IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 17, Issue 10 Ver. 9 (October. 2018), PP 44-47 www.iosrjournals.org

A Study of Indications, Type and Complications of Tracheostomy in a Teritiary Referral Hospital.

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Abstract

AIMS

1.To identify the common indications for tracheostomy.

2. To know the type of tracheostomy required

3. To study the complications in tracheostomy

MATERIALS AND METHODS: *This study was conducted in the Government ENT tertiary referral Hospital in the state of Andhra Pradesh during April 2016 to March 2018.A total number of 100 cases of Tracheostomy were selected in this group, they were distributed according to gender variation ,age variation, indication for tracheostomy, the level of tracheostomy performed and the time of tracheostomy performed and the complications came across.*

OBSERVATION OR RESULTS: *Males needed tracheostomy more than females in the ratio of 2.84:1 (74:26). Most of the cases required tracheostomy in emergency (66%). Later, 26 cases were posted as elective and 8 cases as prophylactic preoperatively for major surgeries of the larynx. The major indication was carcinoma larynx 44%, followed by prolonged intubation in head injury 9%, post irradiated neck malignancy 8%, carcinoma hypopharynx 7%, thyroid malignancy 6%, preoperative hemi laryngectomy 5%, cerebro vascular accidents 4%, preoperative laryngofissure, corrosive acid poisoning and prolonged intubation in poisoning with each 3%,and laryngeal injury in hanging, foreign body airway tract and bilateral abductor palsy with each 2%.The rare indications were subglottic stenosis and juvenile laryngeal papilloma 1%.*

The major complication was infection of tracheal stoma site(8%) followed by the Surgical Emphysema (6%) , Dysphagia (5%) , hemorrhage(3%) , trachea esophageal fistula(2%). Aspiration pneumonia, displaced tracheostomy tube and tracheal stenosis with each 1%.

CONCLUSION: *In our study, males (74%) evolved more in number than females(26%) for tracheostomy(2.84:1).We performed emergency tracheostomy(66%) more than elective(26%) and prophylactic(8%).The commonest indication proved in our institution was carcinoma larynx(44%), later was prolonged intubation in head injury(9%).The frequently encountered complication was infection at stoma and skin around(8%)and next is surgical emphysema(6%).*

Key Words: *Tracheostomy , Neck Injury, Tumors of Larynx, Intensive Care Unit.*

Date of Submission: 12-10-2018 Date of acceptance: 27-10-2018

I. Introduction

Tracheostomy is a procedure to perform a persistent opening in trachea for better airway.

Brasovala in 1546 AD done first tracheostomy successfully. Fabricus in 1600 AD used a tube in the stoma. Chevalier Jackson in 1932, introduced a standardized technique of tracheostomy and designed a tracheostomy tube .

Jackson's tube are mostly used for prolonged and permanent tracheostomy .It has a locking facility to fix the inner tube, which is still commonly used as it is economic and comfortable for both patient and nursing attendant to maintain it.

Fuller's tube is used in emergency and temporary tracheostomy for a short period as its introduction is easy because of bifid outer tube and patient can speak normally as there is an opening in the inner tube

Tracheostomy is one of the commonest emergency surgeries performed in Ear,Nose and Throat department. The indications [1] to do Tracheostomy are divided into1. Infective 2.Traumatic 3.Neoplastic 4.Prolonged Intubation in Intensive Care Units 5.Corrossive Poisonings 6.Burns 7.Foreign body in Airway

8.Prophylactic pre-operative Major surgeries in Head and Neck 9.Congenital defects of Larynx and Trachea.10. Subglottic Stenosis.11.Anaphylactic Angioneurotic edema.

Tracheostomy can be classified according to the time of surgery[2] into

1. Emergency Tracheostomy 2. Elective Tracheostomy[3] 3. Prophylactic Tracheostomy

Normally the Tracheostomy is performed in the 2,3,4 Tracheal rings. Depending upon the site of tracheal opening it is divided in to

A. High Tracheostomy B. Mid Tracheostomy[4] C. Low Tracheostomy

We also Classify into Permanent Tracheostomy and Temporary Tracheostomy depending upon the duration in Particular Indication

The complications [2,5,6] of tracheostomy are1.Hemorrhage 2. Infection of tracheal stoma 3.Injury to great vessels, apex of lung, recurrent laryngeal nerve and esophagus 4. Surgical emphysema 5.Apnoea 6.Tracheomalacia 7.Tracheal stenosis 8.Displacement of tube 9.Tracheoesophageal fistula 10.Aspiration pneumonia 11.Dysphagia.

II. Aims And Objectives

1.To identify the common indications for tracheostomy.
2. To know the type of tracheostomy required.
3. To study the complications in tracheostomy.

III. Materials And Methods

This study was conducted in a tertiary referral Government ENT hospital of Andhra Pradesh for a period of 2 years i.e., April 2016 to March 2018.The cases was recorded from ENT Department and also Intensive Medical care[7], Intensive Neonatal and pediatric Care [8], Intensive Respiratory Care, Surgical Intensive Care Units of our Institution. We included all the emergency, elective and prophylactic tracheostomies in this group.

All the cases were thoroughly examined preoperatively nose ,oral cavity , hypopharynx and larynx with headlight and 0^0 and 45^0 endoscopes.In the possible areas we did videolaryngoscopy too.

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 the Tracheostomies performed in our Hospital and institution were included in our study.

OBSERVATION OR RESULTS

SEX DIFFERENTIATION

S NO	SEX	NUMBER	PERCENTAGE
1	MALE	**74**	**74**
2	FEMALE	**26**	**26**

In our study, more males needed tracheostomy when compared to females in the ratio of 2.84:1 (74:26).

TYPE OF TRACHEOSTOMY

(IN RELATION TO TIME OF SURGERY)

S.NO	Type of Tracheostomy	No. of Cases	Percentage
1	**Emergency**	**66**	**66**
2	**Elective**	**26**	**26**
3	**Prophylactic**	**8**	**8**

Most of the cases required tracheostomy in emergency operation theatre and in Intensive Care Unit wards (66%). Later, 26 cases were posted as elective in our regular operation theatre. 8 cases were posted as prophylactic tracheostomies preoperatively for major surgeries of the larynx.

(IN RELATION TO SITE OF TRACHEAL STOMA)

S.NO	Type of Tracheostomy	No. of Cases	Percentage
1	**High**	**1**	**1**
2	**Mid**	**93**	**93**
3	**Low**	**6**	**6**

Almost 93% of cases, were performed primarily over the third ring of trachea i.e., mid tracheostomy.6 cases required low tracheostomy over the fifth tracheal ring particularly in thyroid carcinoma. In 1 patient with lower lobe thyroid malignancy extended upto the suprasternal notch, we managed with high tracheostomy on first tracheal ring.

INDICATIONS FOR TRACHEOSTOMY

S.NO	INDICATIONS	NUMBER	PERCENTAGE
1	CARCINOMA LARYNX	44	44
2	JUVENILE LARYNGEAL PAPILLOMA	1	1
3	PREOPERATIVE HEMILARYNGECTOMY	5	5
4	PREOPERATIVE LARYNGOFISSURE	3	3
5	FOREIGN BODY AIRWAY TRACT	2	2
6	CORROSIVE ACID POISONING	3	3
7	PROLONGED INTUBATION IN HEAD INJURY	9	9
8	LARYNGEAL INJURY IN HANGING	2	2
9	PROLONGED INTUBATION IN POISONING	3	3
10	SUBGLOTTIC STENOSIS	1	1
11	THYROID MALIGNANCY	6	6
12	CARCINOMA HYPOPHARYNX	7	7
13	CEREBRO VASCULAR ACCIDENTS	4	4
14	POST IRRADIATED NECK MALIGNANCY	8	8
15	BILATERAL ABDUCTOR PALSY	2	2

The major indication in our study was carcinoma larynx with 44%, followed by prolonged intubation in head injury with 9% and post irradiated neck malignancy with 8%, carcinoma hypopahrynx with 7%, thyroid malignancy with 6%, preoperative hemilaryngectomy with 5%, cerebrovascular accidents with 4%. Preoperative laryngofissure, corrosive acid poisoning and prolonged intubation in poisoning with each 3% followed by laryngeal injury in hanging, foreign body airway tract and bilateral abductor palsy with each 2%.The rare indications were subglottic stenosis and juvenile laryngeal papilloma with each 1%.

COMPLICATIONS

S.NO	COMPLICATIONS	NUMBER	PERCENTAGE
1.	HEMORRHAGE	3	3
2.	INFECTION OF TRACHEOSTOMY SITE	8	8
3.	SURGICAL EMPHYSEMA	6	6
4.	INJURY TO GREAT VESSELS	0	0
5.	INJURY TO APEX OF LUNG	0	0
6.	TRACHEO ESOPHAGEAL FISTULA	2	2
7.	ASPIRATION PNEUMONIA	1	1
8.	DISPLACED TRACHEOSTOMY TUBE	1	1
9.	DYSPHAGIA	5	5
10.	TRACHEAL STENOSIS	1	1
11.	TRACHEOMALACIA	0	0
12.	TRACHEAL APNOEA	0	0

The major complication in our observation was found to be the infection of tracheal stoma site and skin(8%) followed by the Surgical Emphysema (6%), Dysphagia (5%), hemorrhage(3%) and trachea-esophageal fistula(2%). Aspiration pneumonia, displaced tracheostomy tube and tracheal stenosis with each 1%

IV. Discussion

In this series the males (74%) attended more than females(26%) for tracheostomy as smoking ,alcohol consumption and chewing of tobacco and its products is more common in males. Liliana Costa et al[9]., male female ratio 3.66:1 is almost equal to ours 2.84:1. Md.Harun-or-Rashid et al[10].,has shown male preponderance too.Emergency tracheostomy[10] (66%) was evolved as a commonest choice in relation to time of surgery for stridor, later is the elective (26%) and prophylactic(8%) for preoperative laryngeal surgeries.

Most of the cases were managed with mid tracheostomy (93%) done over 3rd ring in emergency and elective cases with carcinoma of larynx and hypopharynx and for prolonged intubation. In one case, high

tracheostomy over 1st tracheal ring was performed as it was a carcinoma of thyroid extending upto suprasternal notch. Low tracheostomy was needed in 6 % in injuries and malignancies of neck.

The commonest indication for tracheostomy in our series was carcinoma larynx(44%) as smoking, alcohol and chewing of tobacco are the predisposing factors. Liliana Costa et al[9] showed 44.6% which is very much similar to our study. The second was prolonged intubation in head injury(9%), followed by post irradiated neck malignancy(8%), carcinoma hypopharynx (7%), thyroid malignancy (6%), preoperative hemilaryngectomy(5%) and cerebro vascular accidents (4%). Preoperative laryngofissure, corrosive acid poisoning and prolonged intubation in poisoning were each with 3%. Foreign body airway tract, laryngeal injury in hanging and bilateral abductor palsy were with 2% each. At last the Juvenile laryngeal papilloma and subglottic stenosis were 1%.

The most commonest complication was infection at the stomal site and skin around (8%) due to continuous pouring of secretions and also negligence of patients and their attendants in maintaining clean and healthy stoma. Mehta et al[11]., gave 12% and Md.Harun-or-Rashid et al[10] 6% infection which varies from our study.

The second commonest complication was surgical emphysema with 6%, which was managed by removing the sutures. Md.Harun-or-Rashid et al[10] has shown emphysema 6% which is similar to ours. Mehta et al[11]., gave 14% which varies with us.

The dysphagia due to long length tube and also variant curve of the tracheostomy tube which impinges over the posterior wall of the trachea and also esophagus which was complained by 5% in our study.

Tracheoesophageal fistula(2%) arised in post irradiated malignant cases followed by aspiration pneumonia, displaced tracheostomy tube and tracheal stenosis with each 1%

We have not come across any rare complications like tracheal apnoea, tracheomalacia, injury to great vessels and apex of lung

V. Conclusion

In our study, males (74%) evolved more in number than females (26%) for tracheostomy(2.84:1).We performed emergency tracheostomy(66%) more than elective(26%) and prophylactic(8%).The commonest indication proved in our institution was carcinoma larynx(44%), followed by prolonged intubation in head injury(9%).The frequently encountered complication was infection at stoma and skin around(8%), next was surgical emphysema(6%).

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Dr.P.Rambabu.. "A Study of Indications, Type and Complications of Tracheostomy in a Teritiary Referral Hospital.. " IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 17, no. 10, 2018, pp 44-47