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Research Article

TRACHEOSTOMY IN NNEWI, SOUTH–EASTERN NIGERIA: A TEN-YEAR APPRAISAL

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A B S T R A C T

Tracheostomy is a commonly performed life-saving procedure. This study aims to assess the utilization of tracheostomies in Nnewi, South East Nigeria within the period, and to compare our findings with studies from other regions.
This is a 10-year retrospective study of all tracheostomies performed in our centres between 1st June 2010 to 31st May, 2020 in Nnewi Anambra State, South-East, Nigeria.
The Medical records of all patients that had open surgical tracheostomy in the operating theatre in both centres within the study period were reviewed. Patient's information extracted from the records and analyzed were age, sex, indications of tracheostomy, level of urgency of the procedure, outcome and associated complications.
A total of 95 patients had surgical tracheostomy within the study period. However, the case notes of only 89 could be retrieved comprising of 56 males and 33 females, ratio 1.6:1. The age of patients ranged from 1-92years. Indications were mainly upper airway obstruction secondary to neoplasms 29 cases (32.6%), trauma to the head and neck 16 (18%), airway foreign body 12 (13.5%) and others. Eighty two percent (82%) were performed as emergency, six patients (6.7%) had complications and one mortality was recorded.

INTRODUCTION

Tracheostomy is about the most ancient surgical procedure.[1] The first instance of tracheotomy was portrayed way back in 3600 BC on Egyptian artifacts by engravings in Abydos and Sakkara regions of Egypt depicting tracheostomy. Homer around 1000 BC reported that Alexander the Great saved the life of a soldier from suffocation, by making an opening in the trachea using the tip of his sword.[1] Tracheostomy is a commonly performed life-saving procedure.[2–4] The first tracheotomy is said to have been performed by Asclepiades of Bythinien, who lived in Rome during the last century before the Christian era.[1,5]

The four major indications for tracheostomy are to bypass upper airway obstruction from any cause, Respiratory insufficiency, Tracheobronchial tree toileting (copious secretions) and prophylactic/adjunct to other procedures.[2,6–9] Tracheostomy is one of the most common intensive care unit procedures performed. The advantages include patient comfort, safety, ability to communicate, and better oral and airway care.[10,11]

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introduction of percutaneous tracheostomy in the airway management must not allow the decision for tracheostomy to be left until it is too late.[12,13]

Previous literatures has reported a drastic change in the trends of the various indications for tracheostomy.[14–16] This has made trauma or prolonged intubation to replace acute inflammatory upper airway obstruction as the most common indication for tracheostomy.[14,15] The reason for this may be related to the changes in the epidemiology of infectious diseases, adequate use of antibiotics, and improvement in the capabilities.[12]

Prior to the establishment of ENT Department in Nnamdi Azikiwe University Teaching Hospital, Nnewi patients requiring tracheostomy travelled to Enugu, a distance of about 100kilometers away and some acute patients requiring emergency tracheostomy died on transit. There is need to assess the utilization of this procedure in Nnewi since no such work has been done in our facility. Nnewi is, a highly populated industrial and commercial city in Anambra State, South East Nigeria but Otorhinolaryngological services became available from 1996.

Aims and Objectives

To evaluate the tracheostomy procedures carried out in Nnewi within the period. To compare our findings with studies from

other regions. This would be necessary in healthcare planning and budgeting.

Patients and Methods

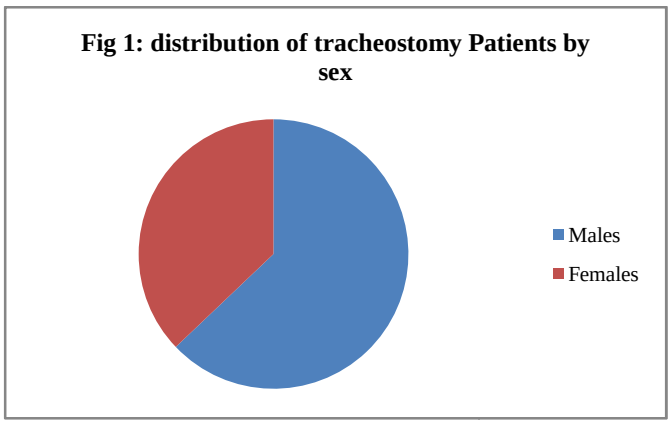
This is a 10-year retrospective study of all the tracheostomy procedures done between 1st June 2010 to 31st May, 2020 in Nnamdi Azikiwe University Teaching Hospital, Nnewi and Eastern Specialist Surgical Clinics, Nnewi, Anambra State, South-Eastern Nigeria.

The Medical records of all patients that had open surgical tracheostomy in the operating theatre in both centres within the study period were retrieved and reviewed.

Patient's information extracted from the records and analyzed included age, sex, indications of tracheostomy, level of urgency of the procedure, outcome and associated complications.

RESULTS

A total of 95 patients had surgical tracheostomy within the study period. However, the case notes of only 89 could be retrieved comprising of 56 males and 33 females, ratio 1.6:1.
The age of patients ranged from 1-92years. Indications were mainly upper airway obstruction secondary to neoplasms 29 cases (32.6%), trauma to the head and neck 16 (18%), airway foreign body 12 (13.5%) and others. Eighty-two percent (82%) were performed as emergency, while only 18% were elective.
Complications were seen in 6 cases (6.7%), comprising two cases of tube dependence/ difficult decannulation, one each of surgical emphysema, tube blockage, fracture and aspiration of metallic tube. One mortality was recorded. The mortality was a patient who had tube dislodgement in the ward and died before help could be given.



This Pie chart shows the sex distribution. Males were more frequently encountered accounting for 56 patients (62.92%) while the rest, 33 patients were females (37.07%).

Table 1 Distribution by age group

Age Range (Years)	Frequency	Percentage (%)
0-10	16	18.0
11-20	9	10.1
21-30	14	15.7
31-40	7	7.9
41-50	3	3.4
51-60	9	10.1
61-70	13	14.6
71-80	11	12.4
81-90	6	6.7
Above 90	1	1.1
Total	89	100

The most commonly represented age group in this study was 0-10 years which constituted 18% of the population, followed by patients in the seventh decade (61-70years) whereas the least was patients above 90years. Other age groups are as shown in table 1 above.

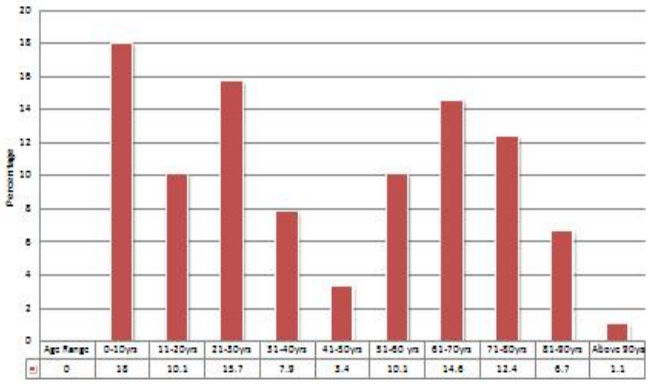


Fig 2 Distribution by age group

Table 2 below shows the distribution of patients who had tracheostomy by their various indications; Laryngeal neoplasm (16.9%) tops the list of indications followed by other head and neck tumours of the cases (15.7%) and the least was recurrent laryngeal nerve palsy (2.2%).

Table 2. Distribution by Indications

S/N	Indications	Frequency	Percentage (%)
1	Laryngeal Malignancies	12	13.5
2	Non malignant laryngeal tumor	3	3.4
3	Head and Neck tumors (Non Laryngeal)	14	15.7
4	Severe Head and Neck injuries	7	7.9
5	Deep Neck abscess	8	8.9
6.	Road traffic accident (RTA)	9	10.1
7	Cut throat injuries (Non RTA related)	7	7.9
8	Foreign body aspiration	12	13.5
9	Recurrent laryngeal nerve palalysis	2	2.2
10	Others	15	16.9
	Total	89	100

The indications for tracheostomy designated as "others" includes difficult and prolonged intubation (9%), angioneurotic oedema (3.4%), acute epiglottitis (1.1%) and inhalational burn injury (1.1%).

Table 3: Other Indications

Indication	Frequency	Percent (%)
Angioneurotic oedema	3	3.4
Acute epiglotitis	1	1.1
Laryngotracheabronchitis	2	2.3
Inhalational burns injury	1	1.1
Prolonged intubation	3	3.4
Anticipated difficult intubation	5	5.6

The above table shows the frequency of various other indications for tracheostomy in our study.

DISCUSSIONS

This study shows that more males than females had tracheostomy within the period, with a male: female ratio of 1.6:1. This is similar to findings by Orji and Ezeanolue in Enugu.[17] Eziyi *et al* and Alabi *et al* also found male preponderance but their male ratio was higher, 2.8:1 and 2.5:1 respectively.[6,14]

Our study shows three peak age range is 1st decade, 3rd decade and 7th decade. Similar pattern of three peak age range has been reported by previous researchers.[6,14] whereas that of Adedeji *et al* in Osogbo showed two peaks in the 1st and 7th decades.[12] A breakdown of the age-related indications shows that in the 1st decade, foreign bodies were the predominant contributors, while the 3rd and 7th decades were predominated by trauma and neoplasms respectively. A study in North-central Nigeria also shows that foreign bodies accounted for most the tracheostomies performed in the first decade of life.[6] In contrast to our study, the peak age range in a study in Bangladesh was the 5th decade[18] and among this age group, carcinoma of the larynx and hypopharynx accounted for most of the indications.

Upper airway obstruction being one of the traditional indications for tracheostomy was the major indication for tracheostomy in 61.8% of cases in this review. This agrees with other works by different otorhinolaryngologists in other parts Nigeria.[15–17,19,20]

In our series upper airway obstruction secondary to head and neck tumors totaling 29 cases (32.5%) constituted the commonest indication for tracheostomy with laryngeal neoplasm being the highest single cause. Studies by previous researchers also show laryngeal neoplasm as the single most common indication.[6] Ranking second after head and neck tumors are trauma of varying aetiology accounting for 23 cases (25.8%), followed by foreign body aspiration, totaling 12 (13.5%). In a study in Tanzania,[21] upper airway obstruction secondary to trauma was the commonest indication for tracheostomy, though in that study, foreign bodies were included as traumatic causes. This high frequency of foreign body aspiration as indication for tracheostomy calls for urgent need for aggressive public enlightenment of prevention and more diligent safety parenting. Infection especially deep neck abscess was responsible for 8.9%, much higher than Kodiya's report from a multicenter study in Northern Nigeria where it accounted for 1.8%.[20] This high incidence of deep neck abscess calls for concern over our antibiotic culture.

Out of the 89 tracheostomies done, only one (0.89%) mortality was recorded following accidental decannulation in the ward. A higher mortality rate of 15% was recorded in the Alabi series. In their study 73% of the mortality cases were in the ICU with various comorbidities.[6] Olajide *et al* recorded a mortality rate of 8.9%. A similar study in Tanzania also estimated a mortality rate of 13.6%. However, None of these mortalities resulted directly from the tracheostomy, hence in all, tracheostomy remains a very important, life-saving procedure with minimal complications.

CONCLUSION

Tracheostomy remains a life-saving surgical intervention with upper airway obstruction constituting its highest indication and most of the procedures performed under emergency. All surgical Residents and casualty officers should endeavour to acquire the skills necessary to perform such a life-saving procedure early in their training in order to prevent avoidable deaths. Indeed, every physician should be familiar with this procedure or at least identify when indicated and refer promptly, so as to prevent salvageable mortalities.

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