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Research Article

**ANALYSIS OF EARLY TRACHEOSTOMY ON EARLY
WEANING OFF VENTILATORY SUPPORT AND HOSPITAL
STAFF IN PATIENTS WITH ISOLATED SEVERE HEAD
INJURY**Dr Waleed Bakht Yar Khan¹, Dr Manzar Yaqoob², Dr Usama Yousaf³¹Medical Officer at Teaching Hospital, University of Lahore, Lahore, ²Medical Officer at Zahida Welfare Trust Hospital, ³Medical Officer at Services Hospital, Lahore.**Article Received:** September 2019 **Accepted:** October 2019 **Published:** November 2019**Abstract:**

Introduction: An important factor responsible for the high mortality in patients with severe head trauma is cerebral hypoxia.

Objectives of the study: The main objective of the study is to analyse the early tracheostomy on early weaning off ventilatory support and hospital staff in patients with isolated severe head injury.

Methodology of the study: This descriptive study was conducted at Teaching Hospital, University of Lahore, Lahore during January 2019 to August 2019. Patients > 18 years of age, who underwent tracheostomy were included in this analysis. Patients coming from outside hospital with tracheostomy in situ were excluded. Patients were divided into two groups, ET group and LT group (patients who underwent tracheostomy >5 days of endotracheal intubation).

Results: The data was collected from 50 patients. Besides the improvement in the GCS and SAPS scores the end point of the study was to see whether tracheostomy led to decrease in mortality rate when compared with similar controls and whether there was reduction in hospital stay in tracheostomised patients. The final outcome (in terms of mortality) was analyzed utilizing chi-square test. The cell chi was 1.30 and 1.141, the degree of freedom was 1 and p was less than 0.05, which is significant.

Conclusion: It is concluded that early tracheostomy is beneficial in patients with isolated closed head injury, severe enough to affect systemic physiological parameters, in terms of decreased mortality and intubation associated complications in centres where ICU care is not readily or easily available.

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INTRODUCTION:

An important factor responsible for the high mortality in patients with severe head trauma is cerebral hypoxia. Mechanical ventilation is often required because of patient's inability to protect the airway, persistence of excessive secretions, and inadequacy of spontaneous ventilation [1]. Tracheostomy plays an integral role in the airway management of such patients, but its timing remains subject to considerable practice variation. The complications associated with prolonged endotracheal intubation are increasingly being recognized and include injury to the larynx, trachea, and patient discomfort [2].

In addition, endotracheal intubation often requires the administration of systemic sedation, with attendant complications. Finally the incidence of ventilator-associated pneumonia is related directly to the duration of mechanical ventilation – a complication that carries significant morbidity and mortality [3].

Paradoxically, although tracheostomy is frequently recommended in closed head injury patients, few studies have been carried out to assess the importance in this group of patients. Many studies recommend early tracheostomy to avoid serious oropharyngeal and laryngeal injury occurring from prolonged translaryngeal intubation though limited data is available to define the impact of early tracheostomy on duration of mechanical ventilation and hospital stay [4]. Long-term mechanical ventilation is the most common situation for which tracheostomy is indicated for patients in Intensive Care Units (ICUs). The procedure is performed in about 24% of critically ill patients in ICU; and as many as 10% of patients requiring at least 3 days of mechanical ventilation eventually receive a tracheostomy for prolonged mechanical ventilation or airway support [5].

There are several advantages associated with tracheotomy over prolonged translaryngeal endotracheal intubation, which include efficient suctioning of secretions, easier nursing care, greater comfort, less sedation, smaller dead space, lower airway resistance, reduced trauma to the oropharynx

and larynx, less incidence of nosocomial pneumonia, decreased periods of mechanical ventilation and consequently length of ICU and hospital stay [6].

Objectives of the study:

The main objective of the study is to analyse the early tracheostomy on early weaning off ventilatory support and hospital staff in patients with isolated severe head injury.

Methodology of the study:

This descriptive study was conducted at Teaching Hospital, University of Lahore, Lahore during January 2019 to August 2019. Patients > 18 years of age, who underwent tracheostomy were included in this analysis. Patients coming from outside hospital with tracheostomy *in situ* were excluded. Patients were divided into two groups, ET group and LT group (patients who underwent tracheostomy >5 days of endotracheal intubation). Acute Physiology and Chronic Health Evaluation and GCS score were used to define the severity of illness.

Statistical analysis:

Data were analyzed using Statistical Package of Social Sciences v20.0. Continuous variables were summarized with standard descriptive statistics. Since data did not follow a normal distribution, the data between two groups were compared using nonparametric Mann–Whitney U-test. Categorical variables presented in frequency *n* (%) and compared using Chi-square test. $P < 0.05$ was considered statistically significant.

RESULTS:

The data was collected from 50 patients. Besides the improvement in the GCS and SAPS scores the end point of the study was to see whether tracheostomy led to decrease in mortality rate when compared with similar controls and whether there was reduction in hospital stay in tracheostomised patients. The final outcome (in terms of mortality) was analyzed utilizing chi-square test. The cell chi was 1.30 and 1.141, the degree of freedom was 1 and *p* was less than 0.05, which is significant.

Table 1: Comparison of sequential G.C.S. between tracheostomised and non-tracheostomised groups.

	Tracheostomy	Non Tracheostomy	p Value
Day 1	4.06 ± 1.0278	4.14 ± 0.9382	0.6882
Day 2	5.04 ± 1.1825	4.74 ± 1.1800	0.2117
Day 3	5.82 ± 1.6815	5.40 ± 1.8617	0.2560
Day 4	6.62 ± 1.9596	6.21 ± 2.3211	0.3681
Day 5	7.12 ± 2.7472	6.91 ± 2.9671	0.7324
Day 10	8.35 ± 3.1983	7.00 ± 3.4935	0.0723
Day 15	9.97 ± 3.0477	7.20 ± 3.3506	0.0009

DISCUSSION:

A tracheostomy is a proven adjunct in the care of head injury patients. Tracheostomy provides an early airway protection and seems to decrease the need for prolonged mechanical ventilatory support. Secondly, severe head injury patients require a prolonged time for recovery and the airway reflexes are rarely optimal. The association between the duration of intubation and risks of laryngotracheal injury is another important consideration in the timing of tracheostomy [7].

The tracheostomy tube facilitates pulmonary toilet and oral hygiene and has been shown to reduce the incidence of ventilator-associated pneumonia [8]. Furthermore, a tracheostomy tube is less noxious for the patient emerging from coma and sedation can be more easily weaned off. In addition, tracheostomy reduces significantly the physiological dead space of ventilation and thereby the work of breathing [9]. This is even more beneficial in a patient having labored breathing or deteriorating respiration and may prevent the use of mechanical ventilation altogether. Because of these benefits, early tracheostomies have been shown to reduce hospital stay. However to realize the benefits of early tracheostomy without performing unnecessary tracheostomies, appropriate patients must be identified early at the time of admission. Early oxygenation and ventilatory abnormalities can predict the need for tracheostomy [10]. However, head injury patients primarily require airway protection and not necessarily ventilatory support for pulmonary failure [11].

CONCLUSION:

It is concluded that early tracheostomy is beneficial in patients with isolated closed head injury, severe enough to affect systemic physiological parameters, in terms of decreased mortality and intubation associated complications in centers where ICU care is not readily or easily available.

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