

Severe Cut Throat Injury in a Child: A Case Report and Review of Literature

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Abstract

Background: Cut-throat injury is a potentially fatal condition that may be associated with serious morbidity and mortality. The neck region is particularly at risk of serious injuries due to the location of vital structures, including nerves, viscera, and major vessels. Although cut-throat injury is said to be rare in children, its occurrence has been reported in some series. Management of this condition requires a multidisciplinary approach for a better outcome. **Aim:** The aim of this report is to highlight the successful management of an alarming case of severe cut-throat injury with associated laryngeal injury in a child. **Case presentation:** A 12-year-old boy presented with a cut-throat following an assault by an unknown person. Examination revealed an acutely ill child, conscious but pale. He sustained a deep transverse laceration that transected the thyroid cartilage, exposing the laryngeal cavity. An assessment of Zone II penetrating neck injury was made. He was resuscitated, and had emergency neck exploration, tracheostomy, and repair of the injuries. The patient was followed up for 6 months, and had a good voice outcome, with no significant complication. **Conclusion:** Cut-throat injury is rare in children. But it is a potentially life-threatening condition. It is therefore important to recognize this entity and develop effective protocol of management in our environment.

Keywords

Cut-Throat, Neck Trauma, Penetrating Neck Injury, Neck Exploration, Tracheostomy

1. Introduction

Cut-throat injuries (CTIs) refer to open wound injuries or those resembling incised

injuries in the neck inflicted by sharp objects such as razor blades, knives, or broken bottle pieces or glasses that may be superficial or deep in nature. [1] CTI is an important cause of morbidity and mortality and accounts for 5% - 10% of all traumatic injuries globally. [2] The incidence of penetrating neck injuries in developing countries is said to be increasing, partly due to incessant community clashes, farmer-herder conflicts, and the increasing rate of cattle rustling in rural communities. [3] [4] These conflicts are on the rise because of fights over limited resources, poor socioeconomic status, poverty, unemployment, easy access to firearms, alcohol, and substance misuse. The etiology of cut-throat injury has been from road traffic accidents, homicide, or suicide ideation. [2] In children, causes of homicide or civil unrest are more likely to result in CTIs. With worsening economic conditions and standards of living in our environment, children are increasingly involved in economic activities such as street hawking, thereby helping their parents make a living. However, this exposes them to being at risk of either being assaulted or attacked by hoodlums, inflicting various degrees of injury on them.

2. Case Presentation

A 12-year-old male street hawker was brought into the accident and emergency department of our hospital by policemen after being found in a pool of his blood with a slit throat following an assault by an unknown person. He was said to have been assaulted using a sharp knife to forcefully cut his throat and sustained a deep and wide cut on the upper part of the neck with associated bleeding, dysphagia, and change in voice, but had no difficulty in breathing, swelling in the neck or inability to move either side of the limbs.

Examination revealed an acutely ill child, conscious but lethargic, pale, dehydrated with BP = 90/60 mmHg, PR = 100/minute, RR = 20/minute, Temperature = 36.7°C and SPO₂ = 98% at room air. He sustained a deep transverse laceration in the anterior part of the neck, about the level of the prominence of the thyroid cartilage, extending across both ends of medial parts of the Sternocleidomastoid muscles (SCM) with transected and displaced thyroid cartilage exposing deep neck muscles and the laryngeal cavity. An assessment of Zone II penetrating neck injury with laryngeal involvement was made.

He was resuscitated in the accident and emergency according to the ATLS protocol, and the neck was packed to stop bleeding. He had an urgent FBC (HB of 8 g/dl), grouping and cross-matching, renal function test, X-ray soft tissue neck and chest X-ray which revealed normal findings. He had 1 pint of blood transfused while in the emergency room, with another 2 pints transfused intraoperatively. He had emergency neck exploration, tracheostomy, and repair of the injuries. The intra-operative findings were; deep transverse neck laceration extending from the anterior border of the right SCM to the posterior border of the left SCM, measuring 16 × 5 cm, exposed and transected strap muscles and horizontal transection of thyroid cartilage 1cm below the thyroid notch exposing the false vocal cords and the arytenoids (**Figure 1**). Postoperatively, he had flexible laryngoscopy done, which showed oedema around the arytenoids and false vocal cords. No hematoma

or cartilage disruption was seen. He was maintained on intravenous fluids, antibiotics, analgesics, tracheostomy care, and closed dressing of the wound. Stitches were removed on the 8th postoperative day. Flexible laryngoscopy was done which revealed normal vocal cords, and the patient was extubated on the 10th postoperative day. He was discharged on the 12th postoperative day. He was reviewed 2 weeks after discharge (**Figure 2**) and had a good voice outcome. The patient was followed up for 6 months with no significant complications. During the follow-up visits laryngoscopies were performed to check for possible postoperative complications e.g. laryngeal stenosis, but no complications was found. Apart from assessment of physical complications, the patient and his parents can develop psychological problems such as post-traumatic stress disorder, depression and other mental problems. This was prevented by referring the child and the parents to a psychologist for regular psychological evaluation and support at intervals during the course of the management and the follow-ups. Child and parents were taught new strategies on how to overcome fears, build resilience and how to return to normal activities and build friendships. Overall outcome and prognosis were good, parents and the patients were satisfied with the treatment.

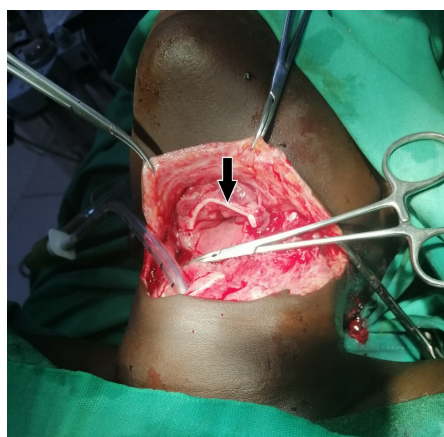


Figure 1. Intra-operative picture showing severe cut-throat injury exposing the transected thyroid cartilage (black arrow).



Figure 2. Postoperative picture showing the healed cut-throat scar (white arrow), and healed tracheostomy site (black arrow).

3. Discussion

Cut-throat injury is a potentially fatal condition that is extensively reported among adults in the literature, only a few cases have been reported in children (**Table 1**). In most of the cases of cut-throat injuries reported in children, adequate details of the management of the patients were not provided (**Table 1**). In agreement with this study, most of the reported cases of cut-throat injury in children were in males within their 2nd or 3rd decades of life. The main reason for male preponderance in most cases of CTIs is due to their active participation in risky behaviors and their frequent involvement in interpersonal conflicts. [5]-[11] Our patient is a 12-year-old street hawker from low socioeconomic class. Due to the worsening economic conditions and increase in crime rates in our environment, the presence of children in the street exposes them to various forms of assault and injury that were hitherto not common. Neck injuries are commonly described using a classification that divides the neck into 3 anatomical zones for ease of description and management. Zone I extends from the sternal notch/clavicle to cricoid cartilage, Zone II extends from cricoid cartilage to the angle of the mandible, and Zone III extends from the angle of the mandible to the base of the skull. [12] While Zones I and III are more protected by bones, the vital structures in Zone II are not protected by bone, hence making the zone more at risk of injury. Our patient had a deep Zone II penetrating neck injury with laryngeal involvement. This is similar to the findings of other studies, [5]-[10] where Zone II injury was the most commonly encountered in the penetrating neck trauma population.

Table 1. Reported cases of cut-throat injuries in children.

Authors	Year	Age/Sex	Affected sites	Cause	Inflicting Object	Treatment	Outcome
Suggit. [19]	1953	4 yrs/M	Left thyroid & arytenoid cartilage divided	Homicide	Razor	Blood transfusion, Tracheostomy, Repair under LA	Treated Successfully
Iseh & Obembe [13]	2011	5 yrs	NSIP	Accidental	Sharp object	NSIP	Treated Successfully
Ozdemir <i>et al.</i> [20]	2013	Two children 5 & 6 yrs	NSIP	NSIP	NSIP	NSIP	Died
Panchappa <i>et al.</i> [5]	2014	4 yrs/M	NSIP	NSIP	NSIP	NSIP	NSIP
Chandra <i>et al.</i> [11]	2014	10 months	NSIP	Homicide	Piece of glass	Repair	Treated Successfully
Jayanth <i>et al.</i> [21]	2015	< 10 yrs/M	NSIP	NSIP	NSIP	NSIP	Died
Kumar & Begum. [22]	2016	4 yrs/F	Left strap muscles, Left Internal Jugular	Accidental	Kite string	Brought-in-dead	Died
Rautela <i>et al.</i> [8]	2017	5 patients < 10 yrs	NSIP	NSIP	NSIP	NSIP	NSIP
Jain & Kaushik. [23]	2018	Two children: 5 & 6 yrs	NSIP	Accidental	Sharp object	NSIP	Died

M = Male, F = Female, NSIP = No Specific Information Provided.

The severity of CTIs varies from simple to life-threatening because of vital structures densely packed in the neck and could either cause damage to the airway leading to airway obstruction or hemorrhage from damaged major blood vessels. [10] However, some cases present as innocuous wounds and may not manifest clear signs or symptoms, while there may be the presence of potentially lethal injuries that could be easily overlooked. [10] Our patient presented with a deep open neck wound involving the larynx with associated bleeding. This presentation is also like most cases of CTIs reported elsewhere. [5]-[8] [13] Control of the airway in the management of patients with CTIs is of utmost importance and may involve the insertion of an endotracheal tube directly through the site of the penetrating injury or by performing cricothyroidotomy and subsequently converting it to a tracheostomy. Because of the tendency to lose a precarious airway in CTIs, Parelta *et al.* [14] have argued that a patient's airway can be lost from the injudicious use of sedation or failure to be properly cautious during attempts at airway management and endotracheal intubation. For these reasons, some authors [10] recommended the use of "awake endotracheal intubation" under local anesthesia in managing these cases. However, Ezeanolue, [15] and Okoye *et al.* [16] carried out tracheostomies in their patients with cut-throat injuries. Our patient had an endotracheal tube placed via the neck defect before tracheostomy was formally given during the wound exploration and repair.

CTIs result mainly from accidental, homicidal, or suicidal causes, especially among adults. The aetiology in young children is usually homicide inflicted on the children by an adult who is usually a drug addict. The link between illicit drug use and homicide has been established, and a study conducted by Spunt *et al.* reported that marijuana was the most common illicit drug (86%) used by a sample of 268 murderers incarcerated in New York state correctional facilities for homicides. About one-third of the prisoners (33%) had used marijuana in the 24-hour period before the homicide, and almost three-quarters (70%) of those respondents were experiencing some type of effect from the drug when the homicide occurred. [17] Although we cannot establish the motive behind the attack and injury to our patient, the cause may be related to illicit drug use among his attackers.

The management of patients with CTI requires a multidisciplinary approach requiring the close collaboration of the otolaryngologist, the anesthetist, and the psychiatrist. The treatments offered for most cases include resuscitation with or without blood transfusion, tracheostomy, and repair of the neck wound in layers. [5]-[8] Similarly, our patient was first resuscitated with crystalloids and had 1 pint of blood transfused in the accident and emergency before he was taken to the operating theater, where he had wound exploration, and repair of laryngeal injury. This is in keeping with the recommendation of Iseh *et al.* [13] who suggested that pharyngeal, hypopharyngeal, and laryngeal mucosal lacerations should ideally be repaired early (within 24 hours). Apart from physical trauma, patients can develop psychological problems such as post-traumatic stress dis-

order, depression and other mental problems even after discharge. Injured child can experience significant psychological changes even after discharge. These include changes in behavior, physical activity, developing friendships, confidence and trust. [18] Considering these, our patient and his parent had psychological evaluation and support during the management and follow-up. Child and parents were taught new strategies on how to overcome fears, build resilience and how to return to normal activities and build new friendships.

The outcome of management has been shown to be affected by the time of presentation and was found to be better for the patients who received timely primary care and who managed to reach the hospital the earliest. [5]-[9] Furthermore, morbidity, and mortality in patients with CTIs are found to be related to delays in the initiation of treatment. [11] Our patient presented about 4 hours after injury and was operated upon within 6 hours of admission. His recovery has been uneventful, he was extubated successfully on the 10th postoperative day with an acceptable voice outcome.

Preventive strategies that will help in curtailing the menace including adequate policing, provision of security, and vigilante groups around the community are recommended. Healthcare advocacy, public health interventions and awareness campaigns aimed at reducing the incidence of such injuries should also be encouraged.

4. Conclusion

Cut-throat injuries are rare in children. But as insecurity and banditry increase in our communities, more children may be vulnerable to these potentially life-threatening injuries. It is therefore important to recognize this entity and develop effective protocol of management in our hospitals to prevent catastrophic outcomes from managing these cases.

Consent for Publication

An informed consent was obtained from the parent of the patient to publish his data including images used in this article.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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