation dysphagia and tracheal stenosis.

DISCUSSION

Cut throat injuries are quite common but data on guidelines for proper management are lacking in the medical literature. The aim of our study was to assess clinical profile and demographic

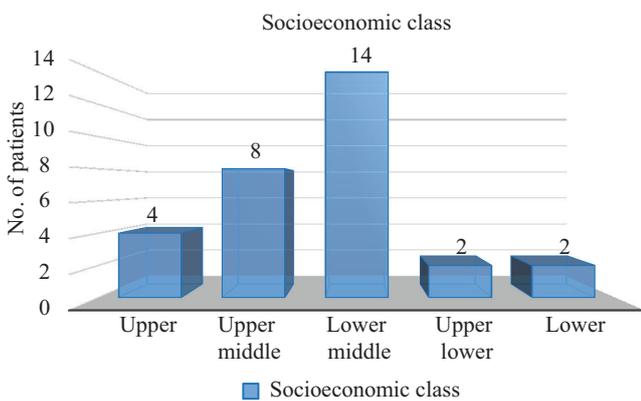


Figure-1: Socioeconomic class wise distribution of patients

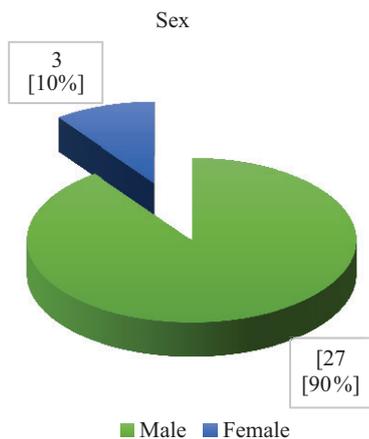


Figure-2: Gender distribution of neck trauma patients

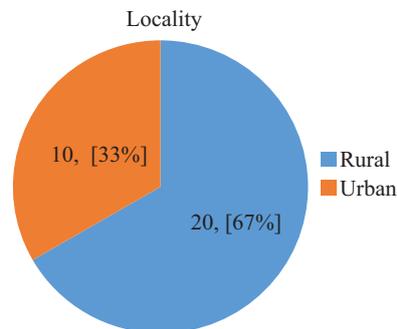


Figure-4: Locality wise distribution of patients

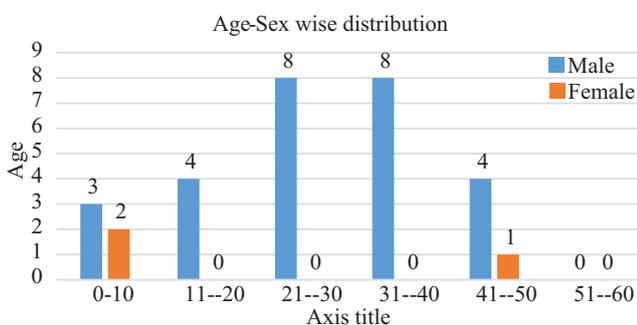


Figure-3: Age-sex wise distribution of neck trauma patients

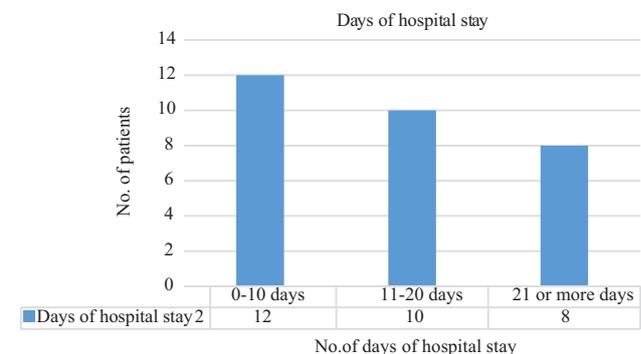


Figure-5: Distribution according to number of days of hospital stay

Type of injury	N (30)	Homicidal	Suicidal	Accidental	P Value
Mental status					
Mentally sound	20	9	0	11	<0.00001
Psychiatric involvement /psychosocial stressor	10	1	9	0	

Table-8: Mental status vs. type of injury

factors of patients with neck trauma and to observe cause/motive of injury and the type and pattern of injuries and their consequences. According to recent estimates of WHO, each year over 5 million people around the world dies as a result of an injury. As per WHO, it is estimated that for every death 10-20 gets hospitalised and 50-100 receives emergency care, indicating the enormous burden on the resources of the country.⁹ In our study of cut throat injuries in our tertiary care hospital, 30 consecutive cases of cut throat injuries were included. Male: Female ratio was 9:1. Cut throat injury was common in males. Patients were mostly from middle and low socio-economic group according to Kuppaswamy socioeconomic scale. Age group in our study ranged from 4 years to 50 years. Most of them were young males with age range between 20 to 40 years. who the most active age group of society. In a study by Nason RW et al, 130 patients ranged in age from 4 to 74 years (mean 29 years) with males predominating (109 males, 21 females).¹⁰ Hindu patients outnumbered patients from other religion. There were 24 (80%) Hindu patients and 6 (20%) Muslim patients. Out of these 6, five had suicidal neck injuries. This shows suicidal tendencies is more common in Muslim population.

The most common cause in our study was accidental 11 (37%) followed by homicidal 10 (33%) and suicidal 10(45%) [Figures 6-8]. The accidental causes included road traffic accident, fall on sharp objects, kite string injuries, accidental strangulation, agriculture and household machine injuries. The cause of homicide included property disputes, fights, and sexual offences. In our study, we have found a significant correlation, between suicide cases and psychosocial stressor or psychiatric involvement such as depression and bipolar disorders [Table 8]. We observed that 26 patients had an injury to zone II (86.66%), 2 patients had an injury in the anatomical zone I (6.66%) while 2 patients had multiple zone involvement (6.66%) [Table 4]. This is in accordance with other studies. In a study by Sriussadaporn et al., the most common zone in penetrating neck trauma was zone II (64% of cases).¹¹ Accordingly, in a study by Nason et al, the location of injury was zone I (lower neck) in 20 cases (15%), zone II (midportion of the neck) in 108 (81%) and zone III (upper neck) in 5 (4%).¹⁰ This similarity may be due to the susceptibility of this zone for neck trauma as it is not protected by bones as compared to zone I and III.

In our study, tracheostomy was done in 15 patients out of them tracheostomy tube removal was possible in 13 out of 15 before discharge. Only two patients had a permanent tracheostomy. Tracheostomy was seldom the first step in these patients as a way to secure the airway and to prevent aspiration of blood or vomitus in these semi-conscious and agitated patients. In the study by Manilal aich et al, tracheostomy tube removal was possible in 7 to 10 days in most of the patients. Only 8(11.94 %) victims had permanent tracheostomy.¹²

In a study by Manilal aich et al, regarding the involvement of the deep structures of the neck larynx 50(74%), hypopharynx 37(31%) and trachea 17(91%) were the common organs.⁸ In our study, Laryngopharyngeal injury was present in 15 cases out of 30. In 11 patients neck exploration was done immediately under local anaesthesia and 4 patients needed general anaesthesia. In general anaesthesia patients, one had right carotid artery injury, two had internal jugular vein injury and one patient had gunshot injury which were explored and repaired.



Figure-6: Patient with homicidal cut throat injury with tracheostomy tube in situ



Figure-7: Patient with cut suicidal cut throat injury with hesitation cuts



Figure-8: patient with accidental cut throat injury due to kite string

In the present study, 26(86.66%) patients required the surgical intervention of some form. 4 patients were treated conservatively and were observed for any bleeding and respiratory distress. Contrast CT was done in stable patients with superficial injuries to rule out any vascular, pharyngeal and laryngeal injuries. In a study by Inaba et al, CT without angiography can be used to rule out significant vascular injury if the trajectory is shown to be away from vascular structures.¹⁴

Patients were further observed during their management at hospital and duration of hospital stay and morbidity were noted. The mean period of hospital stay for the patients in our study was 16.86 ± 12.53 days. 8 patients stayed in the hospital for more than 20 days. However, adequate wound toileting and proper repair of a wound in early admission patients (within 24 hours of injury) allowed better wound healing and most of the patients (19, 63.33%) were discharged within 14 days. Similarly in the study by Manilal aich et al, among 67 patients most of the

patients (73.13%) were discharged within 14 days.⁸ No study patient died during hospital stay. Two patients were discharged with a tracheostomy tube, of which, one had laryngeal stenosis while other had aspiration problem due to palsy and was discharged on request.

Psychological counselling, rehabilitation and follow-up were done for the patients who are the victims of homicide and suicide cases. Onotai and Ibekwe concluded that Cut Throat Injuries require a multidisciplinary approach and can be managed with a better prognosis if patients present early to the hospital and receive prompt attention.¹³

CONCLUSION

Cut throat injuries and its morbidities are common in north India. The objective of the study was to analyse the demographic pattern, causes, and morbidities of the cut throat injuries and its management. The Socio-demographic data, causes or motives of trauma, types of injuries, treatment given, complications, morbidities, and mortalities were analysed. In conclusion, it is said that accident is the commonest cause of cut throat injury in our study, young adults mostly involved and road traffic accidents are the commonest cause. The Low socioeconomic class is mostly affected by homicidal injuries and laryngeal stenosis is the worst complications. Improvement in law and order as well as socio-economic conditions can prevent homicidal injuries.

According to results of the study, it is concluded that the early proper measures to shift the patient to definitive care could save lives and prevent morbidity in most of these cases.

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