

## Original Research Article

# Tracheostomy in a tertiary care hospital: epidemiology, indications and complications

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## ABSTRACT

**Background:** Tracheostomy is one of the most frequently performed surgeries in the emergency department, Intensive care units and at bedside in the present scenario. The aim of our study is to outline the frequent indications, to analyse various complications and to evaluate the outcomes of tracheostomy in our setting in our Institution.

**Methods:** This retrospective study was conducted in the Department of ENT and Head & Neck Surgery, SMGS Hospital, Jammu from January 2018 to January 2020. The cases were recorded from ENT Department and also intensive medical care, intensive neonatal and pediatric care, intensive respiratory care, surgical intensive care units of our institution. We included all the emergency, elective and prophylactic tracheostomies in this group.

**Results:** Out of 100 patients included in our study, male: female ratio was 2.7:1. 61 (61%) patients were in the age group of 41 to 60 years. The mean age was 43 years. In our study 58 (58%) tracheostomies were done on emergency. 38 (38%) were done electively whereas rest 4 (4%) were done prophylactically. 37 (37%) tracheostomies were done for upper airway obstruction, followed by artificial ventilation done in 36 (36%) patients. The most indication was carcinoma seen in 17 (17%) patient followed by head injury seen in 16 (16%) patients. The most common complication was surgical emphysema seen in 8(8%) tracheostomies followed by haemorrhage in 6 (6%) tracheostomies.

**Conclusions:** Tracheostomy still remains a life saving procedure in the surgical management of airway if performed timely despite its few complications.

**Keywords:** Airway, Complication, Tracheostomy

## INTRODUCTION

Tracheostomy is a procedure to perform a persistent opening in trachea for better airway. Brasovola in 1546 AD done first tracheostomy successfully. Armand Trousseau improvised the technique in order to treat diphtheria patients with dyspnea.<sup>1,2</sup> The most common indication for doing tracheostomy initially was to relieve the upper airway obstruction. The indications have evolved gradually and it is being used increasingly as a

temporary procedure for airway access especially for anesthetic purpose and artificial ventilation. Similarly, the indication of long term or permanent tracheostomy as in cases of severe respiratory distress, sleep apnoea syndrome and terminal malignant neoplasm are also increasing.<sup>3</sup>

Tracheostomy being a simple procedure is not free from risks. Mortality rate from procedure-related complications is approximately 0.6%.

Various modifications in techniques of tracheostomy has reduced complications and deaths due to tracheostomy. The use of multidisciplinary teams and protocols for tracheostomy care can improve the quality of life of tracheostomy patients.<sup>4</sup> Aim of our study is to present an analysis of various indications and complications encountered in tracheostomized patients in our Institution.

## METHODS

This retrospective study was conducted in the Department of ENT and Head & Neck Surgery, SMGS Hospital, Jammu from January 2018 to January 2020. The cases were recorded from ENT Department and also intensive medical care, intensive neonatal and pediatric care, intensive respiratory care, surgical intensive care units of our institution. We included all the emergency, elective and prophylactic tracheostomies in this group.

Most of the cases were performed under local anesthesia except prophylactic and preoperative tracheostomies. We preferred a vertical incision from thyroid notch to suprasternal notch in emergency conditions and horizontal incision in elective cases. After reflecting skin and deep fascia, the ribbon muscles i.e., sternohyoid and sternothyroid and isthmus of thyroid were identified and either reflected or cut in midline and ligated. Trachea was identified and opened from below upwards 4,3,2 rings. Using Trousseau's tracheal dilator, the opening was dilated and tube was inserted. In temporary tracheostomy, we preferred horizontal incision in the trachea.

### Inclusion criteria

All patients who underwent tracheostomy during the study period, willing to be included in the study.

### Exclusion criteria

Patients not willing for the study and not available for follow up.

### Statistical analysis

Data was analysed with a statistical software program (SPSS Statistics for Windows version 20, Chicago, IL). All p values were calculated with one tail. P values below 0.05 were considered significant.

## RESULTS

Hundred patients were included in the study. The following observations were made.

### Age and sex distribution of patients

Out of 100 patients included in our study, 73 were male patients and 27 were females. The male:female ratio was 2.7:1 (Figure 1).

61 (61%) patients were in the age group of 41 to 60 years. 19 (19%) patients were in the age group 21 to 40 years. The mean age was 43 years. The youngest patient was 6 months old child in whom tracheostomy was done as the child presented with subglottic stenosis (Figure 2).

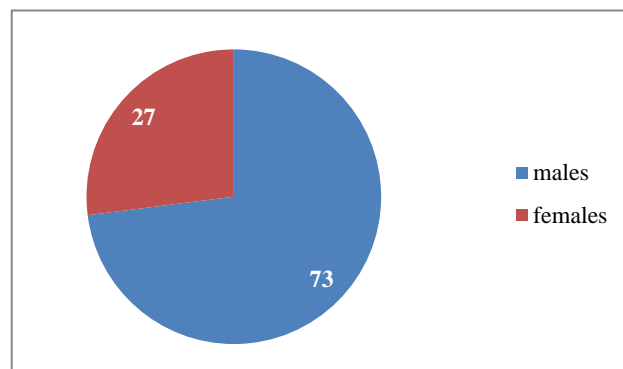


Figure 1: Gender wise distribution of patients.

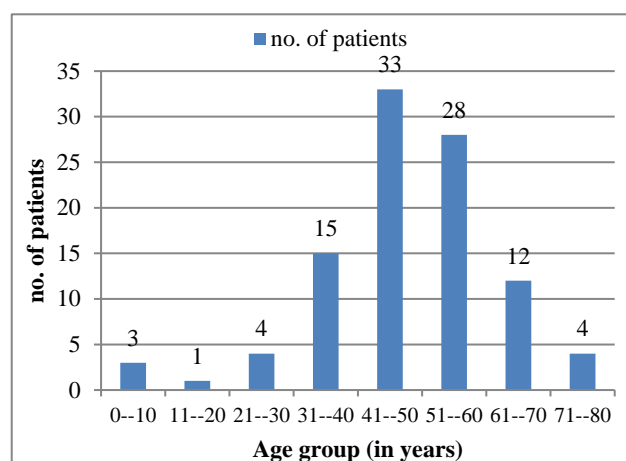


Figure 2: Age wise distribution of patients.

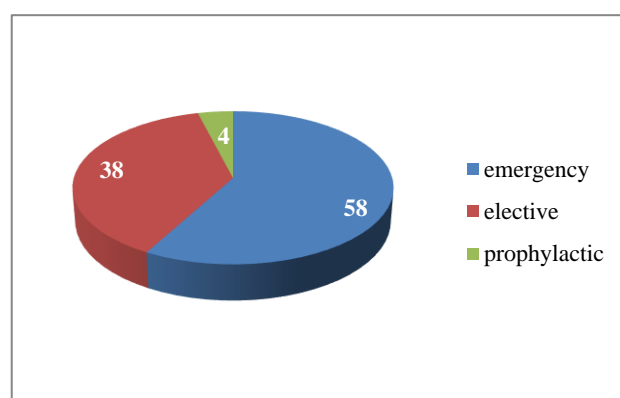


Figure 3: Type of tracheostomy.

### Type of tracheostomy (in relation to time of surgery)

In our study 58 (58%) tracheostomies were done on emergency basis in ENT, surgery emergency and pediatric emergency wings of our hospital. 38 (38%)

tracheostomies were done electively whereas rest 4 (4%) tracheostomies were done prophylactically prior to major surgeries of larynx and oral cavity (Figure 3).

### Indication of tracheostomy

Table 1 shows distribution of patients according to indication of tracheostomy. 37 (37%) tracheostomies were done for upper airway obstruction, followed by artificial ventilation done in 36 (36%) patients, tracheobronchial toilet done in 23 (23%) patients. The most common indication in our study was carcinoma seen in 17 (17%) patients. The most common patients were those with carcinoma larynx, carcinoma tongue and carcinoma buccal mucosa. The next most common indication for tracheostomy was in head injury patients done in 16 (16%) patients. Most of these patients were in ICU and tracheostomy was done for tracheobronchial toileting in these patients.

**Table 1: Distribution of patients according to indication of tracheostomy.**

Indication	No. of patients	
Upper airway obstruction (n=37)	Tumors (malignant)	17
	Trauma (neck and maxillofacial)	8
	Infections	2
	Subglottic stenosis	2
	Bilateral abductor vocal cord palsy	1
	Angioedema	1
	Foreign body airway	1
	Burns	5
Artificial ventilation (n=36)	Snake bite with neuromuscular paralysis	9
	Insecticide poisoning	6
	Seizure disorder	8
	Alcohol intoxication	13
Tracheobronchial toilet (n=23)	Head injury	16
	CVA	5
	ARDS	2
Anaesthesia (n=4)	Difficult intubation	4
Total (n=100)		100

### Complications after tracheostomy

Table 2 shows distribution of patients according to complications after tracheostomy. The most common complication in our study was surgical emphysema seen in 8 (8%) tracheostomies followed by haemorrhage seen in 6 (6%) tracheostomies.

Statistical analysis showed no significant difference in the incidence of complication between males and females, adult and paediatric patients and emergency and elective procedure.

**Table 2: Distribution of patients according to complications after tracheostomy.**

Complications	No. of patients
<b>Haemorrhage</b>	6
<b>Surgical emphysema</b>	8
<b>Infection of tracheostomy site</b>	4
<b>Tube displacement</b>	2
<b>Tube blockage</b>	3
<b>Tracheoesophageal fistula</b>	2
<b>Tracheal stenosis</b>	1
<b>Difficult decannulation</b>	2

### DISCUSSION

Since it was originally described in the first century B.C, tracheostomy is currently one of the most commonly performed operations in the critically ill patients.

Out of 100 patients included in our study, 73 were male patients and 27 were females. The male: female ratio was 2.7: 1.61 (61%) patients were in the age group of 41 to 60 years. 19 (19%) patients were in the age group 21 to 40 years. The mean age was 43 years. Costa et al, male female ratio 3.66:1 is almost equal to ours 2.7:1.<sup>5</sup> Rashid et al has shown male preponderance too.<sup>6</sup> Male preponderance in this age group may be due to their increased susceptibility to trauma and increased incidence of malignancy in males than females owing to their habits of smoking and alcohol consumption.

In our study 58 (58%) tracheostomies were done on emergency basis in ENT, surgery emergency and pediatric emergency wings of our hospital. 38 (38%) tracheostomies were done electively whereas rest 4 (4%) tracheostomies were done prophylactically prior to major surgeries of larynx and oral cavity.

37 (37%) tracheostomies were done for upper airway obstruction, followed by artificial ventilation done in 36 (36%) patients, tracheobronchial toilet done in 23 (23%) patients. The most common indication in our study was carcinoma seen in 17 (17%) patients. The next most common indication for tracheostomy was in head injury patients done in 16 (16%) patients which is comparable with studies by few other workers.<sup>7-9</sup>

The most common complication in our study was surgical emphysema seen in 8 (8%) tracheostomies followed by haemorrhage seen in 6 (6%) tracheostomies. Similar findings were observed by Goldenberg et al and Yellon in their studies.<sup>10,11</sup>

### CONCLUSION

Tracheostomy still remains a life saving procedure in the surgical management of airway if performed timely despite its few complications.

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