

Exploration and Management of Penetrating Neck Injury in a Tertiary Care Centre in Kumaon Region

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Abstract: Introduction: Suicide is a known worldwide leading cause of death with psychiatric illnesses listed among the strongest predictor. Cut throat injuries are potentially dangerous, if not treated in time may lead to death of the patient due to asphyxia and hemorrhage. Evaluation and management is complicated due to dense concentration of vital, vascular, aero digestive, and nervous system structures. A good team consisting of anesthesiologist and surgeons (vascular, ENT) is required to prevent catastrophic airway, vascular, or neurologic sequelae.

Case Review: This is a case series of four cases presented to emergency department of GMC & Susheela Tiwari hospital, Haldwani, Uttarakhand. They were managed successfully with team work of emergency department, anaesthesiologists and ENT surgeons. ENT surgeons successfully managed the cut throat injuries and repair, saving the lives of many with emergency tracheostomy.

Conclusion: Cut throat injuries happen in our environment, though rare. The airway must be secured before wound exploration and wound repair. Tension free anastomosis is essential at wound repair

Key words: cut throat, tracheostomy

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I. Introduction

Suicide is a known worldwide leading cause of death with psychiatric illnesses listed among the strongest predictors.¹ Other predictors listed are familial troubles and poverty.² These self-inflicted injuries are obvious with transection of the hypopharynx, larynx or trachea and involvement of other parts of the body in some occasions.³

Cut throat injuries are potentially dangerous, if not treated in time may lead to death of the patient due to asphyxia and hemorrhage. Cut throat injuries may be open or incised or incised looking in the neck. Penetrating trauma into the neck is involved by sharp object through skin and violating the platysma layer of the neck. These injuries can be with stabbing, gunshot wounds and puncture injuries. Throat injuries comprises major methods adopted to kill, presence of vital blood vessels, nerves and wind pipe, so any damage to this structure invites fatality as death is inevitable.

Their initial management is straightforward and involves establishing an airway either via endotracheal intubation or tracheostomy and then surgical repair of the transected tissues, this may follow wound debridement if the wound is infected. Surgical repair is fraught with laryngo-tracheal stenosis which can be a long term morbidity suffered by patients.^{4,5}

Evaluation and management is complicated due to dense concentration of vital, vascular, aero digestive, and nervous system structures. A good team consisting of anesthesiologist and surgeons (vascular, ENT) is required to prevent catastrophic airway, vascular, or neurologic sequelae.

Case 1



48 years male presented to emergency department of SusheelaTiwari hospital with alleged history of assault with sickle on neck by the landlord of his farm. It was a penetrating cut throat injury measuring 7*8*3cm extending 7cm from angle of right mandible to 6cm from left angle of mandible below level of thyroid cartilage with tracheal breach and air leave observed. There was no history of abdominal trauma, head injury, nausea vomiting loss of consciousness. Patient was oxygenated with simultaneous 2 large bore iv cannula for fluid resuscitation. Emergency tracheostomy was performed to secure the airway. Patient was immediately shifted to operation theatre where cut throat injury was repaired. Wound was sutured in two layers with inner layer sutured with vicryl and outer layers with Ethilon 5-0. Post operative wound site was healthy. Patient was kept under ICU for observation for 48 hours. In post operative period broad spectrum coverage with antibiotics was given. Patient was shifted to general ward on day 3 post op. Sutured wound site was healthy with patent tracheostomy tube in-situ. On post op day 7 sutured wound site was removed. It was observed that wound approximated well with minimal scar mark. Then decannulation of tracheostomy tube was planned. Tracheostomy tube was removed on 14th post op day. Patient was discharged on post op day 15.

Case 2



28 year old male presented to casualty with alleged history of road traffic accident, a truck hitting his bike while he was on way to his home from office in late evening. It was a penetrating injury on right side of neck 8*5*3 cm cubic in dimensions extending 3cm from above the mastoid process to 4cm from mandible with soft tissue injury exposing digastric muscle, transaction of some fibres of sternocleidomastoid muscle. Patient also had lacerated pinna with exposed cartilage. Patient was haemodynamically stable. There was no history of any head injury. Patient was immediately shifted to OT where lacerated wound was repaired in 3 layers using vicryl and ethilon. A drain was kept in muscular plain to prevent any haematoma formation. Pinna was repaired. Perichondrium was sutured to protect the cartilage followed skin suturing keeping aesthetic anatomy in mind. Haemostasis was achieved. Patient was shifted in post op room in satisfactory condition. Patient was kept on broad spectrum antibiotic for 7 days. Drain was removed on 3rd post op day. On 8th post operative day sutures were removed. Wound site was healthy. Patient was discharged in satisfactory condition on 8th post operative day.

Case 3



56 years old female, farmer by occupation came to emergency department of Susheela Tiwari hospital with alleged of assault by her husband. Penetrating injury was caused using a knife in left preauricular region extending from zygomatic prominence involving left pinna. pinna appeared to be separated from temporal area with dimensions 5*4*3. There was no history of any nausea vomiting head injury or loss of consciousness. Patient was haemodynamically stable. Patient was shifted in OT and lacerated wound was repaired in 2 layers using vicryl and ethilon. Pinna was sutured to temporal area preserving the aural cartilage. Mastoid dressing was done. Patient was kept on broad spectrum antibiotics for 7 days. Mastoid dressing was opened on 3rd post op day. Suture line appeared healthy with healthy pinna. No area of necrosis observed. Sutures were removed on 7th post operative day. Wound was healthy and the patient was discharged on 8th post operative day.

Case 4



68 year old male ex-serviceman, having a psychiatric disorder presented to casualty with alleged history of self-inflicted cut throat injury using a knife. It was a penetrating injury with lacerated wound extending 2cm from right angle of mandible to 3cm from left angle of mandible with dimensions 3*4*6 above thyroid cartilage. Vertical lacerated wound of 4cm in length with dimensions 3*5*8 extending from thyroid notch upto 2cm above the suprasternal notch. Thyroid cartilage, cricoid cartilage and strap muscles were cut exposed with normal major vessels. Patient was hemodynamically stable. There was no history of nausea vomiting, head injury, loss of consciousness. Patient was shifted immediately in emergency OT where cut throat injury repair was planned with no air leak observed. Soft tissues were repaired using vicryl and skin sutured using ethilon. Haemostasis was achieved, a drain was kept. Patient was shifted to post op room in satisfactory condition. Patient was kept on broad spectrum antibiotics for a span of 7 days. On 8th post operative day sutured wound was removed. Patient was discharged on 8th post operative day.

II. Discussion

Laryngeal injury is relatively uncommon injury estimated at approximately 1 in every 22,900 emergency room visits, and penetrating neck injuries accounts for 5- 10% of all trauma cases. There is risk of damage to important and vital structures in the neck (larynx, pharynx, trachea, oesophagus and the great vessels) if there is a cut- throat injury. An organized and appropriate management procedure results in increased patient survival as well as improved long term functional outcomes.

Patients' resuscitation should be commenced at the scene of accident or the injury and this should be continued until patients arrive in the hospital. The airway should be secured or patient should be positioned in such a way to prevent further aspiration of blood and secretion into the lower air-way, and the haemorrhage from the wound should be controlled. In resource challenge environment like this the ambulance is not available to transport the patient to the hospital and there were few or no trained paramedics to assist the victims at initial resuscitation before getting to hospital. The air-way was protected by cuffed endotracheal tube by the anaesthetist. Schaefer et al stated that intubation following laryngeal or tracheal trauma is hazardous, but the American College of Surgeons recommend an attempt at intubation, though tracheostomy is to be performed in failed intubation. Tracheostomy is preferred to intubation, this avoid additional injury to larynx in an unstable airway. The fiberoptic laryngoscope can be used to intubate in a cut throat injury, this has reduced the need for tracheostomy and its attendant complications.

The examination of the patients ought to be directed to determine the extent of the cut- throat injuries and other accompanying injuries in the patients. Management should be instituted in good time to prevent affordable complication(s). The most common associated injuries are head injuries, cervical spine fractures, and esophageal injuries. Cut throat injury complications may be chronic airway obstruction, wound infection, scar, persistent voice changes and dysphagia, permanent tracheostomy due to laryngeal stenosis. Leakage of air as evident by bubbling of air through the neck wound in the patient indicates perforation of larynx or trachea. The use of non-absorbable suture (prolene 4/0) in the anastomosis of transected thyroid cartilage (larynx) in the patient is used to provide strength and tension free anastomosis, stainless steel can also be used to provide strength and tension free anastomosis. The tension free anastomosis can also be achieved by restricting the head movement by use of cervical neck collar or by suturing the chin to the sternum. Hemostasis is to be secured during surgery and all the devitalized tissues are debrided after copious irrigation of the wound with Hartman's solution at surgery, these will reduce the wound contaminants and the microbial colonization of the wound. The neck wound drain was not used after the wound repair; Bassamet al⁶ have shown that Neck surgery is safe without a drain. The parenteral broad spectrum antibiotic was given preoperatively and is continued post-operatively to prevent microbial colonization and multiplication in the wound. Krug et al⁷ recommended that pharyngeal, hypopharyngeal and laryngeal mucosal lacerations should be repaired within 24 hours, because delay in repair of laryngeal mucosa lacerations has an effect on airway stenosis and voice. The psychiatrist review of the patient confirmed that there was no behavioural abnormality that could have led to deliberate self-harm or the development of psychiatric illness after the attack. Isehet al⁸ observed that the majority of cut throat injuries were due to suicide attempt in people with psychiatric illness. The change in voice in the patient might be due to laryngeal oedema, which resolved with time.

III. Conclusion

Cut throat injuries happen in our environment, though rare. The air way must be secured before wound exploration and wound repair. Tension free anastomosis is essential at wound repair. A team work of the Otolaryngologist, Anesthesiologist, Social workers, Dieticians (Nutritionist), Psychiatrist and Clinical-psychologist are needed for the patients' management and good outcome. Laryngeal injury can be repair without postoperative restricting of neck movement to ensure tension free anastomosis in the wound.

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