

EMERGENCY TRACHEOSTOMY: OUR EXPERIENCE

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ABSTRACT: INTRODUCTION: Tracheostomy is a life-saving procedure involving incision on trachea followed by insertion of a tube which maintains the patency of the opening in trachea either temporarily or permanently. In recent years there has been a considerable shift in emphasis regarding the indications for tracheostomy with recognition of more physiological and functional indications where in normal respiratory efficiency is impaired because of patient's inability to maintain normal ventilation and control of secretions in addition to those of a strictly obstructive nature. **OBJECTIVES:** To study various indications, intra and post-operative complications of emergency tracheostomy. **METHODS:** Present study is a prospective study conducted in the patients attended to causality and ENT op with stridor in S. V. R. R. Government General Hospital, Tirupathi during 2009-2011 over a period of two years. Patients of all ages & both sexes are included in this study. All the patients were subjected to detailed ENT, Head & Neck examination and operated by emergency tracheostomy. Intra operative and post-operative complications were noted during the follow up period of 3-6 months. **RESULTS:** Most common indication of emergency tracheostomy was laryngeal malignancy followed by poisoning, head injury, subglottic stenosis and bilateral abductor palsy. Hemorrhage is the most common complication observed followed by surgical emphysema, apnoea etc. **CONCLUSION:** Emergency tracheostomy is a safe and reliable method of restoring the airway and also gives ample time for the specialist to plan & execute further management of underlying cause.

KEYWORDS: Emergency tracheostomy, Indications, Complications.

INTRODUCTION: Tracheostomy is a life-saving procedure involving incision on trachea followed by insertion of a tube which maintains the patency of the opening in trachea either temporarily or permanently. Tracheostomy is very ancient surgical procedure described in first century BC.⁽¹⁾ Until the early part of the 19th century the procedure was considered hazardous and rarely performed. Only during the past two decades has the operation assumed its right place as a safe simple procedure with a wide range of usefulness. In recent years there has been a considerable shift in emphasis regarding the indications for tracheostomy with recognition of more physiological and functional indications where in normal respiratory efficiency is impaired because of patient's inability to maintain normal ventilation and control of secretions in addition to those of a strictly obstructive nature.

MATERIALS AND METHODS: This is a prospective study comprising of 100 patients who underwent emergency tracheostomy during 2009-2011 in SVRRGG hospital, Tirupathi. These patients presented with Stridor to causality & ENT department of SVRRGG hospital, Tirupathi. Patients of all ages & both sexes are included in this study. All the patients were subjected to detailed examination and later operated by senior consultants. Intra operative and post-operative complications were noted during the follow up period of 3-6 months.

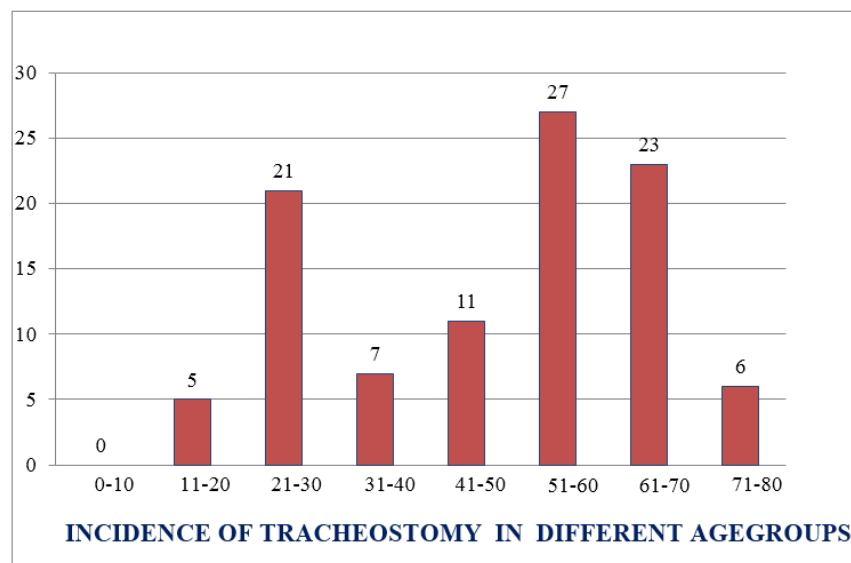
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Patients were subjected to routine blood investigations, screening and X-ray neck lateral view and CT neck in required cases. Videolaryngoscopy was done in malignant & bilateral abductor paralysis cases.

All the cases were operated under local anesthesia either bedside or in the emergency operation theater, with consent taken prior to procedure. The patient is placed supine with shoulders supported and the head tilted backwards on a head ring. Neck, face, upper chest & shoulders are painted with antiseptic solution and draped. Local infiltration with 1% xylocaine with adrenaline done by injecting into the skin & subcutaneous tissue. A vertical incision is made approximately between the suprasternal notch and cricoid cartilage. Blunt dissection is carried out through the subcutaneous tissue. Anterior jugular vein is identified & retracted laterally, Thyroid isthmus is exposed by retracting Strap muscles laterally followed by retraction of isthmus upwards. Pretracheal fascia is dissected and anterior wall of trachea is identified. A vertical incision is given over the area between second and third tracheal rings or third and fourth tracheal rings. A bit of tracheal cartilage is excised in a circular fashion.

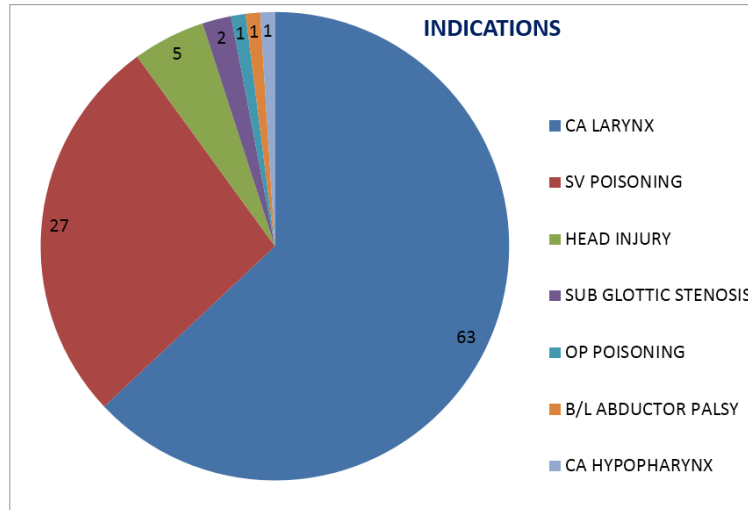
Immediately after this appropriate sized tracheostomy tube is inserted into the lumen of trachea. The tube is kept in situ by anchoring it to the neck with the ribbon gauge or slings provided to the tube, to prevent accidental decannulation. The edges of the wound are sutured. Betadine dressing is placed around the tube which serves the purpose of both wound hygiene and prevention of infection. A saline wiper is placed over the tube opening for humidification. Post-operative care was taken by trained ward staff. Tracheostomy tract is well formed by 72 hours and a metal tube was replaced after it. Decannulation was done by corking or downsizing the tube it was withheld in cases where the primary disease was incurable. Patients discharged with tracheostomy tube in situ were followed for a period of 3-6 months.

RESULTS: Our study includes 100 patients 67 male and 33 female, with mean age of 50.5 years. The majority of patients were in 5th decade.



The commonest indication was malignancy (64%) followed by poisoning (28%), head injury (5%), subglottic stenosis (3%), bilateral abductor palsy (1%).

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Among 64 cases of malignancy, 63 were carcinoma larynx and one was carcinoma hypopharynx. Out of 63 cases of carcinoma larynx 45 glottic & 18 were supraglottic origin. Among 28 cases of poisoning 27 were due to ingestion of supervasmol hair dye poison. Incidence is more in 2nd and 3rd decades, common in females.

Age group	No. of patients
< 20 years	4
20 – 40 years	22
>40 years	1

Table 1

Table showing the incidence of supervasmol hair dye poisoning in different age groups.

Overall complication rate was 24 %. Among these 12% were early, 10 % were intermediate and 2 % were late complications.

Complications	Percentage
Early	12
Haemorrhage	8
Apnoea	4
Intermediate	10
Surgical emphysema	6
Tube blockage	2
Tube displacement	1
Stomal infection	1
Late	2
Stomal recurrence	1
Difficult decannulation	1

Table 2

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DISCUSSION: In our study we observed malignancy of upper airway tract as the most common indication of emergency Tracheostomy which comprises of 64% of total cases. Among the malignant cases, carcinoma larynx being the commonest one. Out of 64 cases, 63 were carcinoma larynx. Out of 63 cases, 45 were glottic, 18 cases were Supraglottic and one case was carcinoma hypopharynx. After tracheostomy all the malignant cases were biopsied by direct laryngoscopy under local anesthesia or general anesthesia and sent for histopathological examination. Later they were confirmed as carcinoma of squamous cell variety with HPE reports. All cases were referred to radiotherapy for further management and followed for 6 months. Out of 63 cases of laryngeal carcinoma 13 cases were decannulated, 15 cases lost follow up, remaining 35 were not decannulated due to incurable primary disease.

Poisoning constitutes the second most common indication in this study. It accounts about 28% of total cases. Out of 28 cases 27 cases were due to supervasol hair dye poisoning and one case was due to organophosphorous poisoning. The major component of hair dye is paraphenylenediamine (PPD), which produce severe edema of face and neck frequently requiring emergency tracheostomy. This is followed by rhabdomyolysis and acute renal failure, culminating in death if not treated aggressively.

Third most common indication was head injury with low Glasgow coma score, accounting about 5% of all cases. These cases were stabilized haemodynamically and emergency tracheostomy was done and later referred to higher institute with poly trauma care.

Remaining 3% cases, 2 cases were subglottic stenosis which occurred as a sequel of prolonged intubation. Emergency tracheostomy was done in both cases. Later Bougie dilatation and local steroid injections were tried in one case and pt recovered well and decannulation was done. Another case was referred to higher institute due to long segment subglottic stenosis.

One case of bilateral abductor paralysis was observed which referred to higher institute was after emergency tracheostomy.

In this study mean age of emergency tracheostomy was 49.07 years, where it was 50.50 years in Allam choudary et al study.⁽²⁾

Male sex was predominant in our study (67) when compared with female (33). Male to female ratio was 2:1 in our study. In Allam choudary et al⁽²⁾ study male predominance was observed. (9:1)

Carcinoma larynx is the most common indication in our study comprising of 63% of total cases which correlates well with the study conducted by Allam choudary et al⁽²⁾ where it was 53.33% In contrast to other studies poisoning was the second most common indication in our study, due to increased incidence of suicidal poisoning in our study population.

Head injuries with low glassgow coma score was the third most common indication comprising of 5% of cases which is closer to 6.67% of cases of head injury in Allam choudary et al⁽²⁾ study.

In this study complication were recorded in 24 cases comprising of 24% of total cases. The complications were grouped into early, intermediate & late complications.

Early: Hemorrhage, apnea.

Intermediate: Surgical emphysema, tube blockage, tube displacement, stomal infection.

Late: Stomal recurrence, difficult decannulation.

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Early complications were observed in 12 among these 8 were haemorrhage, 4 cases were apnoea.

Intermediate complications were observed in 10 cases, 6 were due to surgical emphysema, 2 were tube blockage and remaining 2 cases were tube displacement & stomal infection.

Late complications were observed in 2 cases of these one was stomal recurrence & another was difficult decannulation.

Total complication rate that was observed in the study conducted by Mehta et al⁽³⁾ was (48.4%) and 44% in the study of Abdul Aziz Hamid et al.⁽⁴⁾ However it was significantly higher than those studies of Manzoor et al⁽⁵⁾ (27.2%), Zaidi et al⁽⁶⁾ (24%) & Zaitouni et al⁽⁷⁾ (24%). Our study correlated with the study of second group of studies with a complication rate of 24%.

Haemorrhage is the most common indication in our study constituting 8% of total complications while it is 6% in Abdul Aziz Hamid et al,⁽⁴⁾ 6.67% in Allam Choudary et al.⁽²⁾ Immediate haemorrhage occurs from injury to anterior jugular vein, middle thyroid veins, thyroid gland & surrounding structures.

Surgical emphysema is the second most common complication comprising of 6% in this Study which was 10% in Allam choudary et al & 6 % in Abdul Aziz Hamid et al which well correlate with our study. Too tight closure of the skin or subcutaneous tissue, too large incision in the trachea, improper fitting of tracheostomy tube and excessive coughing are the causative factors.⁽⁸⁾

Apnoea was observed in 4% of cases which was due to sudden reversal of respiratory acidosis. Tube obstruction was seen in 2% cases, which was 4% in Abdul Aziz Hamid et al, and 3.33% in Allam choudary et al. Alteration in physiology of inspired air results in drying of the tracheal and pulmonary secretions & interfere with ciliary mechanism leading to the production of thick, tenacious mucous scabs & crusts. If it is not suctioned in time the scab increase in size with the result that they are difficult or impossible to cough out or even removed by suction.

Tube displacement was 2% in Abdul Aziz Hamid et al, 3.33 % in Allam choudary et al which was only 1% in our study. Length of the tube & thickness of the neck are most important factors for tube displacement.

Stomal infection (12%) which was the most common complication in Abdul Aziz Hamid et al study, occurred in only 1% cases in our study due to advance developed Regarding our knowledge in wound infection and sterilisation.

CONCLUSION: Upper airway obstruction secondary to Laryngeal tumors is still the most common indication in our Centre. If tracheostomy is performed in the standard manner, then it remains a safe and reliable method of restoring the airway and also gives ample time for the specialist to plan & execute further management of underlying cause. Most of the complications can be avoidable by meticulous surgical technique and postoperative tracheostomy care by skilled and trained staff.

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