

AN AUDIT OF THE EMERGENCY TRACHEOSTOMIES IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Background: Emergency tracheostomy remains a vital life saving procedure in advanced upper airway obstructive pathologies and in various other clinical settings where urgent alternative air passage is needed. Ingestions of hair dye powder containing PPD for self harm purpose or accidentally, is emerging as its new indication especially in young female patients. **Objective:** To evaluate the demographic and etiological factors underlying emergency tracheostomies in consecutive one hundred patients presenting in a tertiary care hospital. **Subjects and Methods:** In this case descriptive study, records of one hundred consecutive cases of emergency tracheostomies were collected and analyzed from demographic and etiologically point of view, from 1st January, 2012 to 30th September, 2013 manually as well as by using SSPS version 17. **Results.** Etiologically we found thirty five (35%) cases of severe respiratory distress due to kala pathar ingestion, thirty (30%) cases due to advanced laryngopharyngeal growths, twenty one (21%) due to trauma of head neck region or for assisting ventilation, four (4%) due to foreign bodies in laryngotracheal region, four (4%) cases were due to acute pharyngolaryngeal edema due to corrosive in take, four (4%) cases were due to post thyroidectomy bilateral abductor paralysis, one (1%) case was due to laryngomalacia and one (1%) case was due to acute epiglottitis male to female ratio was 1 to 1.5. **Conclusion:** Upper air way obstruction secondary to kala pathar ingestion is emerging as a new indication for emergency tracheostomy secondly, late presentation of upper airodigestive tract tumors, along with head neck trauma, remains a dominant indication for emergency tracheostomy.

Keywords. Tracheostomy, Indications, kalapathar (PPD).

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INTRODUCTION

Tracheostomy remains a vital life saving surgical procedure since centuries. Its indications and its surgical procedure continue to evolve with the passage of time. The earlier history of tracheostomy is sketchy and somewhat legendary. The earliest depiction is found on Egyptian tablets dating to circa 3600 B.C during the first Dynasty. Much later in Greece Hippocrates (460-380 BC) described intubation of human trachea to support ventilation. Alexander the Great (356-323 BC) reportedly used his sword to cut open the trachea and saved the life of the soldier who was suffocating due to impacted bone in larynx.¹ Italian physician Antonio Brasavola performed the first documented case of successful tracheostomy in a patient with tonsillar obstruction in 1546 AD. Before the advent of antibiotics and understanding of basic surgical principles and establishment of proper

indications, tracheostomy could not gain popularity. Before 1800 AD only fifty life saving tracheostomies had been described in literature.² This reluctance by the surgeons seems to be due to post operative infections, lack in the understanding of surgical principles and pathophysiology of open air way, postoperative infections and especially nonavailability of properly designed tracheostomy tubes.¹⁻²

The term tracheotomy is defined as surgically creation of an opening in anterior tracheal wall that may be reversible and temporary, where as technically tracheostomy means creation of an opening in anterior trachea and putting a tracheostomy tube in for maintaining air way and to do the suction of secretions and to provide humidified air to the lungs.^{3,4}

Just like operative side remained under slow process of evolution, indications of tracheostomy also continued to be changed with the passage of time. In nineteenth century tracheostomies performed for upper air way obstruction and those done for lower air way disorder were in the ratio of 90:10 now a day this ratio has reversed to 20:80. This reversal in indications is partially due to control over diphtheria and other life threatening infections of upper respiratory tract infections by antibiotics.^{5,6}

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Indications of tracheostomy may be grouped on etiological or clinical base as whether it has been performed urgent or electively.⁷

Suicide is a preventable public health problem resulting in more than one millions fatalities every year worldwide, increasing by 60% over the last fifty years especially in developing countries. Poisoning is a preferred method of suicide and is one of the major problem encountered in emergency departments of hospitals.⁸ In developed countries overdose of narcotics, sedatives or hypnotics is commonly used to achieve it while in developing countries agricultural pesticides are commonly used.⁹

Poisoning with commonly used hair dye powder containing paraphenylene Diamine (PPD) is emerging as new trend of intentional self harm in various developing countries of Asia and Africa.¹⁰ PPD paraphenylene diamine in powder or liquid form is mixed in various types of coloring material like henna(mehndi) to deepen its coloring effects. The effects of this material depend on the concentration of PPD in it.¹¹ The concentration of PPD varies in different brands from 70-90% in Stone Hair Dye and 2-10% in branded dyes which are used to give dark black color to hair. The stone dye is very cheap easily available and third factor which makes its use easy is its salty taste making it an attractive option for suicidal intent. PPD has shown to cause rhabdomyolysis by promoting leakage of calcium ions from smooth endoplasmic reticulum resulting in prolonged muscle contraction and irreversible changes in muscle structure. The most marked presentation usually in the cervicofacial edema involving face, tongue, larynx and neck regions resulting in rapidly progressive respiratory distress and hypoxia necessitating an urgent tracheostomy. This study was conducted to evaluate the demographic and etiological factors underlying emergency tracheostomies in consecutive one hundred patients.

SUBJECTS AND METHODS

In this descriptive study, retrospective data of one hundred consecutive cases of emergency performed tracheostomy was collected from admission register from 1st January, 2012 to 30th September, 2013. During this period of one year

and nine months, a total numbers of tracheostomies, including electively based procedures, were one hundred and sixty. We excluded the data of sixty electively performed tracheostomies and analyzed the data of one hundred remaining cases which were performed on emergency basis. Age, sex, etiological factors and outcome were noted down and analyzed manually as well as using SPSS version 17.

RESULTS

The age and gender distribution of the patients is given in table I & figure I.

All these cases were shifted from emergency department to medical units. When recovered they were admitted in ENT Departments for decanulation and closure of wound. Eighty five patients (85%) cured while 15 patients (15%) died due to its systemic effects. Eighty (80%) emergency tracheostomies were performed in operation theater of emergency department by PGRs and consultants while twenty (20%) were performed in intensive care unit. Ninety (90%) tracheostomies were performed under local anesthesia while ten (10%) were performed under general anesthesia. Eighty cases of emergency tracheostomies were performed within ten hours of admission in emergency while in twenty (20%) cases of ICU tracheostomies were performed on emergency call in already admitted cases. The etiological factors are listed in table II:

Table I: Age wise distribution of cases

Age in years	No. of cases
1 to 10	5
11 to 20	45
21 to 30	10
31 to 40	15
41 to 60	25
Total	100

Fig. I: Gender distribution of cases

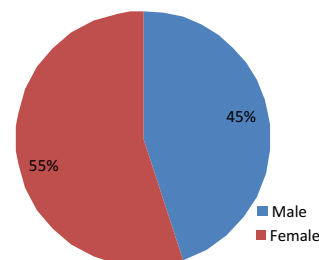


Table II: Etiological factors

Etiology	Cases	Percentage
Kala pather ingestion	35	35%
Tumors	30	30%
Head Neck trauma	11	11%
Assisting ventilation	10	10%
Corrosive intake	04	04%
Foreign bodies aspiration	04	04%
Bilateral abductor paralysis	04	04%
Acute epiglottitis	01	01%
Laryngomalacia	01	01%
Total	100	100%

DISCUSSION

Tracheostomy remains a vital life saving procedure since centuries. Earlier, before the invention of antibiotics and availability of properly manufactured tracheostomy tubes and properly established post-operative care principles and high complications rate, it could not gain popularity among surgeons. However, now a day this life saving procedure is performed in a number of indications.

PPD ingestion for suicidal intention is emerging as rapidly increasing tendency especially in young female patients in developing countries. It has been reported from different areas of India, Asia and Africa as has been well described in study of PK Jane et al in India.⁸ Their five years study showed 697 cases of PPD poisoning. They have shown its effects, being directly proportional to amount of PPD present in dye. Higher the does more severe and rapid effects are there. The earlier presentation of the patients was similar to our patients like cervicofacial edema involving tongue, face and larynx. Similarly, their study also showed that young patients of age group 15 to 25 are more involved (44.21%), with male to female ratio of nearly 4 to 1. Although in our study we could not find any male patient but all patients were female dominantly in same age group. This may be due to the fact that either these cases of male patients could not reach hospital either due to minor trauma or may have died before consulting our hospital but another reason may be that since girls spend more time in homes so they have easy way of already available dye in home. Regarding age and sex of patients our results are similar to the results of Aftab et al,¹⁰ Eddlesting et al¹¹ and Kumar et al,¹² which showed, PPD poisoning

dominantly in young female patients with earlier presentation of cervicofacial edema. Like our finding they also found young age group (15-35yrs) to be more involved. Their study, also showed dominant earlier presentation with cervicofacial edema in 73.03% of cases, in our study we found this presentation in all cases, this may be due to the fact that patients with ingestion of kala pathar containing low percentage of PPD may get minor problem and may contact local doctors instead of coming into tertiary hospital. Our study showed urgent tracheostomy in all cases while their study showed that they had to do urgent tracheostomy in 75% of cases.

Study of literature from different region of same country as well as from different countries showed that indications of emergency tracheostomies also vary for example in Tanzania ten years of study by Japhet at al,⁴ not showed any case of PPD poisoning in 214 cases of tracheostomies in ten years period. Similarly no article from developed countries showed PPD to be used for self harm.¹³ It may be due to the fact that they have hair dyes without PPD and secondly in developed countries people usually use over doses of narcotics, sedatives or hypnotics for suicidal purposes,¹⁴ thirdly preference of using it may be due to the fact that in under developed countries hair dyes use is more common in low socio-economical groups, is very cheap, easily available and lastly because of its salty taste which makes it easy to take and it is easily available in homes.

CONCLUSION

Our study showed that in majority of the patients with emergency tracheostomies were suicidal intake of dye powder containing PPD and aero cervical growths.

Patients presenting with respiratory obstruction due to advanced growths of upper aero- digestive tract, head neck trauma and cervicofacial edema due to corrosive intake or especially due to suicidal intake of dying powder containing PPD get benefit of urgently performed tracheostomy. Mortality and morbidity due to PPD intake can be reduced if district health authorities launch programmes to inform the public of keeping dying powder under strict supervision of parents.

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