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INDICATIONS OF TRACHEOSTOMY IN BASRAH

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Abstract

This retrospective study aimed to determine the main indications of tracheostomy in four main hospitals in Basrah centre. The study included 89 patients who were submitted to tracheostomy during a 2 year period and data was reviewed from the medical records.

Patients were 70 males (78.66%) and 19 females (21.34%). The age of the patients ranged from 1-75 years with mean age of 44.367±13.18 years. Open surgical tracheostomy was performed in all patients, 89.89% of them were submitted to surgery as elective procedure and 94.39% were operated upon under general anesthesia.

The main indications of tracheostomy in this study is the need for prolonged ventilation (61.80%) mostly caused by head injury, followed by upper aero-digestive tumor (19.1%) and lastly cranio-cervical trauma (8.89%).

In conclusion, the commonest indication of tracheostomy in Basrah is the need for prolonged ventilation.

Introduction

The history of tracheostomy represent the history of medical progress in material engineering, it was described on Egyptian tablets as early as 3600 BC. Despite this, it did not enter routine medical practice until the 19th century, when doctors became increasingly open-minded towards the procedure as a means of providing immediate relief to patients with acute laryngeal obstruction, the majority of cases at that time were related to diphtheria[1,2]. The procedure remained the last resort for acute life-threatening upper airway obstruction[3]. In early 20th century, Chevalier Jackson standardized the procedure and its after care measures, reducing morbidity and mortality related to the intervention[4]. In recent years, the list of indications for tracheostomy gradually increased to comprise diseases of the entire respiratory apparatus, a development that gained momentum with the famous Copenhagen poliomyelitis epidemic of 1952[5]. Although the idea of endotracheal intubation performed through the mouth dates back to Hippocrates (460–375 BC), who objected to the idea of tracheostomy for fear of injuring the carotid arteries, attempts to do this were not undertaken until the 19th century[6]. The replacement of rubber and sterling silver tubes by thermo sensitive polyvinyl chloride tubes reduced the discomfort and laryngeal damage associated with prolonged trans-pharyngeal intubation[7]. Similarly, the ability to modulate face masks individually to each patient's facial contours, along with the excellent tolerance towards the new materials, provides opportunity for long-term non-invasive positive-pressure ventilation in many patients with neuromuscular diseases[8,9]. In addition, the introduction of fiberoptic intubation has made nasopharyngeal intubation a valuable alternative in difficult airway management[10]. As a consequence, the

indications of tracheostomy have changed during the years, and they continue to do so.

Patients and methods

This retrospective study was conducted as a review of patients who underwent tracheostomy performed in 4 general hospitals located at the center of Basrah including; Basrah Teaching Hospital, Al-Sadr Teaching Hospital, Al-Mawanee General Hospital and Al-Faiha General Hospital during a 2 year period. All patients who had tracheostomy done in district hospitals and then referred to Basrah and those with incomplete or missed basic information and medical records were excluded from the study. Data were collected from medical records in each hospital provided that records should be complete otherwise it dropped. This study is approved by ethical committee of health institution. All data were entered in a special performa sheet including: demographic profile (date, age, gender), primary diagnosis, main presentation, indication of tracheostomy, surgical technique, type of surgery whether emergency or elective and type of anesthesia. All data were analyzed statistically including the percentage, mean and standard deviation, whereas proportions and frequency tables were used to summarize categorical variables.

The weak point in the present study is the number of dropped patients because of inadequate data, in addition to those underwent tracheostomy in district hospital that are not included in this study.

Results

Patients included in this study were 89, 70 males (78.66%) and 19 females (21.34%) with male to female ratio of 3.68:1. The age of the patients ranged from 1-75 years with mean age of 44.367±13.18 years, it is found that more than 1/3 of the studied patients belong to the age group between 21-30 years, while only one patient belong to age group between 1-10 years. Open surgical tracheostomy was performed in all patients, eighty patients (89.89%) underwent tracheostomy as elective procedure and 9 patients (10.11%) as emergency and the majority of patients 84 (94,39%) were subjected to general anesthesia while only 5 patients (5.61%) had tracheostomy under local anesthesia, 4 of which were at bedside in intensive care unit.

The main indications of tracheostomy in this study (table I) is the need for prolonged ventilation 55 patients (61.80%) which is mainly caused by head injury that was subdivided into road traffic accidents (35 patients, 39.33%) , fall from height (5 patients, 5.62%) and other causes including blunt trauma by heavy object and sport injury (3 patients, 3.37%). Other causes of prolonged ventilation are medical, including Guillain–Barré syndrome (7 cases, 7.87%), cerebro-vascular accidents (4 cases, 4.49%) and one patient with polymyocitis with respiratory failure (1.12%).

The second most common indication of tracheostomy in the present study is tumor in which the larynx is the most common organ involved (15 patients, 16.86%), 10 of which (11.24%) were due to laryngeal tumor and tracheostomy done as patients came with severe stridor, 5 patients (5.62%) done as part of total layryngectomy operation and there was single case having hypopharyngeal tumor (1.12%) and other one due to base of tongue tumor (1.12%).

Trauma is the third common cause, it recorded 8 cases (8.99%) in which 2 of them tracheostomy performed during fixation of cervical spine fracture, one case (1.12%) with fracture mandible, one case (1.12%) due to bullet injury to neck, 2 cases (2.25%) followed direct laryngeal trauma and 2 cases (2.25%) due to stab wound of the neck. Other causes of tracheostomy included 2 cases(2.25%)

of morbid obesity with obstructive sleep apnea syndrome, 2 cases (2.25%) of infection in form of sever acute epiglottitis and acute laryngo-tracheo-bronchitis, one case of stridor caused by subglottic stenosis that resulted from previous prolonged endotracheal intubation due to meningitis, and prolonged coma in a 16 year old female, 3 cases of vocal cord palsy (3.37%) in which 2 of them were due to thyroid surgery, and lastly one case (1.12%) recorded in a 10 months baby with laryngeal web.

Table I: The main indications of tracheostomy and their frequencies.

Main indication			Patients No.	Percent	Total %
Prolonged ventilation			55		61.8 %
	Head injury		43	48.32%	
		RTA	35	39.33%	
		Fall from height	5	5.62%	
		other	3	3.37%	
	Guillain–Barré		7	7.87%	
	CVA		4	4.49%	
	polymyocitis		1	1.12%	
Tumor			17		19.1%
	Laryngeal		15	16.86	
		With or without D/L	10	11.24%	
		With total laryngectomy	5	5.62%	
	Base of tongue		1	1.12%	
	Hypopharynx		1	1.12%	
Trauma			8		8.89%
	Fracture cervical spine		2	2.25%	
	Direct laryngeal trauma		2	2.25%	
	Stab wound in neck		2	2.25%	
	Fracture mandible		1	1.12%	
	Bullet in neck		1	1.12%	
Vocal cord paralysis			3		3.37%
COPD + OSAS			2		2.25%
Infection			2		2.25%
Subglottic stenosis			1		1.12%
Laryngeal web			1		1.12%
total			89		100%

Discussion

In the present study, tracheostomy was performed in 89 patients included 70 males and 19 females with clear male predominance which is near to Adoga study[11] who found that male to female ratio was 2.2-1.

The patients age ranged from 1-75 year and the majority were in the third and 4th decades (51%) and this is similar to the result of other studies[11,12]. The reason for the high incidence of head and neck injuries in our country may be due to high action levels and participation in high-risk activities which may not have a standardized rules.

The majority of cases were elective (89.89%) and this in contrast with the study of Adoga[11] in which he found that 63% of his patients underwent emergency tracheostomy due to upper airway obstruction caused by trauma.

All the cases in this study were done by conventional open surgery technique which also necessitates further evaluation for the exact cause since newer less invasive techniques such as percutaneous tracheostomy is more easy, more safe and with less complications as mentioned earlier, probably the cause is the deficient experience regarding these methods.

In the present study, the main indication of tracheostomy is the need for prolonged ventilation (61.8%) including head injury (48.32%), this is in contrast to a study done in Al-Khalili Hospital in Iran in which the leading cause was subglottic stenosis following prolonged intubation[12]. Although publications suggest that the range of tracheostomy has broadened over the past decades, what has changed, however, is the range of underlying conditions that warrant tracheostomy, e.g. during the early 1970s the most common indication of tracheostomy was acute obstructive airway infection but due to revolution in life style of human being across the globe, introduction of potent antibiotics and vaccination leads to change of main indication to upper airway obstruction due to trauma as recorded by khan[13]. The main indication in our locality is also different from developed countries which is supported by the results of Klotz[14] who found the indication of tracheostomy was laryngotracheal disorder (47%). The main cause of tracheostomy in younger age group is trauma (79%) while the main cause in elderly is malignancy (92%), which is with agreement with Amusa study[15] .

Conclusion: The most common indication of tracheostomy in our locality; is prolonged intubation following head injury, tumour of the upper airway being the second cause and craniofacial trauma is the third.

Recommendations: Prospective meta-analytical broad study of tracheostomy is recommended, training should be started on less invasive tracheostomy technique. Media should highlight the disastrous outcome of road traffic accidents and explain the importance of standardized driving rules .

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