

A study on tracheostomy and its indications amongst patients admitted at tertiary care teaching hospital, Bellary, Karnataka, India

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Abstract

Background: Tracheostomy is one of the oldest operations that performed as a life saving procedure and it is commonly performed for various indications and different age group. This study designed to review the indications of tracheostomy and the age group commonly involved in ENT Department at VIMS, Bellary, Karnataka. **Methods:** A case series study of 75 tracheostomised patients carried out from December 2014 to May 2016, at Department of ENT of Vijayanagar Institute of Medical Sciences, Bellary, Karnataka. Data was entered in MS Excel sheet and were analyzed in the form of percentage and proportions whenever necessary. **Results:** Upper airway obstruction was the most common indication for tracheostomy. Airway obstruction caused by tumor, trauma and infection. Tracheostomy performed for prolonged ventilation was the 2nd common indication and involved commonly age group 21-40 years. It was caused by trauma, snake bite, systemic diseases like cerebrovascular accident, infection, and organophosphorus poisoning. **Conclusion:** The most common indication for tracheostomy was upper airway obstruction due to malignancy, trauma, prolonged ventilation and infections respectively.

Key Words: Tracheostomy, Decannulation, Laryngotracheal trauma, Fazio Londe disease

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Received Date: 19/07/2019 Revised Date: 17/08/2019 Accepted Date: 05/09/2019

DOI: <https://doi.org/10.26611/10161134>

Access this article online

Quick Response Code:



Website:

www.medpulse.in

Accessed Date:
11 September 2019

INTRODUCTION

The word “Trachea” is derived from the Greek Language and originally meant rough. Other names for the trachea included “Arteria aspera”. The early history of tracheostomy starts with Galen and Aretaeus, both of whom referred to either cutting the larynx or making an incision in the arteria aspera. The earliest known references to tracheostomy are made in the Rigveda, a

sacred Hindu book, published around 2000 BC.¹ The term Tracheotomy is used to refer to the creation of a surgical opening into the trachea. Tracheostomy is used to describe the creation of a stoma at the skin surface which leads in to the trachea.² Tracheostomy is a life-saving procedure as quoted by Johannes Scultetus (1595–1645) in his book “Armamentarium Chirurgicum” when performed with an appropriate indication and surgical technique.^{3,4} In the past tracheostomy used to be reserved for severely ill patient with acute respiratory obstruction; gradually the indications for tracheostomy have been widened to include tracheobronchial toileting, intermittent positive pressure ventilation, protection against inhalation of foreign body and reduction of dead space, anaesthetic indications.⁵ In the recent years more and more airway problems are managed with either endotracheal intubation or percutaneous endoscopically guided tracheostomy.⁶ But in our country percutaneous endoscopically guided tracheostomy is not yet routinely practiced, conventional tracheostomy is practiced in vast

How to cite this article: Sher Khan, Arun Ingale. A study on tracheostomy and its indications amongst patients admitted at tertiary care teaching hospital, Bellary, Karnataka, India. *MedPulse International Journal of ENT*. September 2019; 11(3): 63-66.

<https://www.medpulse.in/ENT/>

majority of cases to manage airway problems. A conventional subhyoid tracheostomy is performed. The advances in critical care in the last half of the twentieth century have made prolonged mechanical ventilation the leading indication for tracheostomy in the current era.⁷ Tracheostomy in the pediatric age group has been reported to be different from that in adults because in pediatric patients this procedure is challenging and technically more demanding and carries higher degree of morbidity and mortality when compared to the adult population.⁸ The procedure of traditional tracheostomy is associated with numerous complications which may occur anytime during the operative and postoperative periods.^{9,10} These complications are more common in emergency traditional tracheostomy than in elective ones.⁹ Complication rates associated with tracheostomy have been reported in literature to range from 6% to 66% and the mortality rate related to tracheostomy is reported to be <2%.¹⁰ Complications and mortality associated with tracheostomy are mostly avoidable if the procedure is carefully performed and the postoperative management strictly and conscientiously followed.¹¹ With this background the present study is being performed to assess the current indications with respect to age and also demographic and pathological causes with respect to age, in our hospital in the present scenario. Hence the present study was carried out to study the common indications of the tracheostomy among the patients admitted in tertiary care teaching hospital, Bellary, Karnataka.

MATERIALS AND METHODS

A cross-sectional descriptive study was done in 75 cases of tracheostomies at Department of Otorhinolaryngology (ENT) of Vijayanagar Institute of Medical Sciences (VIMS), Bellary, Karnataka from the period of December 2014 to May 2016. Patients depending on indications, tracheostomy was done on both elective and emergency basis. Selected patients are subjected to investigations preoperative and postoperative like X-ray soft tissue neck lateral view, X-ray chest PA View, Routine Blood and Urine examination, Indirect Laryngoscopy, Video Laryngoscopy., DL Scopy and Biopsy. CT Scan Neck with Contrast.

Inclusion Criteria: Patients of both sex and all age groups presenting with stridor.

1. All patients with stridor at rest were done tracheostomy on emergency basis.
2. Patients with stridor on exertion were evaluated initially and tracheostomy was done later.
3. Patients on tracheal intubation for more than one week.

Exclusion Criteria:

1. Tracheostomy done in other hospital and then referred to VIMS, Bellary, Karnataka.

METHODOLOGY

All the patients have undergone standard surgical tracheostomy procedure in Operation Theater depending upon the indication. All the selected patients who underwent standard tracheostomy procedure were given intensive care for the first 48 hours post-operatively a cuffed portex tracheostomy tube was used in all cases, later the tube changed to Jackson's tracheostomy tube. In the post operative ward, tracheostomy care was given by the surgeon and the attending nurse, while the patient's care giver was asked to observe the same. In the ward tracheostomy care was done once in the morning and again in the evening. In the interval period patient's care giver was taught the same. If patient was to be discharged with tracheostomy tube insitu, then the Portex tube was changed to Jackson's tube.

Regular follow up of the patients was done as follows:

- Twice a week for first month.
- Once a week for second month.
- Monthly twice in the third month and finally whenever patient has any problems, he/she was asked to come for follow up.
- During follow up in Minor OT, inspection of the tracheostomy tube, cleaning and dressing was done. Advice was given as required. When the tracheostomy was no longer required the tube was occluded for 24 hrs to confirm the adequacy of the laryngeal airway. The tube was then removed and an air tight dressing applied.

Data was entered in MS Excel sheet and were analyzed in the form of percentage and proportions whenever necessary.

RESULTS

As shown in Table 1 that out of 75 study subjects, majority of them were in age group of above sixty years and very few are in pediatric age group and two third of study subjects were males and one third being female. As Table 2 shows that majority of tracheostomy performed are emergency types done under local anaesthesia using vertical type of incision among the study subjects. In our study, most common indication of tracheostomy was found to be upper airway obstruction, followed by prolonged ventilation (As shown in Table 3). Among upper airway obstruction patients, majority of them had presented with tumor mass, followed by trauma and infections (As shown in Table 4) and Out of the 9 study subjects who under went tracheostomy as part of another procedure, trauma was the commonst presentation (As shown in Table 5)

Table 1: Distribution of study subjects according to age and gender

Variable	Frequency (n=75)	Percentage
Age group		
0-10 yrs	03	4.0
11-20 yrs	02	2.6
21-30 yrs	07	9.3
31-40 yrs	17	22.5
41-50 yrs	11	14.7
51-60 yrs	14	18.7
Above 60 yr	21	28
Gender		
Male	58	77.3
Female	17	22.7

Table 2: Distribution of study subjects according to type of tracheostomy

Variable	Frequency (n=75)	Percentage
Type of tracheostomy		
Emergency	54	72.0
Elective	21	28.0
Type of anaesthesia		
General	26	34.6
Local	49	65.4
Type of incision		
Vertical	18	24.6
Horizontal	57	75.4

Table 3: Indications of tracheostomy

Indications	Frequency (n=75)	Percentage
Upper airway obstruction	48	63.3
Prolonged ventilation	19	26.3
Part of other surgeries	09	10.4

Table 4: Indications of tracheostomy under upper airway obstruction

Upper airway obstruction	Frequency (n=48)	Percentage
Tumor	27	78.95
Trauma	11	13.16
Infection	08	5.26
Fazio Londe disease	02	2.63

Table 5: Causes of tracheostomy as a part of another procedure and protection of airway

Causes	No. of patients (n=9)	Percentage
Trauma	08	88.88
Laryngeal cyst	01	11.12

DISCUSSION

Tracheostomy is a life-saving procedure as quoted by Johannes Scultetus (1595–1645) in his book “Armamentarium Chirurgicum” when performed with an appropriate indication and surgical technique.^{3,4} In our

study, over all 75 patients were included as study subjects, with a study period of 18 months, the socio-demographic profile suggests elderly age-group i.e. from 40 to 60 yrs (51.2%) and above 60 yrs were in majority, with more of male predilection due to high incidence of laryngeal and other head and neck malignancies which is found similar to study conducted by Chandrika *et al*¹² and Deepa R. *et al*¹³, Crysalde WS *et al*¹⁴. The surgical technique employed in all our patients was the transverse skin crease incision in the operating room. This is the method preferred by us whether it is an emergency or an elective tracheostomy because of the advantage of a better cosmetic result though, the vertical incision has the advantage of running in the line of the trachea, and it is easy to perform and less vascular. Similar to a Nigerian study done by B.S. Alabi *et al*¹⁵ but in contrast with Chandrika *et al*¹² and Deepa R. *et al*¹³. The most common indication in our study was found to be upper airway obstruction (63.4%), secondary to malignancy (78.3%) which is comparable with studies which is comparable with studies by few other.^{14,16} These malignancy preferred site was found to be supraglottic mass (42%) followed by pyiform sinus mass (21.3%) and glottis mass (9%). This finding is similar to study by Mahadevan M *et al*¹⁷. Higher incidence of laryngeal carcinoma in our study may also be due to the increase in the incidence of laryngeal cancer in our society due to increased consumption of tobacco and alcohol. This finding is in agreement with studies by various other authors.^{14,17} In our study female patients who had malignancies were found to have oral cavity, postcricoid and thyroid malignancies. The surgical technique employed in most of our emergency patients was vertical incision in the operation theatre as vertical incision has the advantage of running in the line of the trachea and it is easy to perform with less bleeding. This is in variance with other authors who reported use of horizontal incision more than vertical.^{13, 16, 17}

CONCLUSION

In our study, the predominant age group who underwent tracheostomy was 61-70 years with a male preponderance. The most common indication for tracheostomy was upper airway obstruction due to malignancy, trauma, prolonged ventilation and infections respectively. In our study emergency tracheostomy was more in number than elective one. Emergency procedure was predominantly done under local anaesthesia using vertical incision.

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Source of Support: None Declared
Conflict of Interest: None Declared