

Penetrating Cervical Injury Due to Throat Slitting in Children: 1 Case Reported at Mopti Hospital (Mali)

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Abstract

Case Report

The impact of the media and security crises (rebellions, acts of terrorism, intercommunity conflicts) on children often results in the practical reproduction of what they see and hear. Anterior penetrating injuries to the neck pose a life-threatening situation and the causes vary among countries around the world. They include stab wounds, gunshot wounds, vehicle accident injuries, and neck lacerations. They pose a great challenge to treating surgeons because of the important structures in the neck that can be affected. We report a case of knife slitting of a child by one of his classmates during a simulation game in a conflict zone in central Mali. A 5-year-old boy was cut in the throat by a 9-year-old friend with a knife. According to the patient's father who testified, the cut was committed in the play area where the oldest friend placed the patient in a supine position and then cut him in the throat with a knife; as if to imitate adults. On exploration, the lesion assessment found an anterior cervical wound which was horizontal with linear borders located between the sternocleidomastoid muscles without damage to them and the large vessels. A partial section of the esophagus and trachea was noted. There was no neurological or cervical spine involvement on X-ray. Laryngo-tracheal repair with two control tractor wires and then orotracheal re-intubation; Finally a suture of the sternothyroid muscles and skin closure. The postoperative course was simple. Penetrating trauma is rare in children, their management is a challenge. They are serious and put the patient's vital prognosis at stake.

Words keys: Cervical injury, throat cut, child.

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INTRODUCTION

The impact of the media and security crises (rebellions, acts of terrorism, intercommunity conflicts) on children often results in the practical reproduction of what they see and hear. Anterior penetrating trauma to the neck poses a life-threatening situation and the causes vary in different countries around the world.

The crude annual incidence rate observed in England in the emergency department population was 737/100,000 people with the 16 to 24 age group being most affected. Overall, 44% of injuries were self-reported as assaults [1]. These lesions are most often superficial with multiple hesitation marks [2]. They include stab wounds, gunshot wounds, vehicle accident injuries, and neck lacerations. Bladed weapons produce lesions by “cutting” effect, generally quite linear. They

pose a great challenge to treating surgeons because of the important structures in the neck that can be affected [3].

We report a case of knife slitting of a child by one of his classmates during a simulation game in a conflict zone in central Mali.

OBSERVATION

A 5-year-old boy was cut in the throat by a 9-year-old friend with a knife. According to the patient's father who testified, the cut was committed in the play area where the oldest friend placed the patient in a supine position and then cut him in the throat with a knife; as if to imitate adults. On admission, the patient had a Glasgow score of 15/15 without signs of Hypovolemic shock. On exploration, the lesion assessment revealed an anterior cervical wound (zone

II) which was horizontal with linear borders located between the sternocleidomastoid muscles without damage to them and the large vessels (Figure 1). A partial section of the esophagus and trachea was noted. It saturated at 96% in ambient air. He had no neurological or cervical spine damage on radiography. The biological assessment found a hemoglobin level of 9.5 g/dl. Antibiotic therapy based on a combination of C3G and nitroimidazole and tetanus vaccine therapy were instituted. One unit of iso-rhesus group blood was transfused.

His surgical treatment within 6 hours consisted of: translesional tracheal intubation under general anesthesia in the operating room. Placement of a

nasogastric tube was performed followed by closure of the esophageal breach (Figure 2).

Laryngo -tracheal repair keeping two control tractor wires then orotracheal re-intubation (Figure 3); Finally a suture of the sternothyroid muscles and skin closure. The postoperative course was simple.

To ensure the patency of the digestive tract, an Oeso - gastro-duodenal transit (TOGD) was carried out 25 days after the operation with esophageal permeability (Figure 4). The patient was seen at 1 year of postoperative follow-up without complaint (Figure 5).



Figure 1: Cervical wound (zone II) by sticking in a child



Figure 2: Closure of the esophageal breach on a nasogastric tube



Figure 3: Orotacheal re-intubation, skin closure



Figure 4: TOGD images with good passage of contrast



Figure 5: After 1 year of post-operative follow-up

DISCUSSION

To our knowledge, this is the first case of the slitting of a child's throat by another child, treated at the Sominé Dolo hospital in Mopti (Mali). However, in Mali Koné FI *et al.*, in ENT at the Gabriel Touré University Hospital in Bamako reported a case of penetrating cervical knife wound in a context of human sacrifice in an 11-year-old boy in 2017 [4]. In their patient the injury would be inflicted by a Mentor, therefore by an adult. However, in our case the attack was committed by another 9 year old child. According to a Nigerian study published in 2022 by Magagi A *et al.*, [5], the main circumstances of occurrence mentioned are conflictual confrontations or attacks most often involving male farmers and breeders almost always leading to trauma or even murderers are quite recurrent and common to our neighboring countries. But in our case, the circumstance takes on a very particular character: "the absence of any notion of conflict but rather in the playing area, practicing (imitating) on the smallest part what we hear or see".

In Nigeria, in a study published in 2017 by NAWOLO CC and ASOEGWU CN [3] out of 58 cases of previous penetrating neck injuries no cases of vascular or nerve injury were recorded, the age extremes were 6 years and 65 years with 61.5% laryngopharyngeal repair. In the same way the large vessels were spared in our case, certainly we did not ask for angiography by Computed tomography (CAT); which was advised by Madsen AS *et al.*, [6] in South Africa as a key imaging test to exclude vascular lesions and identify aerodigestive tract lesions by demonstrating subtle amounts of surgical emphysema and delineating the trajectory of the penetrating object. The targeted area, the context of the attack and the type of weapon are factors that influence the severity of knife injuries; and are all important information that guides the overall management strategy [5]. To help recognize a suicide cutthroat, suicide wounds are usually multiple, characterized by numerous test cuts, called hesitation cuts Shetty BSK *et al.*, [7]. In Pennsylvania Philadelphia, a study carried out by Marc Makhani MD *et al.*, [8] in twenty level I trauma centers having recorded 327 (0.14%) traumatic lesions of the esophagus over 6 years, although retrospective; treated and analyzed several aspects of this subject. Approximately 60% of all traumatic esophageal injuries were due to penetrating injuries caused by a gunshot or stab.

Chest pain is considered the cardinal symptom and is present in more than 70% of patients. Other clues include the triad of vomiting, chest pain, and subcutaneous emphysema known as Mackle's triad. The injury has higher morbidity and mortality when the thoracic esophagus is involved compared to the cervical esophagus alone. And concluded that the only independent predictor of mortality related to traumatic esophageal injury was the time to diagnosis of

perforation, and not the time to definitive management. Delaying surgery beyond a threshold of approximately 13 hours was associated with a higher frequency of complications such as empyema. The final anatomic diagnosis of the traumatic esophageal injury was made by one or the combination of CT/MRI, surgery and/or autopsy. A complete perforation of the cervical esophagus would result in spillage of the contents into the retroesophageal space; lateral spread is limited by the areas of attachment of the esophagus to the prevertebral fascia. Perforation of the thoracic esophagus with spillage of gastrointestinal contents into the pleural space had a higher mortality (22% versus 11%) than when spillage was confined to the mediastinum. In case of perforation, mortality can exceed 50% due to mediastinal and pleural infection leading to sepsis and multiorgan failure.

At the University of Nebraska in the United States of America, Menke BA *et al.*, [9, 10] reported a case of self-penetrating antero-cervical trauma similar to ours in terms of the lesion assessment and management. Namely a knife wound to the anterior part of the neck allowing access to direct laryngeal visualization, without damage to the large vessels allowing transcervical intubation. A complex repair by bringing together the mucosa and cartilage of the epiglottis with 4/0 vicryl sutures. The significant postoperative cough and dysphagia mentioned, not observed in our patient, could be explained by the early use of corticosteroid (Dexamethasone) for three days, the speed of treatment, the absence of defect and the young age.

The experience of the Beijing Friendship Hospital written by Tian *et al.*, [2] teaches us that when the airways are traumatized, deformed and the worst situation occurs (Unable to intubate, Impossible to oxygenate), to proceed directly to an invasive emergency which is the tracheotomy. The same experience was described in India by Naqvi Sayyed EH *et al.*, [11] who, after completion of tracheal reconstruction on an endotracheal tube, performed a tracheostomy distal to the traumatic injury.

International guidelines recommend that endoscopic evaluation of the esophagus or contrast swallowing studies be performed to exclude penetrating injuries to the esophagus, Alves DG *et al.*, [12]. The TOGD requested in our patient made it possible to demonstrate good permeability with good passage of the contrast product from the esophagus to the stomach before letting the patient go home.

In the English study of Sixty-two cases of trauma identified at the head and neck level, 50% were isolated injuries [1]. The length of stay for isolated stab wounds ranged from 1 to 48 days with a mean of 3.04 days. Our patient was discharged 27 days postoperatively.

CONCLUSION

Penetrating traumas are rare in children, their management is a challenge. They are serious and put the patient's vital prognosis at stake. So what could be the contributing factors to this criminality in the pediatric population?

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