

Operative complications of tracheostomy

Faheem Ahmed Khan, S. Khalid Ashrafi, Hina Iqbal, Zahid Sohail, Wadood

Abstract:

Objective: To evaluate the operative complications of tracheostomy operation on designed proforma at a tertiary care hospital.

Study Design: It was a prospective descriptive study.

Setting and duration: Department of Ear, Nose, Throat, Head and Neck Surgery, Karachi Medical and Dental College and Abbasi Shaheed Hospital, Karachi from 1st July 2009 to 5th July 2010.

Methodology: All the cases in which tracheostomy was performed during this period were included in this study. Various operative complications of tracheostomy were recorded in predesigned proforma.

Results: The study showed that among 106 patients, 93 were males, of which complication rate was 7.5%. The maximum incidence of complications was noted between the 31-45 years of age. 57 tracheostomy were done in emergency. Higher frequency of operative complications was recorded in prolonged intensive care unit patients. Frequently recorded complication was hemorrhage in 06 cases.

Keywords: Tracheostomy Complications, Tracheostomy, Long-term mechanical ventilation, Upper airway obstruction

Introduction:

Tracheostomy is one of the oldest surgical procedures known¹. This technique of slashing the throat to save life was known as semi-slaughter. However once the technique was perfected, the opportunities it offered for medical heroism ensured its place in the surgical armamentarium, such that Fabricius could write in the 17th century, "this operation rebounds to the honor of the physician and places him on a footing with the gods". The word tracheostomy is derived from two Greek words meaning 'I cut trachea'². The word tracheostomy was first used by Heister in 1739¹. In 1909, it was Chevalier Jackson who refined the technical aspects of the procedure and described it in detail³.

The indications of tracheostomy includes: long term mechanical ventilation, weaning failure,

upper airway obstruction, bronchial toilet⁴ and as a part of another operation⁵. Tracheostomy is frequently performed as an elective therapeutic procedure⁶, while complication is seldom and generally comfortable, fatal complications can sometimes occur⁷. Complication rates quoted in the literature ranges 6 to 66 percent for surgical tracheostomy⁸. This includes damage, injury of the laryngeal or tracheal mucosa and forced insertion of the cannula contributes to development of early (Pneumomediastinum, pneumothorax, hemorrhage, wound complication, misplacement of cannula) and late (tracheal stenosis, laryngeal stenosis, failed reinsertion of cannula) complication⁹. The mortality of tracheostomy is reported to be less than 2%⁶.

Materials and methods:

This study was carried out at Department of Ear,

Karachi Medical & Dental College and Abbasi Shaheed Hospital, Karachi
FA Khan
SK Ashrafi
H Iqbal
Z Sohail
Wadood

Correspondence:

Dr. Faheem Ahmed Khan
Senior Registrar, ENT
Department
Karachi Medical & Dental
College and Abbasi
Shaheed Hospital, Karachi
Cell: 0300-2148912
Fahimk1@Yahoo.Com

Nose, Throat, Head and Neck Surgery, Karachi Medical and Dental College and Abbasi Shaheed Hospital, Karachi within the duration of 1 year from 1st July 2009 to 5th July 2010. Within this time frame all the cases in which tracheostomy was performed were included in this study. All the operative complications of the procedure were recorded in pre designed performa. Also noted was the fact the whether it was done as an emergency procedure at trauma centre with airway emergency or required by surgical and medical intensive care department as elective procedure were selected for the study. Nearly all the ICU patients had deranged hematological and biochemical profile.

Results:

In the current study of 106 cases, the male female ratio was 1.4:1. The overall frequency of various complications was 11.32% in our study. Majority of the cases were males. Seven out of twelve cases in whom complication were recorded belonged to third and fourth decade of life accounting for 6.60% (Figure 1). Emergency tracheostomy was done in 57 cases (53.77%), out of which 3 (2.83%) cases suffer complications whilst in 49 cases elective tracheostomies were done, in which 9 (8.49%) faced complications (Table 1). The most common operative complication of tracheostomy was bleeding, presented in 6 patients (5.66%) followed by subcutaneous emphysema, 03 patients (2.83%) (Table 2).

Discussion:

Tracheostomy is the term used to describe the surgical opening of the trachea⁵. Tracheostomy can be associated with numerous (per operative and post operative) complications. Some, of these complications continue to be a problem after placement of the tracheostomy tube, and there are specific late complications that have clinical relevance¹⁰. In the current study, tracheostomy was done in 106 patients. The male female complication ratio was 1.4:1. One study which was conducted at Khomeini Hospital showed higher incidence of complication in male¹¹. The maximum incidence of complication was between 31-35 years seen in 7 cases (6.60%) followed by 16-30 years of age, (2.83%). Table 1 shows, 57

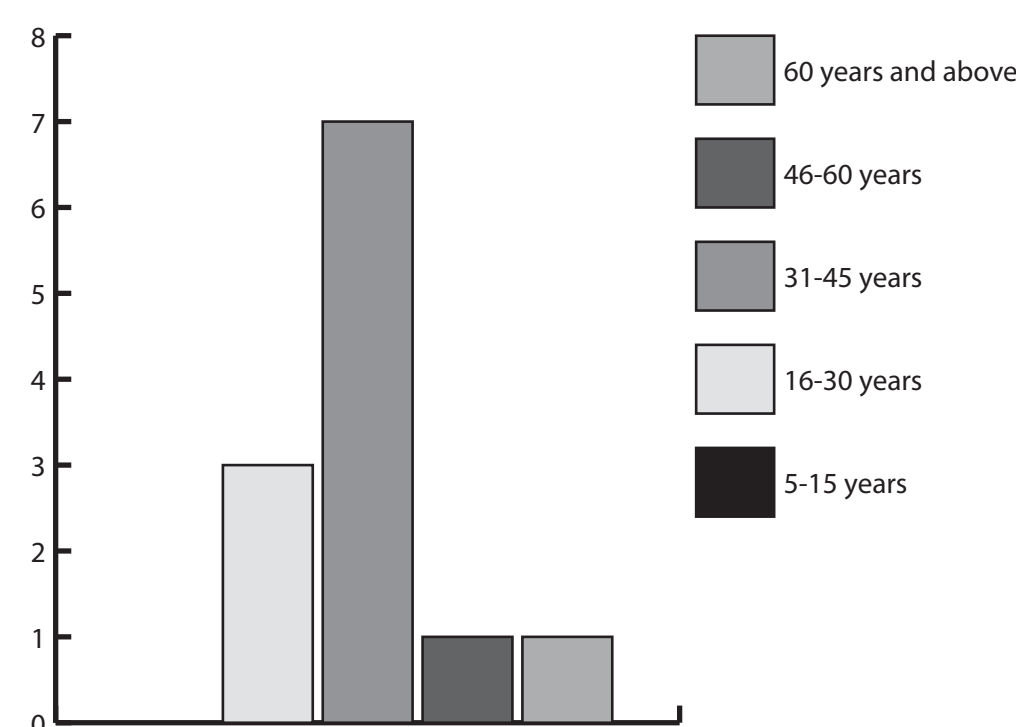


Figure 1: Age incidence

Table 1: Incidence of operative complications

	No. of patients	Percentage
Emergency tracheostomy		
No Complication	54	50.94
Complication	3	2.83
Elective tracheostomy		
No Complication	40	37.74
Complication	9	8.49

Table 2: Operative complications

Complication	No. of patients	Percentage
Bleeding	6	6.36%
Damage posterior tracheal wall	2	1.88%
Subcutaneous emphysema	3	2.83 %
Pneumothorax	1	0.94%

(53.77%) tracheostomies were done in emergency in which 03 cases (5.52%) developed complications and elective cases of tracheostomy were 49 (46.22%) in which 9 cases (18.36%) developed complications. Reilly et al showed those complications rate two to five times more common in emergency tracheostomy¹². But in this study, percentage of complication is more in the elective cases. The reasons for this result is that our cases included low hemoglobin, low platelets, deranged bleeding and clotting profile, deranged biochemical profile causing edema etc. Most of these patients' conditions and available resources forced us to do tracheostomy operation at the bed side with inadequate facilities of light, suction, instruments and without platelet transfusion etc. All levels of faculty (from resident to consultant) were involved in this study. In literature, Hemorrhage is perhaps the most

common complication of tracheostomy and is the commonest fatal case as well¹³. Bleeding from the operative site was noted in 6 (5.66%) cases. Hemorrhage at the operative site was the most frequent complication occurring 7 times more commonly¹⁴. The study conducted in Khomeini Hospital showed the hemorrhage (25.7%) as the most common complication¹¹. Second operative complication was subcutaneous emphysema noted in 3 (2.83%) cases, which is similar to study conducted by Asmatullah et al which showed 2% cases resulted in surgical emphysema¹⁵. One study showed that one of the most serious concerns is posterior wall injury¹⁶. In 2 cases (1.88%) posterior tracheal wall damage were noted in this study where pneumothorax developed in 01 case (0.94%). Pneumothorax incidence during tracheostomy was reported to be 0-4%⁷. The overall incidence of complications of tracheostomy was 11.32%. In other studies, the complications rate of tracheostomy vary 6-66%¹⁷⁻²² and the mortality associated with it ranges from 0-5%^{20,21}.

Conclusion:

Complications of tracheostomy may sometimes be fatal. Most of the complications can be avoidable by meticulous attention to the details of the technique and postoperative tracheostomy care by skilled and trained staff. It is better that tracheostomy should be performed by an experienced surgeon with adequate facilities to reduce the potential complications.

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