



ORIGINAL ARTICLE

Analysis of tracheostomies in a Paediatric Intensive Care Unit during the period 2003–2013[☆]



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KEYWORDS

Tracheotomy;
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Abstract

Introduction: Tracheotomy in paediatric patients is a rare procedure. In this paediatric series, perioperative complications, mortality related to surgical procedure and overall mortality are analysed.

Patients and methods: This is a retrospective study conducted from January 2003 to December 2013. Data were retrieved from patients who were tracheotomized and admitted to our PICU in the postoperative period.

Results: Data were collected from 25 tracheotomized patients admitted during the study period. The mean age was 31.3 months (median 14 months, range 1–144 months), and PICU length of stay was 53 days (median 37 days, range 1–338 days). Most patients (68%) had comorbidities prior to admission, with a higher prevalence of craniofacial anomalies/polymalformative syndromes (32%) and prematurity related disorders (12%) being observed. The most common aetiologies related to the procedure were congenital airway obstruction (16%) and several types of spinal cord injury (16%), followed by tracheobronchomalacia (12%) and subglottic stenosis (12%). Complications were detected in 40% of patients, with accidental decannulation being the most frequent. Accidental or unexpected decannulation occurred in as many as 20% of our patients, mainly in the first 24h after surgery. One patient died as a result.

Conclusions: The postoperative course of a tracheotomy is associated with a high rate of complications, some of them related to life-threatening events.

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PALABRAS CLAVE

Traqueotomía;
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Análisis de las traqueotomías en cuidados intensivos pediátricos durante el periodo 2003–2013**Resumen**

Introducción: La traqueotomía es un procedimiento poco frecuente en la Unidad de cuidados intensivos pediátricos (UCIP). Analizamos las complicaciones derivadas de la técnica, la mortalidad atribuible a la misma y la mortalidad global de los pacientes traqueotomizados.

Pacientes y métodos: Estudio retrospectivo descriptivo durante el periodo comprendido entre enero del 2003 y diciembre del 2013 de los pacientes ingresados en la UCIP a los que se realiza una traqueotomía a lo largo de su ingreso.

Resultados: Durante el periodo analizado se recoge a 25 pacientes. La media de edad es de 31,3 meses (rango 1-144, mediana 14 meses) y la media de estancia en UCIP es de 53 días (rango 1-338 días, mediana 37 días). En su mayoría (68%) son pacientes con comorbilidades previas a su ingreso, destacando en frecuencia las anomalías craneofaciales/síndromes polimalformativos (32%) y problemas asociados a la prematuridad (12%). Las patologías más frecuentes que motivaron la realización del procedimiento fueron la obstrucción congénita de la vía aérea y diversas causas de lesión medular, seguido de traqueobroncomalacia y estenosis subglótica. Se detectaron complicaciones en el 40% de los pacientes, siendo la más frecuente la decanulación accidental. Presentaron durante el curso evolutivo una decanulación accidental el 20% de los pacientes, principalmente en las primeras 24 h del postoperatorio, motivo por el que falleció uno de los pacientes.

Conclusiones: La realización de la traqueotomía es un procedimiento poco frecuente en la UCIP, aunque no exento de complicaciones, algunas de ellas de riesgo vital.

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Introduction

Tracheotomies are rarely performed in the Paediatric Intensive Care Unit.¹ This technique is performed in the paediatric patient noticeably less frequently than in adults, where up to 10% of all patients who receive mechanical ventilation (MV) are tracheotomised.² Over time, common indications for MV, such as the infectious acute inflammation of the airway, have now been replaced with others, such as MV dependency in chronic patients, severe airway obstruction due to congenital malformations, and thoracic wall weakness in neuromuscular patients.^{3–5} MV, therefore, is now used in both acute and chronic patients discharged with some kind of home respiratory support.

The complication rate associated with this technique is considered to be higher in children than in adults.^{6–8} However, both the frequency and type of complication, above all mortality, vary considerably between studies. Mahadevan et al.⁹ describe a global complications rate in these patients of 51%, with 2.5% of accidental decannulations, percentages that are similar to those found in other publications.^{10–12} Mortality directly attributable to MV ranges from 0.5% to 3% in different series, the most frequent causes being accidental decannulation and obstruction of the cannula.^{10,12–14} Global mortality of tracheotomised patients ranges from 7% to 40%, depending on the study.^{4,9,14}

The purpose of this review is to analyse the tracheotomies performed in our unit in order to gain insight into the complications derived from the technique, the mortality attributable to it and the global mortality of tracheotomised

patients. The purpose is also to compare our findings with those published in the most recent literature. The study was approved by the institutional review board of the Cruces University Hospital (Bilbao, Spain).

Patients and methods

We conducted a retrospective chart review of patients admitted to the Paediatric Intensive Care Unit (PICU) of the Cruces University Hospital that underwent tracheotomy in the unit in the period between January 2003 and December 2014.

The patients were chosen after reviewing the records of patients discharged from the unit, selecting those whose diagnosis and/or techniques performed during admission showed a tracheotomy within the period covered by the study. In total, 26 patients were identified. One patient was excluded because his medical history was not available. The patients were included in the review, regardless of whether the procedure was urgent or elective and of the surgical technique used for placing and fixing the cannula.

The following variables were analysed – indication for tracheotomy, age, MV days prior to the tracheotomy, length of stay in the PICU, types of cannula (cuffed or simple) postoperative day for the first scheduled cannula replacement, and complications directly related to this procedure, mortality related to the technique and global mortality.

We also analysed a subgroup of patients with an episode of accidental removal of the tracheotomy cannula

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