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## Suicidal Cutthroat Injuries: A Study on 20 Cases

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### Abstract

Suicidal cutthroat injuries are self-inflicted injuries with sharp object either due to influence of alcohol or due to psychological depression, according to WHO every year 5 million people die due to injuries. Majority of victims are young males, 10 times more injuries are seen in zone 2 of anterior neck and most of the cases have superficial cuts. Mortality rate was 11.2% associated with postoperative complications. To see the influencing factors, depth of injuries, age, sex incidence, to see if surgical treatment, psychiatric treatment, or counselling would help in curing or treating the injuries. Patients attending to Emergency department of tertiary care Centre with Suicidal cutthroat injuries (over anterior neck) were selected of above 15 years age group, admitted, counseled and treated by surgical and psychiatric evaluation followed as inpatient basis till complete recovery and outcome of injuries summarized. Age and sex predominance noted with males, age between 26-35 yrs. predominating with in suicidal cutthroat injuries in this study. Zone II injuries >90%, deep injuries 25%, laryngeal trauma 45%, 50% of surgical debridement, 30% of tracheostomy, 30 & 15% laryngeal and pharyngeal repair, 100% of cases on psychiatric treatment or evaluation and 75% of recovery rate were calculated and postoperative complications 30%. Suicidal cutthroat injuries are mostly observed in zone II region in the anterior neck. Interdepartmental collaboration of the Otolaryngologist, Anaesthetist and Psychiatrist is required in the effective management of patients with suicidal cutthroat injuries. It was observed that highest incidence of suicidal cutthroat injuries in 26-35 yrs. age group with male sex preponderance, mostly under the influence of alcohol and superficial injuries were common, mostly treated with surgical neck exploration with wound closure and with psychiatric treatment and evaluation, tracheostomy place an important role.

## INTRODUCTION

Suicidal cutthroat injuries are self-inflicted injuries of anterior neck. Most of them involve zone II of anterior neck and deep laryngeal injuries are less common. It is either due to alcohol intoxication or with major psychotic depression. According to recent estimate of WHO every year 5 million people die due to injuries<sup>[1]</sup>. 10-20% gets hospitalized, 50-110 receive emergency care. Suicide is one of the leading causes of death in the world, 20-4-times more in individuals with major depression in general population. People with psychotic disorders, alcohol disorders and withdrawal are greater than 90% causes of suicide injuries. Greater than 70% commonly occur in the anterior neck zone II. Regarding depth of injuries-Pathologically skin and subcutaneous layers are injured more than laryngeal depth or pharyngeal depth, <25% people with alcohol induced psychotic disorders are more prone to cut throat laryngeal deep injuries to major vessels and major anatomical laryngeal structures like thyroid cartilage, cricoid cartilage, tracheal rings etc. leads to symptomatology like active bleeding, respiratory distress, haemorrhage shock immediately and in the later stages emphysema, stenosis, fistula formation, secondary bacterial infections<sup>[2,3]</sup>.

Interpersonal conflict is a most common motivating factors common procedures are surgical debridement and repair with or without tracheostomy, post operative complications include fistulas, secondary bacterial infections, other comorbidities etc. mortality rate around 11.2 % was reported.

## MATERIALS AND METHODS

This is a retrospective study conducted over a period of 6 months from July 2022-December 2022, this study was approved by Institutional ethical committee with clearance no Rc. No. IEC/GMC/2022/08/07. Patients attending to emergency department in tertiary care centre (around the clock-24hrs) with anterior neck cuts (cutthroat) were selected and history taken from patient's attenders. Patients with only suicidal cutthroat injuries were selected in present study, from them 20 cases selected (sample size 20) and treated on emergency basis and also as inpatient basis in multiple modalities, depth and cause of injuries are assessed.

### Inclusion Criteria:

- Patients with suicidal cut throat injuries were taken into study
- Patients above the age of 15 years were taken into study
- Patients attending to the emergency department were taken to the study

### Exclusion Criteria:

- Patients with cutthroat injuries due to other causes like RTA, assault etc. were excluded
- Patients below the age of 15 years were excluded
- Elective cases were excluded from this study

### Aims:

- Influencing factors proven for suicidal cutthroat injuries
- To see the vulnerable age group and sex for suicidal cutthroat injuries
- To know the depth of injuries and repair options for injuries

**Pathophysiology:** Injuries to neck are potentially dangerous and requires emergency management. Cut throat injuries are one of the emergency conditions managed by ENT specialists. In developing countries the incidence is increasing because of increasing conflict over limited resources, poor socioeconomic condition, unemployment, easy access to alcohol and increased crime rates. The aetiology of cut throat injuries can be broadly divided into suicidal, homicidal and accidental<sup>[4]</sup>.

The site of the injury gives an idea about the structures involved. In Zone II which extends from the level of the cricoid cartilage to the mandibular angle is the area where majority of neck injuries were observed. There are many vital organs including the common carotid artery, internal jugular vein, trachea, and oesophagus in zone II. Injury to major organs results in a fatal outcome<sup>[5]</sup>.

The different injuries could range from asymptomatic to dyspnoea, hoarseness, stridor secondary to airway compression or aspiration of blood, injury to the great vessels which may present with visible external blood loss, neck hematoma formation, and in varying degrees of shock<sup>[2]</sup>.

It may cause penetrating laryngeal injury which may present with oedema or hematoma resulting in airway obstruction, fracturing of laryngeal framework and its supporting system, cricotracheal transection, devascularization and scarring of tissues resulting in stenosis<sup>[6,7]</sup>.

Stridor may be inspiratory, expiratory, or biphasic and depending on the extent of the damage vocal abnormalities may or may not be there. Neck trauma patients should be examined for any cervical spinal injury. The thyroid cartilage and trachea should be checked for any discomfort, ecchymoses over the anterior neck, subcutaneous emphysema, or loss of the thyroid cartilage prominence and, if it is possible, check the voice for hoarseness<sup>[8]</sup>.

Tracheostomy or cricothyrotomy should be done right away for anyone with an evident larynx fracture, stridor with elevated breathing labour, or an imminent airway blockage<sup>[6]</sup>.

Oesophageal injury may cause a sore throat, minor subcutaneous emphysema of the neck and hematemesis. However, these are the common symptoms of injuries to the neck and are not specific to oesophageal injuries. Very rarely serious complications such as mediastinitis, pyothorax, or tracheoesophageal fistula may develop. Although oesophageal injury is challenging to diagnose because of the lack of specific clinical symptoms, it is advisable to always consider the possibility of thoracic oesophageal injury in diagnosis and treatment, taking into account the path of the wound and CT findings<sup>[9]</sup>.

Tracheal disruption is a rare occurrence and is seen in only 14% of penetrating neck trauma cases<sup>[10]</sup>.

Physiologically respiratory epithelium (ciliated columnar epithelium) lining the airway tract due to injuries leads to granulation tissue formation and epithelium may turn into squamous epithelium which may lead to stenosis formation web formation after recovery.

A pharyngo-cutaneous fistula must be prevented as much as possible while carrying out pharyngo-hypopharyngeal repair. This requires meticulous approximation of the tissues, use of a nasogastric (NG) tube and avoidance of oral feeding. If the fistula persists, it may indicate either the presence of a foreign body, wrong surgical technique, malnutrition or a concomitant underlying malignancy especially in the elderly<sup>[3]</sup>.

Exposed hypopharynx or larynx with haemorrhagic shock and asphyxia are the common cause of death following cutthroat injuries. Injury to major vessels can cause death from haemorrhage, stroke or cerebral ischemia.

Cut throat injuries pose a challenge to the surgeon in their management. If not treated in time, they may lead to death of the patient due to asphyxia and haemorrhage. Prevention of these complications depends on immediate resuscitation by securing the airway by tracheostomy or intubation, prompt control of haemorrhage and blood replacement<sup>[4]</sup>.

## RESULTS AND DISCUSSIONS

This is a retrospective study, conducted in tertiary care Centre for a period of 6 months, approved by IEC Rc.No IEC/GMC/2022/08/07 , sample size 20, of age above 15 years and both sexes, attending to emergency department with anterior neck cut throat injuries with suicide as a cause were taken into present study. Accordingly, 20 patients were admitted, investigations were done and immediate surgical

exploration and repair was done as emergency or in-patient basis according to the depth of cut throat injuries and the patients were followed up for a period of 2 months, postoperative complications and recovery rate assessed and the results were tabulated and summarized.

Suicidal cutthroat injuries are self-inflicted injuries with sharp object either due to influence of alcohol or due to psychological depression. Cut throat injuries are scarcely reported in medical literature. According to the depth of injuries (laryngeal/tracheal) leads to injuries to major vessel and respiratory distress which may result in fatal complications (leads to death). This study conducted in patients attending to emergency department in tertiary care Centre for a period of 6 months from July 2022-December 2022. From them 20 patients with anterior neck injuries with suicide as a cause were taken into present study. These patients were admitted and treated accordingly.

Anatomically this cut may go through superficial lacerations and platysma, suprahyoid and infrahyoid muscles, vessels and nerves, membranes/cartilages later in deeper planes leads to cricotracheal injuries which often leads to respiratory distress and great vessel damage and fistulas also with the involvement of hypopharynx.

Patients with superficial cut throat injuries 13 cases (65%) involving the skin and soft tissues injury were managed in the minor OT simple repair of wounds. Exploration of the wound was done to identify vascular or neural damage and treated accordingly.

In our study after securing the airway, all deep cut throat injuries cases involving the larynx/ pharynx or trachea are considered for emergency exploration of the neck with repair of the injured tissues. Patients with vascular injury are considered for repair of vessels involved.

Physiologically respiratory epithelium (ciliated columnar epithelium) lining the airway tract due to injuries leads to granulation tissue formation and epithelium may turn into squamous epithelium which may lead to stenosis formation web formation after recovery.

Symptoms mostly observed were pain and tenderness, irritability, open wound, active bleeding and respiratory distress.

In our study, after successful management of a cases of cut throat injuries by surgical exploration 7(35%) patients attained recovery within 5-10days and 8 patients (40%) recovered within >10days

Psychiatric symptoms like alcohol dependent (psychotic disorders), addiction (withdrawal symptoms) leads to a) attention deficit hyperactivity disorder b) personality disorder. The same said

## Tables and Charts

## 1: Sex Incidence

Sex	No of cases	Percentage%
Male	18	90%
Female	2	10%

## 2: Age Incidence

Age	15-25	26-35	36-45	46-55	>55
No. of cases	5	9	3	3	0
Percentage%	25%	45%	15%	15%	0%

## 3 : Under the influence of addiction index

Addiction	No. of cases	Percentage%
Alcohol influence	14	70%
Non-alcohol influence	6	30%
Any other drugs	0	0%

## 4 : Objects used for suicidal cutthroat injuries in index.

Object types	Blade	Knife	Glass	Bear bottle	Other objects
No. of cases	10	6	2	1	1
Percentage%	50%	30%	10%	5%	5%

## 5 : Depth of anterior neck injuries due to suicidal cutthroat -index

Depth	Skin and superficial layer	Laryngeal muscles	Hypopharynx and muscles	Cartilages	Cricotracheal injuries	Esophageal injuries
No. of cases	13	9	6	5	3	0
Percentage%	65%	45%	30%	25%	15%	0%

## 6 : Clinical features index

Symptoms and signs	Open wound	Irritability	Pain and tenderness	Active bleeding	Respiratory distress
No. of cases	18	15	12	10	5
Percentage%	90%	75%	60%	50%	25%

## 7 : Types of cuts and injuries index

Types of cuts	Cases	Percentage%
Clear anterior neck cuts	11	55%
Hesitation cuts anywhere else in the body	2	10%
Irregular Incisional cuts	7	35%

## 8 : Psychiatric illness index

Parameter	No. of cases	Percentage%
Non- psychiatric illness	16	80%
Chronic Psychiatric illness	4	20%

## 9 : Chronic illness index

Parameter	Immunodeficiency diseases	DM	HTN	HTN and DM
Cases	2	3	2	1
Percentage%	10%	15%	10%	5%

## 10 : Treatment provided (surgery):

Treatment	No. of cases	Percentage
Simple wound closure	10	50%
Repair of larynx	8	40%
Repair of larynx with tracheostomy	6	30%
Repair of hypopharynx	3	15%
Repair of great vessels	3	15%
Blood transfusion	3	15%
Pharyngocutaneous fistula closure	1	5%

## 11 : Treatment provided (medical)

Treatment	No. of cases	Percentage%
Psychiatric consultation	20	100%
Supportive treatment needed	20	100%
O2 support	8	40%
Tracheostomy care in ICU	6	30%
For chronic illness	6	30%

## 12 : Recovery rate and follow up.

Recovered	No. of cases	Percentage%
Follow up in ENT OPD	14	70%
Followup in psychiatry OPD/consultation	8	40%
Deaths	2	10%

## 13 : Recovery rate in days and postoperative complications

Parameter	Recovery rate 5-10 days	>10 days	Postoperative complications	LAMA
No. of cases	7	8	6	2
Percentage%	35%	40%	30%	10%

categories are divided according to i) tendencies of suicide by hesitation cuts anywhere else in the body and doing any harm to others , ii) alcohol induced seizures episodes iii) with assessment scale. All our patients were with suicidal cut throat injuries, therefore required psychiatric care and supervision in the immediate post-operative period. It was estimated in our study that 100% patients (20cases) required psychiatric consultation to treat and to avoid future such type of tendencies and patients were followed up in the OPD.

Family history of suicidal behaviour exposure to family violence, impulsivity, substance abuse, older age, chronic illness for a long time, loss of job, divorced, widowed, or separated are some socio-demographic risk factors in suicide. It is important to record protocols used and correct operative findings for medico-legal purpose and future reviews.

**Assessment:** Assessment of these patients begins with the ABCs of resuscitation i.e. checking the airway, evaluating the patient's breathing and circulation. Resuscitation of individuals commenced immediately.

Anaesthetist secures compromised airway and patients breathing. Otorhinolaryngologist assess injuries and surgically repair the severed tissues with the restoration of breathing swallowing phonation, psychiatrist provides adequate care and supervision, counsels the patients psychiatric issues (Malvi *et al.*, 2022).

**Psychiatric issues in relation to suicidal cut throat injuries:** Mental illnesses are the strongest predictors of suicide. Suicide occurs 20.4 times more

frequently in individuals with major depression than the general population.

Depression (50%), alcoholism (25%) and other causes like schizophrenia and delirium are the common mental disorders associated with suicide<sup>[11]</sup>. Common mode of injuries is fire arms, hanging, ingestion of toxic substance, laceration of forearm/wrist etc.

According to cuts-modes are superficial wounds, deep wounds with serious suicidal intent, self-mutilation by schizophrenia patients

Common modes according to the object: knife (62%), razor blade (15%), other objects (beer bottle glass etc.) (2to3%). Alcohol and other psychoactive substances may lower the levels of 5 hydroxy indole acetic acid (5HIAA) and biological factors like serotonin (5HT) in the CSF of depressed people and suicide patients' brain<sup>[12]</sup>.

Psychiatric management of suicidal cut throat injuries are with 1) counselling 2) lorazepam 3) lithium 4) thiamine. Sedatives play a significant role in reliving

patient's distress or risk of harmful behavior.

Accordingly patients are followed up for 6 months. Mental disorders like depression, bipolar disorder, schizophrenia, substance abuse, psychosis, major depression, alcohol dependence are also assessed to know the suicidal risk.

A positive family history is also considered as a precipitating factor. In patients of psychosis and schizophrenia, deeper cut and more violent injuries were observed. Hesitation marks were more pronounced in patients of depressive disorders. Transient psychosis and delirium usually have an acute onset following acute stress and most of them recover within a month. Major depressive disorder and schizophrenia usually have a longer history with poor chance of complete recovery. They require psychological support for a longer time<sup>[13]</sup>

**The following are important in the assessment of suicide attempters:**

- Building a rapport with these patients is important as they may be depressed, embarrassed or guarded; therefore they may be reluctant in volunteering a history
- Taking a psychiatric history- Information regarding the attempt or intent of suicide
- Should be obtained in an open and direct manner without any form of ambiguity. It is often useful to run through the chronological events leading up to, during and after the suicide attempt to assess the level of risk<sup>[14]</sup>

Although suicide prevention efforts should include a focus on screening and treating mental disorders, ways must also be found to identify the many people without mental disorders who are at risk of suicidal behaviours<sup>[15]</sup>.

**Limitations of the Study:** The sample size was limited. Author had to rely on the history given by the patients and attendants and many times they give false information regarding substance abuse and addiction. Due to irregular follow up psychiatry improvement evaluation can be limited, sometimes Due to decreased, irregular follow-up compliance, proper evaluation of postoperative complication also limited.

## CONCLUSION

Injuries to the neck are very dangerous and mostly observed in zone II region in the anterior neck. Suicidal cutthroat injuries are self-inflicted injuries mostly under the influence of alcohol (70%).

Interdepartmental joint effort of the Otolaryngologist, Anaesthetist and Psychiatrist is

required in the effective management of patients with suicidal cutthroat injuries. In this study it was observed that highest incidence of suicidal cutthroat injuries in 26-35 yrs age group with male sex preponderance(90%), mostly under the influence of alcohol(70%) and superficial injuries were common(65%), mostly treated with surgical neck exploration with simple wound closure and minor laryngeal repairs(60%), tracheostomy place an important role in respiratory distress(30%),

And for all the cases psychiatric treatment and evaluation (100%), supportive medical treatment along with o2 support given for moderate number of cases (40%), follow up in ENT OPD and psychiatric OPD done for more than 70% cases, recovery rate is good in superficial injuries (70%), post operative complications are (30%) and death rate can be assessed by depth of wound and major vessels involvement.

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