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# A 5 YEAR STUDY OF INDICATIONS FOR TRACHEOSTOMY IN THE LAGOS STATE UNIVERSITY TEACHING HOSPITAL

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## ABSTRACT

**Background:** The aim of this study is to identify the common indications for tracheostomy in the Lagos State University Teaching Hospital in a 5 year period (2017-2021) carried out by the ENT Department of the Lagos State University Teaching Hospital. **Method:** A review of the Surgery records of all patients with tracheostomy over the study period (January 2017 to December 2021) using the records of the Main theatre, Intensive Care unit and the private critical care unit of the Lagos State University Teaching Hospital between 2017 and 2021 after ethical approval. Data retrieved includes: Age, Sex, Indication for Surgery, type of tracheostomy (Emergency or elective) and method of Anaesthesia and data analyzed using Microsoft Excel. **Result:** In the study period, 89 tracheostomies were carried out of which 62(69.66%) were emergencies while 27(30.34%) were electives. 51(57.3%) were done under General anaesthesia while 38(42.7%) were under local anaesthesia. 38(42.7%) of the patients were females while 51(57.3%) were males. The common indications for tracheostomy were upper airway obstruction secondary to laryngeal tumor(37.8%) and upper airway obstruction secondary to tracheomalacia (16.85%). Prolonged Huge multi-nodular Goitre with suspected tracheomalacia (7.87%) and assess for anaesthesia(5.62%) were other indications for tracheostomy. **Conclusion:** Tracheostomy remains a live saving procedure. Relief of upper airways obstructions secondary to laryngeal tumor and tracheomalacia were the common indications in our study. Other common indications are prolonged huge multi-nodular goitre with suspected tracheomalacia and assess for anaesthesia.

## KEYWORDS

## INTRODUCTION:

Tracheostomy is a surgical procedure where a stoma is created at the skin surface of the anterior aspect of the neck with the trachea exteriorized to the cervical skin with a subsequent tracheal cutaneous fistula with maintenance of this fistula with a tube[1] The goal of this procedure is to establish an alternative airway through the creation of a surgical opening at the anterior wall of the trachea and maintaining this opening with a tube or the stoma can remain independently[2].

According to the book titled "Armamenterium Chirurguium," tracheostomy is a lifesaving procedure, especially when the indication is appropriate and the right technique is applied. Tracheostomy happens not to be the only airway intervention procedure. Other airway interventions includes: endotracheal intubation, and crico-thyroidotomy[3].

The history of Tracheostomy dates back to Egypt where the procedure was first depicted on Egyptian artifacts in 3600 B.C[4]. Notable names that are important in the history of tracheostomy includes: Asclepiades of Bithynia, Galen and Aretaeus, Antonio Musa Brassalova[5]. The currently used tracheostomy technique was described in 1909 by Chevalier Jackson of Pittsburg Pennsylvania[6]. However the word tracheotomy was first used by a Professor of medicine by name Thomas Fienus (1567-1631)[7].It is a common surgical procedure carried out in emergencies, intensive cares and in the bedside wards[8].

The common indications for tracheostomy includes: long term mechanical ventilation, weaning failure, upper airway obstruction and airway protection[9]. Asides providing a stable airway, it ensures pulmonary toileting[10]. Other benefits includes: reduction of laryngeal injury from endotracheal intubation, improves patients comfort and daily activities which includes: mobility, eating and speech[11,12].

Other benefits of tracheostomy includes facilitating weaning of patients off a mechanical ventilator in the intensive care unit, reduces upper respiratory dead space and allows the use of mechanically assisted respiration when necessary[18].According to De leyn et.al the four main indications for tracheostomy are: long term mechanical ventilation, failure in weaning patient off an endotracheal tube, upper airway obstruction and copious secretions[10].In as much as tracheostomy is a life saving procedure, it has its own complications. If performed carefully and the post operative period is managed meticulously, these complications tend to be avoided[9]. It has been observed that as a result of the delicate and pliable nature of the paediatric age group, they tend to have more morbidity and mortality when compared to adults[19,20].Complications of tracheostomy could be early, intermediate and late. Acute haemorrhage, pnuemo mediastinum, accidental decannulation, subcutaneous emphysema and tracheostomy tube blockage are examples of early complications. Intermediate complications includes local infection of the tracheostomy site and secondary haemorrhage. Late complications are: difficult decannulation and psychological dependence[21].

Tracheostomy can be done either traditioanlly or percutaeously. Percutaneaous tracheostomy has some advantages which includes: easy and shorter duration to perform. A meta analysis done comparing percutaneous vs traditional tracheostomy revealed a reduced incidence of wound infection when tracheostomy was performed percutaneously[24].

## MATERIALS AND METHOD:

This study was a retrospective carried out on all patients that had tracheostomy at the Lagos State University Teaching Hospital between January 2017 to December 2021. A review of the Surgery records of all patients with tracheostomy over the study period using the records of the Main theatre, Intensive Care unit and the Critical Care unit of the Lagos State University Teaching Hospital between 2017 and 2021 after ethical approval. Data retrieved includes: Age, Sex, Indication for Surgery, type of tracheostomy (Emergency or elective) and method of Anaesthesia. Information retrieved was inputted into a Microsoft Excel sheet and data analyzed with results presented in tables and charts.

## RESULTS:

In the study period, 89 tracheostomies were carried out of which 62(69.66%) were Emergencies while 27(30.34%) were electives. 51(57.3%) were done under General anaesthesia while 38(42.7%) were under local anaesthesia. 38(42.7%) of the patients were females while 51(57.3%) were males. Gender distribution, 50 males: 39 females with ratio 1.3: 1 with the age range of 1 year to 83 years.

The most common indication for tracheostomy were upper airway obstruction secondary to laryngeal tumor(37.8%) and upper airway obstruction secondary to tracheomalacia(16.85%). Prolonged Huge

multi-nodular Goitre with suspected tracheomalacia (7.87%) and assess for anaesthesia(5.62%) were other indications for tracheostomy.

**Table I: Showing the indications for tracheostomy**

| S/No | Indications for tracheostomy | Numbers | Prevalence% |
|---|---|---|---|
| | Upper airway obstruction secondary to tumor | | |
| 1 | Laryngeal tumor | 35 | 39.33 |
| 2 | Oropharyngeal tumor | 3 | 3.37 |
| 3 | Palatal tumor | 2 | 2.25 |
| 4 | Hypopharyngeal tumor | 2 | 2.25 |
| 5 | Larygeal papillomatosis | 2 | 2.25 |
| 6 | Thyroid Cancer | 1 | 1.12 |
| 7 | Upper airway obstruction secondary to advanced Parotid tumor | 1 | 1.12 |
| 8 | Upper airway obstruction secondary to vocal cord paralysis post thyroidectomy | 10 | 11.24 |
| 9 | Prolonged Huge multi-nodular Goitre with suspected tracheomalacia. | 7 | 7.87 |
| 10 | Assess for anaesthesia | 5 | 5.62 |
| 11 | Anticipated prolonged intubation | 4 | 4.49 |
| 12 | Foreign body in Aero-digestive tract | 4 | 4.49 |
| 13 | Prolonged intubation | 4 | 4.49 |
| 14 | penetrating neck injury | 2 | 2.25 |
| 15 | Cut throat sec attempted suicide | 2 | 2.25 |
| 16 | Temporo-mandibular joint ankylosis | 1 | 1.12 |
| 17 | ARDS | 1 | 1.12 |
| 18 | Upper airway obstruction secondary to infra-glottic abscess | 1 | 1.12 |
| 19 | Upper Airway obstruction secondary to Ludwig angina | 1 | 1.12 |
| 20 | Upper Airway obstruction secondary to tetanus | 1 | 1.12 |
| | Total | 89 | 100 |

**Table 2: Showing the age ranges vs Number of tracheostomies done**

**Age rang Number of tracheostomy**

| Age range | Number of tracheostomy |
|---|---|
| 0-10 | 3 |
| 11-20 | 10 |
| 21-30 | 10 |
| 31-40 | 12 |
| 41-50 | 13 |
| 51-60 | 17 |
| 61-70 | 12 |
| 71-80 | 11 |
| 81-90 | 1 |

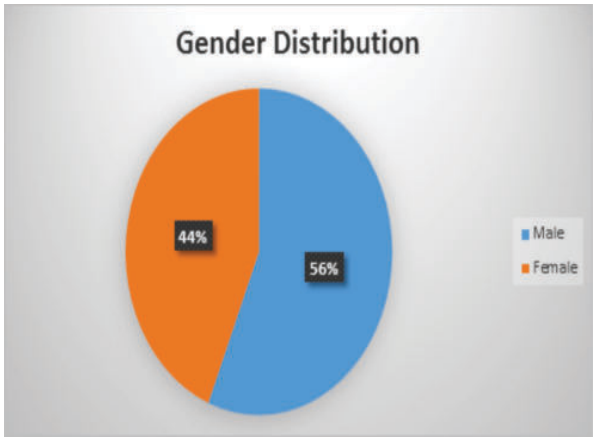


**Fig 1: Gender distribution**

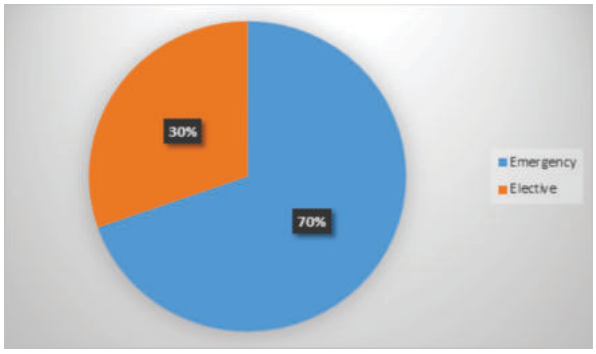


**Fig II: Emergency VS Elective tracheostomy.**

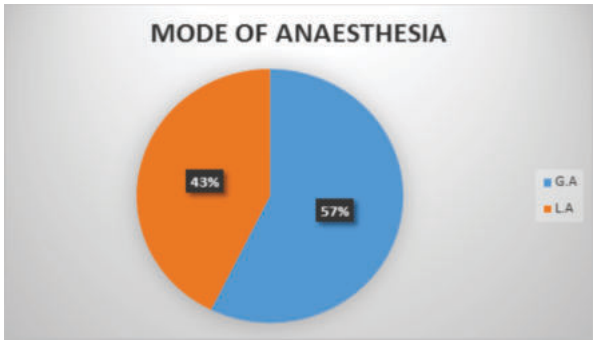


**Fig III: Mode of anaesthesia for Tracheostomy**

**DISCUSSION:**

Tracheostomy is a lifesaving procedure especially when the indication is appropriate and the right technique applied[3]. It will continue to be relevant in the practice of Otolaryngology since there will always be airway problems that will require such an intervention[6].

In our study the age range with the most frequent tracheostomy was 41-50 as against that in another study which was 20-3915. In a study by Toye Gabriel et.al in North Eastern Nigeria with age ranging from 5 months to 84 years the highest percentage of tracheostomies were carried in the paediatrics age group within the age range of 0-15 with a percentage of 37.8%[13]. Males were frequently involved with a male: female ratio of 2.2:1 as against 1.3:1 as found in our study15. Other authors also found males being the most affected[9,13,15].

In a study in North central Nigeria, 76.3% patients had emergency tracheostomy while 23.7% were elective9 which was similar in our study where 69.66% were emergency tracheostomy while 30.34% were electives.

The common indication for tracheostomy would depend on the health challenges of the region of the world. Relief of upper airway obstruction makes up the common indication for tracheostomy[10]. Another study found out that common indications for tracheostomy were relieve of upper airway obstruction, prolonged mechanical ventilation, protection of the lower airway in patients in coma and tracheobronchial toileting[17]. In our study the common indications were upper airway obstruction secondary to laryngeal tumor(37.08%) and upper airway obstruction secondary to vocal cord paralysis post thyroidectomy (11.24%). A study in South western Nigeria showed that the commonest reason for tracheostomy was upper airway obstruction secondary to laryngeal tumor and this was similar to a study in Ilorin by Ologe et.al revealed that the commonest indication for tracheostomy was upper airway obstruction secondary to laryngeal tumor which was similar to our study where an emergency tracheostomy was done to relieve the obstruction of these patients before confirmation of the diagnosis via histology[18,19]. However in a study in Tanzania, the commonest indication was upper airway obstruction secondary to trauma which was not the case in our study[20]. Upper airway obstruction secondary to neoplasm(39.8%) was the second leading reason for tracheostomy in a study by Japhet M Gilyoma et.al and majority of these trachostomies were emergencies[20]. The second commonest indication for tracheostomy in our study was upper airway obstruction secondary to vocal cord paralysis post thyroidectomy which was at variance with the study at Ilorin were

upper airway obstruction secondary to trauma[19]. Trauma being an indication for tracheostomy contributed to indications for tracheostomy. Penetrating neck injury(2.25%), cut throat from attempted suicide(1.12%) were also indications in our study. In another study trauma was a major indication for tracheostomy (33.3%) with four of those patients having a motor bike accident while two had cut throat injuries following attempted suicide on themselves[13] while Kokong et.al recorded 9.8% cases of cut throat in their study[15].

A study on indications for tracheostomy in the ICU revealed that head injury and history of RTA contributed about 28.33%. Post operative of intra cranial space occupying lesion(25%). This result was in tandem with our study where trauma was the commonest indication. The study also concluded that 100% of the patients had greater comfort with tracheostomy over endotracheal intubation[22]. A study in India revealed that prolonged intubation requiring recquiring ICU admission was the commonest indication for tracheostomy with RTA contributing to 45% of ICU admissions[23].

Other indications for tracheostomy in the study by Mita MS et.al were septic shock(11.81%) and poisoning(7.64%) and this wasn't found in our study.

In another study by Buchie et.al, the commonest indication for tracheostomy was assisted ventilation which is at variance with the finding in our study. Complications sited in some studies includes: granulation, ulceration with slough, ulceration of subglottis as early complications. Late complications noticed were sublgottic stenosis, granulataion at tracheostomy site, vocal cord palsy[23].

## CONCLUSION:

Tracheostomy remains a life saving procedure. Relieve of upper airways obstructions secondary to laryngeal tumor and upper airway obstruction secondary to vocal cord paralysis post thyroidectomy were the common indications in our study.

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**Conflict of Interest:** There are no conflicts of interests.

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