

Comparison of Early Complications of Elective Tracheostomy with Early Complications of Emergency Tracheostomy

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ABSTRACT

Aim: To compare early postoperative complications of elective tracheostomy and early postoperative complications of emergency tracheostomy.

Study Design: Comparative/observational study

Place and Duration of Study: Department of ENT, Ganga Ram Hospital Lahore from 2nd February 2018 to 3rd February 2019.

Methods: Sixty six patients (32 in exposed group (Group I) and 34 in non-exposed group (Group II) were taken. The exposed group comprised those patients who underwent emergency tracheostomy, while the non-exposed group comprised those patients who underwent elective tracheostomy. Early post-operative complications were examined and compare between both groups.

Results: There were 21 female (31.8%) and 45 male (68.2%) patients. Mean age of the patients was 43.65±11.87 years. Minimum age was 15 years and maximum age was 59 years. Frequency of early were high in emergency tracheostomy group as compared to elective tracheostomy group with p-value <0.05.

Conclusion: Early postoperative complications were high in patients whom were received emergency tracheostomy than elective tracheostomy.

Keywords: Early complications, Elective tracheostomy, Emergency tracheostomy

INTRODUCTION

Tracheostomy is a procedure in which a stoma between the skin and the anterior wall of the trachea is created. It was first described about 3,500 years ago, and thus is one of the first recorded surgical procedures. It has been alleged that Alexander the Great carried out a tracheostomy in the fourth century BC.¹The indications of the procedure are increasing day by day. Initially all tracheostomy was carried out only to relieve the upper airway obstruction, gradually its indication became extensive and now it's being increasingly used as 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^{2,3}.

The benefits of tracheostomy are not without associated risk and complications. The increasing use of tracheostomy in the past decades has resulted in parallel increase in complications; moreover little emphasis is given in medical and nursing instruction on post operative management to reduce the complications. The post tracheostomy care of the patient, involve large number of highly trained staff, elaborate machinery and expenditure of much time and money. The problems are multifold in paediatric patients including associated feeding difficulties, communication development, schooling etc⁴.

Elective tracheostomy is much more favorable than waiting for the situation to become emergency. The morbidity and mortality due to procedure is not exclusively due to procedure per se but more often due to age of the patient, general condition of the patient, whether tracheostomy is the primary procedure or part of other procedure the urgency of the procedure, the skill of the surgeon, timing of the procedure, the instrument kept in the tray, quality of the tracheostomy tube, postoperative care of the patient.^{5,6} In pediatric patients this procedure is more challenging and it is associated to a higher degree of morbidity and mortality when compared to the adult population. The younger the child is submitted to the procedure, the greater is the risk of complication.^{7,8} The present study was conducted with the goal to compare the early post operative complications of elective tracheostomy with emergency tracheostomy.

MATERIALS AND METHODS

This comparative/observational study was conducted at Department of ENT, Ganga Ram Hospital Lahore from 2nd February 2018 to 3rd February 2019. Sixty six patients (32 in exposed group (Group I) and 34 in non-exposed group (Group II) were selected. Patients of non exposed who required elective tracheostomy due to prolonged (>7 days) intubation, of either sex and of age 13–59 years and exposed patients who required emergency tracheostomy due to upper airway obstruction and the airway obstruction may be due to any cause, including head and neck tumors and maxillofacial and head injuries were included. Patients with INR > 1.6 or platelet count < 50,000/ μ L or patients

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taking aspirin (or similar drug) who hadn't stopped taking aspirin 5 days prior to tracheostomy, tracheostomies done outside the Operation Theater (e.g. at bedside) and tracheostomies done by percutaneous method or by cricothyroidotomy were excluded. Tracheostomy was performed in the Operation Theater using conventional open surgical technique. As described in detail previously, it involved local anesthesia and proper positioning of patient, transverse skin incision in elective cases and vertical skin incision in emergency cases, dissection of underlying structures, and cannulation of the trachea with appropriate sized tube. Postoperatively, patients were retained in the Ear, Nose, and Throat (ENT) ward or intensive care unit. Complications arising in the first seven postoperative days were noted and labelled as "yes" or "no" if present or absent. Presence of pneumothorax was assessed by auscultation and confirmed by chest x-ray. Presence of tracheo-esophageal fistula was evident on history of aspiration. The data were entered and analyzed in SPSS version 22. Pearson Chi-square test was done to compare the complications between both groups. A significance of <0.05 was considered statistically significant.

RESULTS

There were 21 (31.8%) female (10 in group I, 11 in group II) and 45(68.2%) male patients (group I 22, group II 23). 15(22.73%) patients (group I 7, group II 8) were ages less than 30 years, 30(45.45%) patients (14 in group I, 16 in group II) were ages 31 to 50 years and 21(31.82%) patients (group I 11. Group II 10) had ages above 50 years (Table 1).

According to the early complications, post-operative bleeding in group I was found in 8(25%) patients while in group II 3(8.82%) patients had bleeding, a significant difference was observed with p-value <0.05. No significant difference was observed regarding subcutaneous emphysema between both groups [3(9.38) patients in group I, 2 (5.88%) in group II] with p-value >0.05. In group I 3 (9.38%) patients had trauma while in group II none of patients developed trauma to surrounding structure, a significant difference was observed (p=0.04). In group I 3 (9.38%) patients had developed wound infection while in group II 2 (5.88%) patients had wound infection (Table 2).

Table 1: Age and gender wise distribution in both groups

Variable	Group I (n=32)	Group II (n=34)	Total (n=66)
Gender			
Male	22 (68.75)	23 (67.65)	45 (68.2)
Female	10 (31.25)	11 (32.35)	21 (31.8)
Age (years)			
<30	7 (21.88)	8 (23.53)	15 (22.73)
31 – 50	14 (43.75)	16 (47.06)	30 (45.45)
>50	11 (34.38)	10 (29.41)	21 (31.82)

P-value >0.05

Table 2: Comparison of early postop complications in both groups

Early postoperative Complication	Group I (n=32)	Group II (n=34)	P-value
Bleeding	8 (25)	3 (8.82)	0.038
Emphysema	3 (9.38)	2 (5.88)	N/S
Trauma	3 (9.38)	-	0.03
Wound Infection	3 (9.38)	2 (5.88)	N/S

In group I 17 (53.13%) patients had developed early postoperative complications while in group II 7 (20.59%) patients had complications (Fig. 1). A significant difference was observed between both groups regarding overall frequency of early postoperative complications with p-value <0.001 (Table 3).

Fig. 1: Frequency of early postop complications in both groups

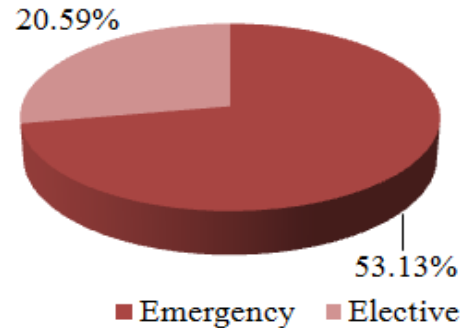


Table 3: Comparison of overall early complications in both groups

Overall early complication	Group I (n=32)	Group II (n=34)	P-value
Yes	17 (53.13)	7 (20.59)	<0.001
No	15 (46.87)	27 (79.41)	

DISCUSSION

Tracheostomy is one of the most performing surgical procedures around the world with high rate of post operative complications associated with elective or emergency tracheostomy^{9,10}. In present study we enrolled 66 patients to compare the early postoperative complications between elective and emergency tracheostomy. There were 68.2% male while 31.8% patients were females. Majority of patients 77.27% were ages 30 to 60 years. These results were similar to many of previous studies in which male patients were high in numbers 60% to 80% with average age of 40 years^{11,12}.

The results of the present study agree broadly with the literature. Previous studies have found that the rate of complications is higher with emergency tracheostomy as compared with elective tracheostomy.¹³⁻¹⁷ This pattern of increased rate of complications with emergency tracheostomy has been observed in immediate complications as well as early and late complications¹⁸. Moreover, postoperative bleeding (hemorrhage) has been found to be among the most common early postoperative complication as reported by Francois et al¹⁹.

The other early complications researched in the present study namely subcutaneous emphysema, trauma to surrounding structures, and wound infection were also found to be more frequent in emergency tracheostomies. A study by Pal et al²⁰ reported overall incidence of complications was 77%, with 53% cases of intraoperative bleeding and 13% tube obstruction.

CONCLUSION

Early postoperative complications were high in patients whom were received emergency tracheostomy than elective tracheostomy. The most common early

postoperative complication is hemorrhage. This may be related to the less-than-ideal working conditions for the surgeon in an emergent situation, where both surgeon and patient may be anxious and panicked.

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