



CLINICAL STUDY ON TRACHEOSTOMY IN PATIENTS PRESENTING TO DEPARTMENT OF OTORHINOLARYNGOLOGY.

ENT

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ABSTRACT

Aim: To evaluate the indications and to assess the outcomes of tracheostomy in all patients presenting to department of otorhinolaryngology. **Materials And Methods:** 70 patients of age 2-78yrs attended the department of Otorhinolaryngology or referred from other departments during DECEMBER 2022 TO JUNE 2024, who underwent tracheostomy were studied for indications and followed up for complications of tracheostomy. **Result:** out of 70 study subjects, majority of them were in age group of 51-60 years (27.1%) and very few are in pediatric age group and 68 subjects were males (97.1%) and only 2 being females (2.9%). Most common indication of tracheostomy was found to be upper airway obstruction and among upper airway obstruction patients, majority of them had presented with Growth supraglottis(38.6%). Surgical emphysema (17 i.e. 24.3%) was the most common complication. **Conclusion:** In our study, the predominant age group who underwent tracheostomy was 51-60 years with a male preponderance. The most common indication for tracheostomy was upper airway obstruction due to malignancy. Surgical emphysema was the most common complication followed by peristomal infection.

KEYWORDS

Tracheostomy, Airway obstruction, growth Supraglottis, surgical Emphysema.

INTRODUCTION

Tracheostomy represents the surgical procedure that exteriorizes the trachea to the skin of the neck, to create an opening in the anterior trachea to facilitate respiration.^[1,2] It is a frequently performed procedure in the Intensive Care Unit (ICU).^[3] Mainly, tracheostomy is performed to relieve upper-airway obstruction due to surgery, tumor, foreign body, trauma, or infection, to allow easy or frequent access to the lower airway for suctioning and secretion removal, to prevent damage to the larynx and upper airway due to prolonged intubation, and to provide a stable airway in a patient who requires prolonged mechanical ventilation or oxygenation support.^[3,4] It allows early weaning from mechanical ventilation and sedation. It also reduces the length of stay and ventilator-associated morbidity.^[5]

Conventionally, tracheostomy is performed as an open surgical procedure. In 1985, Ciaglia and colleagues introduced percutaneous tracheostomy techniques.^[1] During surgical tracheostomy, a long incision (2–3 cm) is made in the anterior neck between the cricoid cartilage and the sternal notch. The skin and platysma are dissected and strap muscles are then retracted laterally which exposes the thyroid isthmus. It is followed by either division or mobilization of the thyroid isthmus as per the requirement. After achieving adequate hemostasis, the trachea is exposed with the help of a cricoid hook or lateral stay sutures, and then a small opening (stoma) is made on the trachea. The tracheostomy tube is then inserted through this stoma.^[6] Percutaneous dilatational tracheostomy (PDT) is performed using a modified Seldinger technique. In this technique, the trachea is accessed with a needle and then a guidewire is inserted and the tube is then introduced over the guidewire after dilation.^[6] Studies have reported PDT to be superior to conventional surgical tracheostomy.^[7] Usually, in the tracheostomy procedure, the creation of a stoma is temporary. After a few days or weeks of clearing airway obstruction, the tube is removed and the stoma is closed using an air-tight dressing or sutures. In permanent tracheostomy, the tube is not removed and the stoma is maintained throughout the patient's life.^[8]

Tracheostomy is commonly performed in patients having prolonged respiratory failure, decreased level of consciousness, poor airway protective reflexes, and trauma and medical illness resulting in severe alterations in physiology.^[3,9] It is observed that tracheostomy is usually required in approximately 10% of patients on mechanical ventilation for more than 3 days.^[3,10] A study has found that among the children

undergoing tracheostomy, 62% of children were having prolonged intubation.^[11] Patients with subglottic stenosis, bilateral recurrent laryngeal nerve paralysis or collapse, total laryngectomy, laryngotracheal resection, stage laryngeal reconstruction, and severe obstructive sleep apnea syndrome require permanent tracheostomy.^[8]

The complications associated with tracheostomy are rare. The incidence of complications is higher among pediatric patients compared to adult patients.^[11] A few complications that have been reported include pneumothorax, intraoperative bleeding, infection, acute obstruction of the tracheostomy tube by mucus or blood, tube dislodgement, vocal cord dysfunction, vocal cord dysfunction, subglottic stenosis, pressure necrosis due to over-inflation of the cuff of the tracheostomy tube, persistent Tracheocutaneous Fistula, Tracheoesophageal fistula, and Tracheoinnominate fistula and scarring.^[1,2]

METHODS

The present study was conducted as Prospective, observational study to evaluate the indications of tracheostomy and the complications of tracheostomy in patients presenting to Department of Otorhinolaryngology, Gandhi Medical College, Hamidia Hospital, Bhopal (Madhya Pradesh) from DEC 22 to JUNE 24 (18 months). Follow-up was scheduled at 1 month and then 3 months after tracheostomy.

Inclusion criteria

1. All age groups
2. All genders
3. Patients willing to participate

Exclusion criteria

1. Patient with tracheostomy done in some other hospital.

This study included 70 patients of all age groups requiring tracheostomy.

Most patients belonged to the age group of 51-60 years. The most common indication was upper airway obstruction. The majority of the patients underwent emergency tracheostomy.

Sampling technique- Convenience sampling technique.

Methodology-

The study was commenced after approval from the institutional ethics committee. Only the patients meeting the inclusion criteria and providing written informed consent were included in the study.

The data was recorded in a predesigned proforma.

Ethical considerations- The study was begun after approval from the institutional ethics committee of Gandhi Medical College, Bhopal. The participants were informed about the purpose of the study. A brief description of the procedures involved was given. The participants were informed that their participation is voluntary and they have the right to quit at any point in time. Written informed consent was obtained from the subjects willing to participate in the study. Confidentiality of the information was maintained.

RESULTS

Age

The study included 70 subjects with a mean age of 47.085 ± 21.970 years (range= 2 to 75 years). Most subjects belonged to the age group of 51- 60 years (27.1%), followed by 61-70 years of age (21.4%).

Table 4. Age-wise Distribution OfThe Study Subjects.

Age group	Number of subjects	Percentage
1-10 years	8	11.4
11-20 years	1	1.4
21-30 years	12	17.1
31-40 years	5	7.1
41-50 years	1	1.4
51-60 years	19	27.1
61-70 years	15	21.4
71-80 years	9	12.9
Total	70	100.0

Gender

A vast majority of the subjects were males (97.1%) there were only 2 (2.9%) females.

Table 5. Gender-wise Distribution OfStudy Subjects.

Gender	Number of subjects	Percentage
Male	68	97.1
Female	2	2.9
Total	70	100.0

Diagnosis

The most frequent diagnosis was growth in supraglottis [27 (38.6%)], followed by growth in Pyriform fossa [8 (11.4%)], followed by Laryngotracheal trauma [7 (10%)].

Table 7. Distribution Of Study Subjects According To The Diagnosis.

Diagnosis	Number of subjects	Percentage
Growth Supraglottis	27	38.6
Growth Pyriform Fossa	8	11.4
Laryngotracheal Trauma	7	10.0
Generalised Tetanus	4	5.7
Growth Glottis	4	5.7
Diphtheria	3	4.3
Emphysema	2	2.9
Bilateral Abductor Palsy	2	2.9
Cortical Venous Thrombosis	2	2.9
Guillaine Barre Syndrome	2	2.9
IP Bleed	2	2.9
Nodular Goitre	2	2.9
Septicaemia With Meningitis	2	2.9
Supraglottic Stenosis	2	2.9
Meningitis	1	1.4
Total	70	100.0

Complications

The rate of occurrence of complications was 50%. The most frequently occurring complication was Surgical emphysema (24.3%), followed by peri-tubal infection (11.4%), followed by tubal block (5.7%), and haemorrhage (5.7%), followed by apnoea (2.9%), delayed haemorrhage (2.9%) and Trachea-oesophageal fistula (2.9%).

Table 9. Distribution OfStudy Subjects Based On The Presence Of

Complications.

Presence of complications	Number of subjects	Percentage
Yes	35	50.0
No	35	50.0
Total	70	100.0

DISCUSSION

Although tracheostomy is a safe procedure and the incidence of complications is very low, however, the safety of patients with tracheostomy outside the ICU is a matter of concern. [Durbin CG Jr] Otorhinolaryngologists perform a significant proportion of surgical tracheostomies in their department, but data on indications and complications in tracheostomies performed in the Otolaryngology department are scarce. [Ruohoallo] Therefore, in the present study, an evaluation of the indications of tracheostomy in all patients presenting to the Department of Otorhinolaryngology and an assessment of the outcome and complications of tracheostomy in those patients have been done.

In the present study, the mean age of the subjects was 47.085 ± 21.970 years. Most subjects belonged to the age group of 51- 60 years (27.1%). The number of adult patients was more than the number of pediatric patients. Similarly, Chavan RP et al. (2019), Nyanzi DJ et al. (2023) also reported greater number of adults compared to children among patients undergoing tracheostomy. [ChavanRP][NyanziDJ]

The majority of them were males (97.1%). Fasunla JA et al. (2010), Chavan RP et al. (2019), and Nyanzi DJ et al. (2023) also reported a greater number of males compared to females among those requiring tracheostomy. [FasunlaJ]

Indication

In the present study, the commonest reason for tracheostomy was difficulty in breathing mainly because of growth in supraglottis (38.6%) and growth in Pyriform fossa (11.4%). Similarly, most of the studies, reported upper airway obstruction to be the most common reason to perform tracheostomy. [ZenkiJ][ItamotoCH][AdedejiTO]

Complications

The present study found that the most frequently occurring complication was Surgical emphysema (24.3%), followed by peritubal infection (11.4%), followed by tubal block (5.7%), and hemorrhage (5.7%), followed by apnoea (2.9%), delayed hemorrhage (2.9%) and Trachea-oesophageal fistula (2.9%). The findings of the present study were in coherence with the previous studies.

Study	Complications
Present study	Surgical emphysema (24.3%), per-tubal infection (11.4%), tubal block (5.7%), hemorrhage (5.7%), apnoea (2.9%), delayed hemorrhage (2.9%), and Trachea-oesophageal fistula (2.9%).
Itamoto CH et al. (2010)	cannula obstruction (8.6%), accidental cannula loss (5.2%), death (3.4%), aspiration bronchopneumonia (3.4%), tracheomalacia (1.7%), pneumothorax (1.7%) and false course of the cannula (1.7%).
Fasunla JA et al.	supra stomal granulation tissue (5.47%), tracheal stenosis (0.78%), dependence (0.78%), stomal infection (4.30%), and impacted tracheostomy tube (0.39%).
Adedeji TO et al. (2014)	tracheostomy dependence (9.6%), peri-stoma granulation (5.8%)
Chavan RP et al. (2019)	tubal occlusion (7.5%) followed by Granulations around stoma (2.5%), Tracheal stenosis (1.25%), tracheoesophageal fistula (0.4%)

LIMITATION

It was single centred study, lacks generalizability, no data on percutaneous tracheostomy,short study duration and small sample size

CONCLUSION

Tracheostomy is a life-saving procedure for upper airway obstruction and laryngotracheal obstruction and an elective procedure for prolonged ventilation. There are various techniques of tracheostomy and every technique has its own associated complications but in expert hands and with careful surgery these complications can be prevented. The commonest complication is surgical emphysema which can be managed with proper care of tracheostomy and postop management.

It can be concluded that:The most common indications of

tracheostomy are difficulty breathing (68.5%), prolonged ventilation (14.3%), alleged history of trauma (12.9%) and difficulty in swallowing (4.3%).

The occurrence of complications has no significant association with age, gender, and type of tracheostomy.

Conflict Of Interest- NONE

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