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B. O. OSOTIMEHIN**

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# Management of the upper airway in severe cut-throat injuries

BC Ezeanolue

Department of Otolaryngology, University of Nigeria Teaching Hospital, Enugu, Nigeria

## Summary

Four patients treated for cut-throat injuries are the subjects of this paper. Two were self-inflicted suicide attempts while one each was for ritual killing and over disputed farmland. Tracheostomy was deployed at the early period in all cases to ensure safe and patent airway. Significant laryngo-tracheal stenosis was a long-term morbidity suffered by two of the patients. Management of the airway in the early and late periods following the cut-throat injuries is discussed.

**Keywords:** *Cut-throat injuries, upper airway, neck, suicide, homicide, trachea.*

## Résumé

Quatre patients traités des blessures de la gorge forment le sujet de cette recherche. Deux cas étaient des tentatives de suicide personnel alors que chacun des deux autres car étaient pour des rituels sur la dispute de terrain. La trachéostomie était déplorée au stade primaire dans tous les cas pour assurer la sécurité du conduit aérien. Un resserrement significatif laryngotrachéenne était la cause à long terme de la morbidité dont souffraient deux des malades. La gestion du conduit aérien au stade primaire et secondaire après la blessure de la gorge est discutée.

## Introduction

Injuries to the anterior neck may be closed (blunt) or open (incised) variety [1,2]. Open or incised anterior neck injuries inflicted by sharp implements such as razor, knives or broken bottle pieces or glasses may be described by the term 'cut-throat' injuries. Cut-throat injury (CTI) may result from an accident, homicide or suicide. It could become rapidly fatal from profuse haemorrhage from damaged major blood vessels, air embolism or airway obstruction. Other problems of CTI when not immediately fatal include sepsis, hypertrophic scars, swallowing difficulties and phonatory incapacity [1].

There are reports in the medical literature of cut-throat injuries from West Africa. Ladapo [1] reported on the complication and principles of management of such wounds with emphasis on the forensic implications. Eshiet *et al's* [3] article on open neck injuries stressed on the surgical airway problems. Amadasun [4] highlighted problems of decision-making in this critical condition of neck injury. This paper is yet another from West Africa. It is hoped that it will contribute to the existing quantum of knowledge on the subject matter with focus on the objectives in the management of the airway.

Subjects of this paper are patients treated for cut-throat injuries at the Department of Otolaryngology, University of Nigeria Teaching Hospital, Enugu between 1989 and 1998. Management of the airway in the early and late periods following the cut-throat injuries is discussed.

## Case reports

### Case 1

The Police brought MB, a 40-year old carpenter, to the Accident and Emergency Department. The facts of the case were

Dr. BC Ezeanolue, Department of Otolaryngology, University of Nigeria Teaching Hospital, Enugu, Nigeria.

that he murdered his wife, after both had had a misunderstanding and immediately thereafter attempted to commit suicide by cutting his neck with the same knife. Neighbours later discovered him lying in a pool of his blood in his bedroom, behind a locked door, with the corpse of his wife lying in the same room. He had previous medical history of receiving treatment from a Psychiatric Clinic for depressive psychosis but had defaulted for several months before the fateful day.

Examination showed anterior neck cuts, which severed the pharynx from the larynx exposing the glottic chink. There were other cuts on the thyroid cartilage. The carotid sheaths were not incised, although both were exposed at the lateral ends of the wound. Fig. 1.



Clinical photograph of case number 1

Operative procedure included tracheostomy created distal to the anterior neck incised wounds. The cut-throat wound was explored, debrided and repaired in layers. Particular care in restoring the continuity of the mucosal layer was taken during the repair. He made an uneventful recovery and the tracheostomy tube was removed on the seventh day post repair. His voice, breathing and swallowing were as good as they were before the cut throat. He was discharged to Psychiatric care and taken to asylum by the Police.

### Case 2

The relatives of a 21-year-old female student of a tertiary school brought her to the Emergency Room after they located her with multiple, bleeding anterior neck cuts behind locked door, Fig. 2. She confessed that she attempted suicide by



Clinical photograph of case number 2

first swallowing tablets Diazepam 25 mg and after waiting for 30 minutes she realised that her objective was not achieved. Her second attempt to commit suicide was to incise her neck with a razor blade. The reason she gave for attempting suicide was that she her boy friend had infected her with the HIV virus and hence she decided not to live with the dreaded infection. There was no history of previous mental illness. Examination showed cuts of uneven depth on her tracheal cartilages, which opened into the lumen of the trachea. Tentative cuts were present. Operative procedures were neck exploration and wound repair in layers. Tests later done on her serum for presence of HIV antibodies were negative. She recovered fully from her cut throat injuries as assessed by a good voice, breathing and swallowing. She was referred to a Psychiatrist for further treatment.

#### Case 3

A 23-year-old male, referred from a peripheral hospital with cuts on his anterior neck was received at our emergency room. Unknown persons attacked him in a village. Apparently, they wanted his head for ritual purposes but aborted the attempt to decapitate him. The referral doctor secured his airway by intubating the trachea with an anaesthetic endotracheal tube through the neck wound created by the assailants, before transferring him to our center. Examination revealed multiple incised wounds on the anterior neck extending deep down on the thyroid and cricoid cartilages. The cut opened into the lumen of the upper airway at the levels of the larynx and upper tracheal rings. A low-level tracheostomy was done. Fig. 3. We explored, debrided and repaired the CTI in layers.



Clinical photograph of case number 3

The external wounds healed but laryngo-tracheal stenosis occurred such that he had respiratory difficulties when without the tracheostomy tube. Swallowing function was good. His voice was serviceable when he momentarily occludes the tracheostome, but it was not as good as before he suffered the cut throat. He was discharged home wearing the tracheostomy tube and a laryngo-tracheoplasty planned for a later date. He failed to keep his appointment and was lost to follow-up.

#### Case 4.

A 30-year-old housewife presented in our out-patient clinic 3 months after she sustained knife cuts on her neck during a communal fight over the ownership of a farmland. She received tracheostomy as part of emergency treatment at another hospital. The external wounds healed but she had severe airway obstruction when attempt was made to remove the tracheostomy tube at the hospital.

Our assessment showed that she has laryngo-tracheal stenosis and swallows without difficulties She was so afraid of living in the community that the family had to relocate to another community. An elective laryngo-tracheoplasty using a free composite costal cartilage graft was done. She was successfully decannulated ten days post repair. Her voice remained serviceable and breathing airway adequate when last reviewed at 9 months post repair.

#### Discussion

One of the objectives of management of CTI is to ensure a patent airway both at the early and late stages. The survival of our patients was possible because the CTI opened the lumen of the larynx or trachea and these openings functioned as a laryngostomy or tracheostomy, albeit a crude one. A proper tracheostomy was fashioned to continue keeping the airway patent, as well as protecting the tracheo-bronchial tree from aspiration. The worth of tracheostomy in the management of CTI was highlighted in the literatures [1-5]. Respiratory difficulties may arise in several ways namely, the base of tongue causing airway obstruction, laryngeal oedema from injury to the larynx, inhalation of blood into the trachea, laryngeal spasms, and laryngeal paralysis from injury to the recurrent laryngeal nerve [6].

Endotracheal intubation via the oral or nasal route is an alternative method of securing a patent airway. The predicament is that upper airway anatomy could be distorted

Table 1: Summary of patients with cut-throat injuries

Case/ Patient	Sex	Age	Injuries	Motive	Outcome/morbidity/ Disposal action.
1.	M	40	Pharyngo-laryngeal separation. Laceration thyroid cartilage	Self inflicted, suicide. To escape trial for murder of wife.	Repair. Good healing. Psychiatric consultation
2.	F	21	Lacerated cuts tracheal cartilage.	Self inflicted, suicide Phobia for suspected contacting of HIV infection.	Repaired. Good healing Psychiatric consultation
3.	M	23	Multiple cuts on thyroid and cricoid cartilages	Assault. Ritual killing	Laryngo-tracheal stenosis Psychological trauma.
4.	F	30	Cuts on cricoid cartilage and trachea	Assault. Dispute over farmland	Tracheostomy. Lost to follow-up Laryngo-tracheal stenosis. Laryngo-tracheoplasty. Adequate airway and good voice achieved

making intubation difficult and there is the additional hazard of inhaling vomitus, blood or secretions [2,7]. The securing of a patent airway by intubating the trachea with an anaesthetic endotracheal tube through the neck wound was a commendable effort by the doctor, who gave emergency treatment to Case 3, in a desperate situation with inadequate facilities. A similar action reported in the literature also proved life-saving [7].

Another objective of management at this early stage is to prevent the development of laryngo-tracheal stenosis, which might result after the wounds had healed. This may be achieved if the CTI is repaired in anatomical layers, preserving fragments of cartilages and grafting them in their rightful positions.

In addition, healing by primary intention that reduces development of stenosis is tenable by preventing sepsis of the CTI. In particular, treat any associated pharyngeal injuries promptly, in order to prevent complications such as pharyngeal fistula and infection of the neurovascular bundle of the neck. When all precautions fail to prevent airway stenosis, an elective reconstructive procedure will be performed to restore the calibre of the airway. This happened in Case 4 while Case 3 failed to keep his appointment for the planned laryngo-tracheoplasty.

Airway obstruction may be caused in patients with CTI by injury to the recurrent laryngeal nerve in the neck [6]. If the injury to the nerve is unilateral, it may be asymptomatic but if bilateral, airway obstruction will manifest as stridor and difficulty in breathing. Tracheostomy should be deployed in the early stage and subsequent definitive procedure such as arytenoidectomy and cordepexy performed to restore the patency of the airway.

All patients that attempted suicide should have a psychiatric consultation. This is because the act of suicide is a sign of underlying mental illness and there is a possibility of

a second attempt. Ellis [6] reported 25% of his patients as having made a second attempt at suicide. In this series, Case 2 cut her throat on second attempt at suicide while Case 1 defaulted in the Psychiatric treatment he was receiving and thus had a relapse. 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.

In conclusion, the worth of tracheostomy in the management of the airway in severe CTI is established. Long-term follow-up is necessary to ensure that laryngo-tracheal stenosis when not prevented is treated appropriately.

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