COMPLICATIONS OF EMERGENCY TRACHEOSTOMY

Asmatullah, Inayatullah, Ghulam Rasool, Mohtasim Billah

Postgraduate Medical Institute,
Lady Reading Hospital,
Peshawar

ABSTRACT

Objective: To find various complications of tracheostomy and their causes and means/ways for there preventions.

Material and Methods: This study was conducted from 1st March 1996 to 28th February 1997 at Post-Graduate Medical Institute Govt: Lady Reading Hospital Peshawar. This study included fifty patients with respiratory distrees due to various reasons. All the tracheostomies were performed in OT either under General Anesthesia or local Anesthesia. In 68% patients Portex cuffed tracheostomy tubes were used and in 32% of cases silver tubes were used.

Results: Comment operative complications were excessive bleeding 6%, cardiac arrests 4% Pneumothorax and surgical emphysema 2% each. Post operative complication were tube obstruction 6% infection 4%, accidental decanulation, tracheal stenosis, difficult recanulation and keloid formation 2% each.

Conclusion: Haemorrhage is the most common intra operative complication, which could be prevented/reduced by good surgical techniques. While tubal obstruction is the commonest postoperative complication which needs meticulous postoperative care.

Key words: Tracheostomy, complications; Respiratory distress.

INTRODUCTION

Tracheostomy has been carried out all over the globe for more than 2000 years.[1] It is a life saving procedure when performed with an appropriate indication and surgical technique[2,3]. The morbidity and mortality associated with tracheostomy itself is quite low in present times. It is a common procedure in practice for relieving upper airway obstruction, for intermittent positive

pressure ventilation[4] and lung toilet purposes[5]. There are many types of tracheostomies like elective, emergency, permanent, and percutaneous dilatational tracheostomy[6]. Early tracheostomy shortens days on the ventilator, intensive care unit and hospital stay[7], The incidence of nosocomial pneumonias is significantly less in patients undergoing early tracheostomy[8,9,10]. The procedure of tracheostomy is prone to too many complications. These complications are more in emergency that in elective one[11]. The complications can be divided into intra operative and postoperative. Intra operative complications include haemorrhage, cardiac arrest, respiratory arrest, damage to vital structures, apnoea, air leak, while postoperative include accidental recanulation, tube dislodgement, obstruction, infection[11], surgical emphysema, pneumothorax, sub-glottic stenosis, tracheal stenosis, fistula and difficult recanulation. Rare complication is tracheoinnominate artery fistula[12] leading to fatal haemorrhage.

MATERIAL AND METHODS

This is a study of 50 patients undergoing emergency tracheostomy at the department of ENT and Head and neck Surgery at PGMI LRH Peshawar, from 1st March 1996 to 28th February 1997. The selection criterion was respiratory distress requiring urgent intervention. Detail history and examinations were performed to justify for emergency tracheostomy. The tracheostomy was performed mainly under local anaesthesia (88%)

SEX DISTRIBUTION OF PATIENTS

Sex	No	%age
Male	35	70
Female	15	30
Total	50	100

TABLE 1

AGE DISTRIBUTION OF PATIENTS

Age in years	No of patients	%age
0-9	13	26
10-19	8	16
20-29	12	24
30-39	10	20
40-and above	7	14
Total	50	100

TABLE 2

or general anaesthesia (12%). In 45 (90%) of the cases vertical incision was given for rapid access to the trachea while in 5 (10%) of the cases horizontal incision was give for cosmetic purposes. We used Portex tube in (68%) and Silver tube in (32%) of the cases. Portex tube as it contains cuff, which can be deflated to prevent blood aspiration, was used in cases of road traffic accidents.

RESULTS

Of the 50 patients in the study, 35 were male (70.0%) and 15 female (30%).

Their ages ranged from 1-year up to 80 years. Thirteen of the patients were under the age of ten. Majority of the patients were between the ages of 15 and 40 years (Table 2).

In adults common indications were road traffic accidents (30%), fire arm injuries 20% and growth larynx 6%. In children tracheostomies were done for foreign body bronchus 8%, diphtheria laryngotracheobronchitis 8%, respiratory papillomas 6% and subglottic stenosis 4% (Table 3).

Intraoperative complications occurred in 7 cases (14%); which were excessive bleeding 3 cases (6%), followed by cardiac arrest 2 cases (4%) pneumothorax and surgical emphysema 1 case (2%) each. (Table 4).

INDICATIONS OF TRACHEOSTOMY

Causes	No	%age
Road. T. Accidents	15	30
Fire arm injuries	10	20
Laryngotracheobronchitis+ Diphtheria	4	8
Recurrent Respiratory Papillomatosis	3	6
Post thyroidectomy	3	6
Congenital Sub-glottic stenosis	2	4
Blunt trauma larynx	2	4
Cut throat	2	4
Post Angiofibroma excision	1	2
Dog bite	1	2
Total	50	100

TABLE 3

The post operative complications occurred in 9 cases (18%) which were tube obstruction 3 cases (6%), followed by stomal infection 2 cases (4%), accidental decanulation, difficult recanulation, tracheal stenosis and keloid formation occurred 1 case (2%) each. (Table 5).

DISCUSSION

The frequency of complications in our study was 32%. Hadi and Ikram (1995) have reported 45% of complications in their patients who underwent tracheostoy[11], while

INTRA-OPERATIVE COMPLICATIONS n=7

Complications	No	%age
Excessive bleeding	3	6
Cardiac arrest	2	4
Pneumothorax	1	2
Surgical emphysema	1	2
Total	7	14

TABLE 4

POST-OPERATIVE COMPLICATIONS (n=9)

Complications	No	%age
Tube obstruction	3	6
Infection	2	4
Accidental recanulation	1	2
Tracheal stenosis	1	2
Difficult recanulation	1	2
Keloid formation	1	2
Total	9	18

TABLE 5

Zaidi (1992) has reported 15.23% complication rate in his study[13]. Manzoor et al. (2000) reported the rate of complications as 27.2%[1]. The reason for high frequency of complications in our study was that these tracheostomies were performed in emergency situation and in less favourable conditions. In our study 7 (14%) patients had intraoperative while 9 (18%) had postoperative complications. Hawkins and William's (1976) reported 14% operative and 22% postoperative complications[14]. Freezer et al. (1990) reported two out of 142 tracheostomy related deaths[15].

In our study, excessive bleeding (6%) was the most common per-operative complication. The reason is that, patients were in respiratory distress and the prime aim was the establishment of an airway. Although we used vertical incision for rapid access to the trachea, the bleeding was due to damage to anterior jugular vein and vessels in the strap muscles. They were ligated with 2/0 chromic catgut. There was no damage to the thyroid isthmus, as it was retracted upward for making a hole in the trachea. Kremer et al (2002) observed bleeding as a most frequent early complications of tracheostomy[16]. Two patients (4%) went into cardiac arrest during tracheostomy, but they were immediately resuscitated with the help of anaesthesia team. Immediate intubation was done and once the patient's condition was stabilised

then tracheotomy was performed under general anaesthesia.

Simma et al (1994) noticed pneumothorax in 7.4%, tube obstruction in 10 % patients with cardiorespiratory arrest in 3.7%; dislocation of the tube in 5.5% patients[17].

Pneumothorax occurred in one patient (2%) in our study. It was a seriously ill child of 5 years age in severe respiratory distress due to laryngo-pharyngeal diphtheria. Tracheostomy was done under local anaesthesia. But the patient was not relieved of respiratory distress. X-ray chest was done and it showed pneumothorax on the right side. Cardiothoracic Surgeon was called upon and he did chest intubation, which was connected with under water seal. Ameye et al (1994) has reported the incidence of pneumothorax in children as 5.8 - 10%[18] while Berrouschot et al. (1997) has reported one death (1.27%) due to tension pneumothorax[19].

Surgical emphysema was noticed in one patient (2%). The cause of surgical emphysema was misdirected tracheostomy tube due to excessive bouts of coughing. Guo et al (1993) has reported surgical emphysema in 2.5%[20], while Zaidi (1992) has reported 1.5 % incidence in his cases[1]. Tube obstruction was major postoperative complication in our study (6%) with 2% mortality. Tracheostomy bypasses nose and the humidification and air-conditioning function of the nose is lost leading to dryness of tracheal and bronchial secretions. This complication can be prevented by vigilant postoperative care. Shinkwin and Gibbin (1996) observed this complication in 19.2% and mortality due to tube obstruction of 1.7%[21]. Zaidi (1992) has reported tube obstruction in 2.29% of cases[1].

Stomal infection was noticed in 4% of our cases. There was mild to moderate cellulitis, oedema and discharge from the stomal side. Both patients responded well to broad-spectrum antibiotics. Guo (1993) reported stomal infection in 5% while Hadi and Ikram (1995) has reported high incidence of stomal infection in their patients[11]. Dunham and LaMonica (1984) observed infections in 54% of their patients who underwent tracheostomy[22].

Accidental recanulation occurred in one (2%) patient who was a child having respiratory papillomatosis, the patient survived due to stay sutures in the trachea, due to which easy re-insertion of tracheostomy tube was possible at the bed side of the patient. Miller et all (1995) has reported accidental recanulation in 24% of patients. Difficult recanulation was noticed in one (2%) patient. He was a child of subglottic stenosis. Recanulation was tried 6 months after tracheostomy but was not successful. Bronchoscopy was performed and the subglottic stenosis was confirmed and there were no granulation tissue or collapse of the trachea. Saati et al. (1993) has stated recanulation difficulty in the paediatric age group as an acknowledge complication after tracheostomy[23]. Tracheal stenosis occurred in 2% of our patients, which was managed by serial dilatation. The low incidence of tracheal stenosis in our series was due to use of proper size Portex tracheostomy tube and comparatively shorter duration for which tube was kept. Hill et al. (1996) observed this complication in 19% and long-term symptomatic tracheal stenosis in 3.7%[24]. Farnandez et al (1996) has reported tracheal stenosis in 0.5% of their cases[25]. Keloid formation is a rare complication, which occurred in one (2%) of our patients.

CONCLUSION

The most common intra operative complication is haemorrhage, which can be prevented by good surgical technique while postoperative complication is tube obstruction which needs meticulous post operative care.

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Address for Correspondence:
Dr. Asmatullah,
ENT Surgeon,
DHQ Hospital Timergara,
Dir (NWFP)