

## NEAR TOTAL TRANSECTION OF SUPRAGLOTTIC LARYNX FOLLOWING SUICIDAL CUT THROAT INJURY: A CASE REPORT AND REVIEW OF LITERATURE

### Otorhinolaryngology

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### ABSTRACT

This case report presents the rare occurrence and management of a near-total transection of the supraglottic larynx due to a suicidal cut-throat injury. A 35-year-old male presented to the emergency department with a deep self-inflicted laceration to the neck. Emergency surgical intervention involved securing the airway through tracheostomy and meticulous multilayered wound repair. Postoperative care included airway management, speech and swallowing rehabilitation, and psychological support. The patient demonstrated significant recovery, regaining the ability to phonate and swallow normally, and was successfully decannulated within six months. This case underscores the critical importance of a multidisciplinary approach in managing complex laryngeal injuries to achieve favorable outcomes.

### KEYWORDS

Suicidal injury, Airway, Tracheostomy, Rehabilitation, Multidisciplinary

### INTRODUCTION:

Neck injuries occur due to accidental, homicidal, or suicidal incidents (Chakraborty et al., 2017). In the era of high-speed travel, road traffic accidents are a leading cause of penetrating neck injuries, followed by homicidal injuries. Laryngotracheal airway injury causing near-total transection of the supraglottic airway because of suicidal injury is extremely rare. This case report discusses the presentation and management of near-total resection of the supraglottis secondary to suicidal injury to the neck, along with a review of the literature.

### Case Report:

A 35-year-old male was brought to the emergency department with an alleged history of a self-inflicted cut injury to the neck with a sharp knife at his residence. At presentation, a deep lacerated neck injury was noted, and the wound was covered with fresh bleeding and clots. The patient was breathing through the opening in the neck. He had tachycardia with a heart rate of 116 bpm, tachypnea with a respiratory rate of 28/min, and was severely agitated. He had a blood pressure of 90/60 mmHg and SpO<sub>2</sub> of 92% in room air. An intravenous line was secured and blood routines, including blood grouping and cross-matching, were done. An O<sub>2</sub> mask was placed over the exposed airway to reinforce oxygenation.

The patient was shifted to the operating theatre, where he was placed in a supine position with neck extension, opening the wound area further and exposing the penetrating wound and the airway. The glottis and aryepiglottic fold could be visualized through the wound. A deep cut transecting the entire supraglottic larynx at the level of insertion of the epiglottis, leaving behind a thin slice of the posterior pharyngeal wall, was noted. A 7 mm flexo-metallic endotracheal tube was introduced via the wound into the glottis and the airway was secured. An active ooze from the left side was identified and cauterized. The lower part of the neck was painted and draped, and through a separate incision, a tracheostomy was performed. An 8-size double-lumen Portex tracheostomy tube was inserted, securing the airway, following which the flexo-metallic tube was removed. The entire wound was inspected, revealing multiple cuts on the thyroid lamella and a deep wound transecting through the infrahyoid strap muscles and superior part of the thyroid lamella, transecting the epiglottis and lateral pharyngeal wall, with only part of the posterior pharyngeal mucosa intact. The arytenoids were swollen, a part of the false cords and aryepiglottic folds were lacerated on both sides, and the entire glottis was visible through the wound. After extensive and meticulous wound debridement, along with H<sub>2</sub>O<sub>2</sub> and saline washes, haemostasis was achieved and wound repair was done in three layers, initially approximating the lateral pharyngeal mucosa and the strap muscles laterally, followed by repairing the lacerated thyroid cartilage using 3-0 Vicryl, and later approximating the severed epiglottis into position in the anterior lamina. The midline approximation of strap muscles was

made and subcutaneous sutures, along with subcuticular sutures to approximate the skin, were carried out after placing a corrugated rubber drain. A Ryles tube was passed and the patient was extubated and shifted to the ward in a stable condition. Postoperative ABG showed Hb-9.9, hence no transfusion of blood and products was given. The postoperative period was uneventful. The corrugated drain was removed after three days and subcuticular sutures were removed after seven days. On the seventh day, a video laryngoscopy showed extensive pooling of saliva, edematous arytenoids, and sluggish movement of both vocal cords. A PEG tube was inserted, anticipating difficulty in swallowing. The Ryles tube was removed and the patient was discharged on the eighth postoperative day with instructions to follow chest physiotherapy at home. A repeat video laryngoscopy was done three weeks postoperatively, showing increased pooling of saliva with evidence of aspiration, but both vocal cords were mobile. The patient was able to tolerate a spigot and vocalize well but had frequent episodes of swallowing. The patient was advised to undergo swallowing therapy at our center.

After 3 ½ months post-procedure, when there was no pooling of saliva, the patient was subjected to functional endoscopic evaluation of swallowing, which showed delayed clearance of food from vallecula and pyriform fossa with minimal aspiration with liquid foods. At the fourth month postoperatively, a repeat FEES study showed that the patient was able to swallow liquid and solid food without aspiration; both vocal cords were mobile and the patient was able to phonate well. The PEG tube was removed, and tracheostomy decannulation was done, and the patient started on oral feeds. At six months postoperatively, the patient could phonate well with no evidence of aspiration and was swallowing well, leading a normal life.



Fig 1 : Preoperative

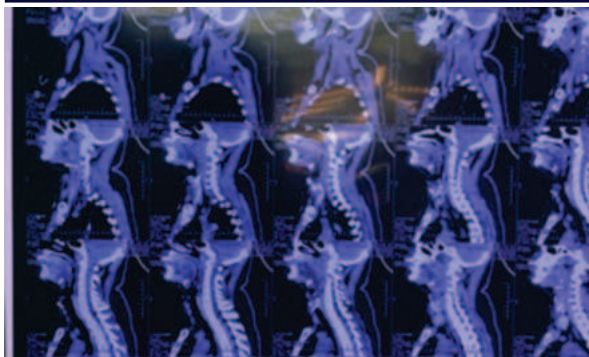


Fig 2 : CT Imaging



Fig 3: Intraoperative



Fig 4: Postoperative



Fig 5: Decannulated

### DISCUSSION:

Nimura et al. (2021) analyzed the national registry for suicides in Japan and observed that the most common age for self-inflicted injury in their population was 50-60 years. Abdominal injury was common, followed by injuries to extremities, face, and neck. Males accounted for the majority of suicidal attempts. In the United States, as per CDC data, firearm injuries were a common form of self-inflicted injuries (Sethi et al., 2014). In India, in 2021, 164,052 suicides were reported in the accidental death and suicide registry, of which 0.3% were self-inflicted injuries (Suryakant et al., 2023). Injuries to the neck and face are classified by Schafer and Furman (1992) into the following categories:

1. Minor endolaryngeal hematoma without detectable fracture
2. Edema, hematoma, minor mucosal disruption without exposed cartilage, and a non-displaced fracture
3. Massive edema, mucosal disruption, exposed cartilage, vocal fold

immobility, and displaced fracture

4. Disruption of anterior larynx, unstable fractures, two or more fracture lines, or massive trauma to laryngeal mucosa
5. Complete laryngotracheal separation

Neck injuries are classified into three zones: Zone 1 extends from the clavicles to the cricoid, Zone 2 from the cricoid to the angle of the mandible, and Zone 3 from the angle of the mandible to the skull base. Devang Gupta et al. (2021) analyzed 100 cases of cut throat injuries from North India, finding that suicidal injuries of the neck are more common in Zone 2. In Zone 2 injuries, the major cause of morbidity is exsanguination secondary to injury to the vessels of the neck (carotid and jugular). Airway obstruction and respiratory distress due to injury to the laryngotracheal airway cause changes in voice, aspiration, and difficulty in swallowing due to injuries to laryngeal nerves. Suicidal injuries are often associated with hesitation cuts and are usually superficial, limited to the skin and subcutaneous tissue (Grade 1). Grade 5 injuries leading to complete transection of the laryngotracheal airway are very rare as these injuries have high mortality before even seeking medical care. The clinical manifestations of laryngeal trauma range from hoarseness and dysphonia to respiratory distress. Therefore, the importance of a thorough clinical examination and prompt recognition of symptoms is paramount. Diagnostic tools such as flexible laryngoscopy and CT imaging are of great use in management. A collaborative effort between emergency care physicians, trauma surgeons, and anesthesiologists is essential for securing the airway, achieving hemodynamic stability, laryngeal framework repair, tracheostomy, physical therapy, and psychological rehabilitation to provide a good outcome for the patients (Adoga et al., 2010). In our case, we have successfully decannulated the patient who has resumed normal life and is under constant follow-up to date. This success is attributed to effective diagnosis, management, postoperative care, and rehabilitation of the patient.

### CONCLUSION:

This case report describes the successful management of a rare suicidal near-total transection of the supraglottic larynx that was meticulously and successfully managed. Here we emphasize the need for emergent airway assessment and reconstruction followed by appropriate rehabilitation with speech and language therapy and psychiatric rehabilitation of the patient.

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