

Tracheostomy In The Intensive Care Unit- A Developing Country Experience

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Abstract

OBJECTIVE: To determine the incidence, indications and outcome for patients that had a tracheostomy in the intensive care unit of a teaching hospital in a developing nation. **METHODS:** This is an observational retrospective study of intensive care unit patients that received a tracheostomy in the University of Nigeria Teaching Hospital, Enugu from March 2003 to February 2007. The hospital records of the patients were reviewed for demographics, indications for admissions, duration of admission and outcome. **RESULTS:** Ten patients (2%) had tracheostomy while on admission in the intensive care unit from a total of 497 admissions. All the patients had surgical tracheostomy. Eight patients had post surgical tracheostomy to maintain a patent airway following postoperative airway obstruction while two patients had ST for the Gullian Barre syndrome and severe head injury. There were four deaths. **CONCLUSION:** Like some other studies from Nigeria, the number of patients that received a tracheostomy in the intensive care was small and the major indication was to relieve postoperative airway obstruction.

INTRODUCTION

Placement of a tracheostomy is an important procedure for securing a functional and safe airway in patients with various medical ailments¹². It is reportedly the commonest surgical procedure in the Intensive Care Unit (ICU)³⁴. It is a procedure aimed at establishing an alternative airway by creating a surgical opening in the anterior wall of the trachea and maintained with a tube⁵.

It has been estimated that between 2% and 11% of ICU patients requiring mechanical ventilation in ICU would receive a tracheostomy⁶⁷⁸.

Tracheostomy is believed to have many benefits over prolonged trans laryngeal intubations including lower risk of laryngeal injury, improved comfort for the patient, facilitated weaning from mechanical ventilation, improving pulmonary toilet, enhancing patient communication and decreased sedative requirement⁹¹⁰. It reduces upper respiratory dead space, bypasses resistance to airflow in the nose, mouth and glottis, and allows the use of mechanically assisted respiration if necessary (intermittent positive pressure ventilation).

Percutaneous dilational tracheostomy (PDT) or conventional surgical tracheostomy (ST) can be performed in the ICU, though ST is usually performed in the theater by the

otolaryngologists. Generally PDT is considered more cost effective, simple and avoids the movement of critically ill patients¹¹¹² and can be performed by non-surgeons.

This study was undertaken to determine the incidence, pattern and outcome of patients that had tracheostomy in the ICU of a developing nation.

METHODS

A retrospective observable study was carried out in the University of Nigeria Teaching Hospital (UNTH), Enugu, Nigeria from March 2003 to February 2007 to determine the incidence, indications and outcome of patients that had tracheostomies during ICU admissions. The hospital records of these consecutive patients were scrutinized for demographics, indications and outcome. Surgical tracheostomy was the procedure of choice. Patients who had emergency tracheotomies as a prelude to ICU admission (two) were included in this study.

RESULTS

There were a total of 497 admissions to the intensive care unit during the four year span.

Ten patients (2%) had tracheostomy while on admission in the ICU. All the patients had surgical tracheostomy. The average age of the patients was 36.4 days and average

duration of stay in the ICU was 19.1 days (range 1 – 65 years). Eight patients had post surgical tracheostomy to maintain a patent airway following postoperative airway obstruction while two patients had ST for the Gullian Barre syndrome and severe head injury. Three patients (30%) were mechanically ventilated.

The average number of admission days after tracheostomy was 14.2 days and the average number of days before institution of a tracheostomy was 4.7 days.

There were four deaths including the three patients that received mechanical ventilation. The dead patients spent an average of 24 days in the ICU.

DISCUSSION

The number of tracheotomies performed in Nigerian hospitals is small compared to that in more developed countries, and there are few studies on tracheostomies done in Nigeria ICUs¹³¹⁴ and sub-Saharan Africa with exception of South Africa. This could be because as we found out in this study, endotracheal intubation is often the preferred option for airway maintenance in our centre despite its obvious drawbacks for prolonged period. Only 2% of our ICU patients received a tracheostomy. It was reported from studies in the United Kingdom that as many as one third of critically ill patients will require a tracheostomy¹⁵. Seven of the patients in this study had a tracheostomy to relieve airway obstruction. This is similar to other studies in the centre but not limited to the ICU, where upper airway obstruction predominated as the indication for tracheostomy though there was a change in the etiologies of the obstruction¹⁶¹⁷.

Three patients had tracheostomy solely for mechanical ventilation. This is different from some studies which indicated that the major indication for tracheostomy in their ICUs was for prolonged mechanical ventilation¹¹³¹⁴.

The timing of a tracheostomy in ICU patients in need of one has been a subject of controversy¹⁸¹⁹²⁰²¹. However, an old adage states that 'the time to do a tracheostomy is when you first think of it'. This is true for all cases where tracheostomy is indicated.

However, the American College of Chest Physicians consensus statement on Artificial Airways in patients Receiving Mechanical Ventilation considered translaryngeal intubation to be the preferred technique for patients requiring up to 10 days of mechanical ventilation²². But tracheostomy

was recommended for those with an anticipated need for artificial airway for more than 21 days. In patients with acute airway obstruction, an emergency tracheotomy is of course indicated. Tracheostomies comes risks and reports have documented significant associated morbidity with rates of complications ranging from 6-66% and mortality rates of 0-5%²³.

There was a 40% mortality rate in this small number of patients. Two of the patients had tracheostomy within 24 hours of ICU admission (following neck surgery) including an attempted thyroidectomy in a patient with a malignant thyroid gland.

The other two deaths occurred in a patient with anoxic encephalopathy (with stomal haemorrhage) and another with Gullian Barre syndrome.

From this study, a tracheostomy performed early in a patient with upper airway obstruction improved survival but did not affect survival in patients with severe co-morbidity including possible iatrogenic injury. This is similar to the conclusion of Rumback et al⁹. Use of the percutaneous dilational technique which is associated with reduced complication and is technically easier to performed should be encouraged in our centre as this will also reduce the time to intervention as it can be performed by anesthetists and other physicians.

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