

## ORIGINAL ARTICLE

# Comparison of Outcomes between Elective Tracheostomy versus Emergency Tracheostomy

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## ABSTRACT

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

**Study design:** Comparative/observational study

**Place and duration of study:** Department of ENT/Head & Neck Surgery, Mayo Hospital Lahore from 1<sup>st</sup> July 2012 to 31<sup>st</sup> December 2012.

**Methodology:** One hundred patients of both genders undergoing tracheostomy were enrolled. All the patients were divided equally in two groups; Group A (elective) comprised 50 patients and group B (emergency) tracheostomies also comprised 50 patients. Early postoperative complications were examined and compare between both groups.

**Results:** There were 28 (56%) and 22 (44%) males and females in group A with mean age  $42.45 \pm 10.55$  years while in group B 30 (60%) and 20 (40%) patients were male and females with mean age  $43.06 \pm 9.84$  years. Patients received emergency tracheostomy had high rate of postoperative complications as compared to elective tracheostomy (36% vs 16%). The difference was statistically significant ( $P < 0.05$ ).

**Conclusion:** Early postoperative complications were high in patients underwent emergency tracheostomy as compared to elective tracheostomy.

**Keywords:** Early complications, Elective tracheostomy, Emergency tracheostomy

## INTRODUCTION

Tracheostomy is a procedure where a stoma is formed between the skin and the anterior trachea wall. It was first identified some 3500 years ago and is therefore one of the first operations to be documented. Alexander the Great was said to have performed a tracheostomy in the fourth century BC.<sup>1</sup> The procedural indications are increasing day by day. Initially, tracheostomy was performed to relieve the high airway obstruction. Its indication became increasingly comprehensive, now being used more and more as a temporary procedure for access to airways, particularly for anesthetic and artificial ventilation purposes. Similarly, long-term or permanent tracheostomy as well as extreme respiratory distress is being shown to increase sleep apnoea syndrome and terminal malignant neoplasm.<sup>2,3</sup>

Tracheostomy has its advantages not without associated risk and complications. The increased use of tracheostoma in recent decades has led to an increase in complications in parallel. Furthermore, little focus is placed on postoperative management of medical and nursing instruction to avoid complications. The treatment of the patient after tracheostomy involves a large + of highly skilled staff, elaborate machining and a lot of time and resources. Problems include related feeding issues, communication and educational growth in paediatric patients.<sup>4</sup>

Elective tracheostomy is far more advantageous than waiting for an emergency. Morbidity and mortality caused by the procedure are not exclusivity of the procedure per

se, but most often due to patient age, general patient condition, whether the tracheostomy is the primary procedure or part of some other procedure, procedural urgency, surgeon's capacity, timing of the procedure, tray-like instrument, tracheostomy tube quality, postoperative c c This procedure is more difficult for pediatric patients and is associated with a higher degree of morbidity and mortality than in adults. The younger the child undergoes the operation, the greater the possibility of complications.<sup>7,8</sup>

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/Head & Neck Surgery, Mayo Hospital Lahore from 1<sup>st</sup> July 2012 to 31<sup>st</sup> December 2012 after approval from Ethical Committee. A total of 100 patients of both genders undergoing tracheostomy were enrolled. All the patients were divided equally in to two groups. Group A (elective) comprised 50 patients and group B with same number of patients received emergency tracheostomy. Patients with INR > 1.6 or platelet counts < 50,000/ $\mu$ L or patients who had not stopped taking aspirin (or related medications) five days before tracheostomy, outside of the operation theater (e.g. in bedside) tracheostomies, and percutaneous procedure or cricothyroidotomy were also excluded from this analysis. Tracheostomy was conducted on traditional open surgical techniques in the operation theater. The local anesthesia and correct positioning of the patient, transverse skin incision in elective cases and vertical skin incision for emergencies, underlying structural

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dissection and the trachea cancelation with a sufficient size tube were involved. Postoperatively, the ENT ward or intensive care unit held patients. During the first seven days of the post-operative procedure, complications were reported and labeled as "yes" or "no" when present or absent. Pneumothorax presence was evaluated by auscultation and confirmed by chest x-ray. In the history of aspiration, the presence of tracheoesophagous fistula was clear. The data was entered and analyzed through 24. Pearson chi-square has been tested to compare the complications between the two classes and  $P < 0.05$  considered significant.

## RESULTS

There were 28 (56%) and 22 (44%) males and females in group A with mean age  $42.45 \pm 10.55$  years while in group B, 30 (60%) and 20 (40%) patients were male and females with mean age  $43.06 \pm 9.84$  years. Mean BMI in group A was  $25.38 \pm 2.24$  kg/m<sup>2</sup> and in group B, it was  $25.22 \pm 2.44$  kg/m<sup>2</sup> (Table 1). Patients received emergency tracheostomy had high rate of postoperative complications as compared to elective tracheostomy (36% Vs 16%). The difference was statistically significant with P-value was  $< 0.05$  (Table 2)

Table 1: Demographic information of all the patients

Variables	Group A	Group B	P-value
Mean age (yrs)	$42.45 \pm 10.55$	$43.06 \pm 9.84$	$> 0.05$
Mean BMI (Kg/m <sup>2</sup> )	$25.38 \pm 2.24$	$25.22 \pm 2.44$	$> 0.05$
<b>Gender</b>			
Male	28 (56%)	30 (60%)	$> 0.05$
Females	22 (44%)	20 (40%)	

Table 2: Comparison of frequency of early postoperative complications between both groups

Complication	Group A	Group B	P-value
Yes	8 (16%)	18 (36%)	0.001
No	42 (84%)	32 (64%)	

## DISCUSSION

Tracheostomy is one of the most successful operations worldwide with a high incidence of complications associated with elective or emergency tracheostomy.<sup>9,10</sup> There were 58% male while 42% patients were females. Majority of patients 70% were ages 35 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.<sup>11,12</sup>

In present study, we found that patients received emergency tracheostomy had high rate of postoperative complications as compared to elective tracheostomy (36% vs 16%). The difference was statistically significant ( $P < 0.05$ ). Previous studies have found that the rate of complications is higher with emergency tracheostomy as compared with elective tracheostomy.<sup>13-17</sup> This pattern of increased rate of complications with emergency tracheostomy has been observed in immediate complications as well as early and late complications.<sup>18</sup> Moreover, postoperative bleeding (hemorrhage) has been found to be among the most common early postoperative complication as reported by Francois et al<sup>19</sup>.

Kumar et al<sup>20</sup> were found to be more frequent in emergency tracheostomies. Kumar et al<sup>20</sup> also reported commoner complications were mucous deposition (6.86%), blockage of tracheostomy canula (6.29%), bleeding from multiple attempts (6.06%), excessive bleeding (2.94%).

A prospective study with a much larger patient sample would be needed, of course, to conclude whether indeed these individual early postoperative complications do occur more frequently in emergency tracheostomies with statistical significance. Nevertheless, when all early postoperative complications are taken as a whole, even the present study with a combined sample size of 100 patients is able to show that these complications occur significantly more frequently with emergency tracheostomies.

## CONCLUSION

Early postoperative complications have been concluded to be large in patients with emergency tracheostomy rather than elective tracheostomy. Hemorrhage is the most common early postoperative complication. This can be attributed to the surgeon's less than optimal working circumstances in an emergent situation where both surgeon and patient are nervous and panicked.

**Conflict of interest:** None

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