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Tracheostomy in the Oral and Maxillofacial Surgery Department of Cocody Teaching Hospital: About 15 Cases

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Abstract

Introduction: Tracheotomy is the opening of the anterior surface of the cervical trachea and the placement of a tracheostomy tube allowing breathing by short-circuiting the supraglottic airways. Although tracheotomy is a common surgical procedure in ENT departments, it's also performed by the maxillofacial surgeon in stomatology and maxillofacial surgery departments. The aim of our study is to describe the epidemiological profile, identify the indications and circumstances and determine the prognosis of tracheotomy performed in the maxillofacial surgery and stomatology department of Cocody Teaching Hospital. **Results:** 15 tracheostomies were performed with an annual incidence of 7.5. The age group between 20 and 39 years old was common in 60%. There were 7 men and 8 women. The patients all had a medical history. Traders were represented in 7 cases. The commune of Abobo was the place of origin in 5 cases. Tracheotomy was elective in 11 cases (73.3%) and permanent constriction of the jaws was the indication in 6 cases (40%). The course was simple in 10 cases (66.7%) and punctuated by complications in 5 cases (33.3%), including one death. **Discussion:** Tracheostomy is a common surgical procedure. The epidemiological profile of tracheostomized patients in the Department of Stomatology and Maxillofacial Surgery of the University Hospital of Cocody is young female subjects of modest socioeconomic status. Permanent constriction of the jaws, large oro-maxillofacial tumors and cervicofacial cellulitis of dental origin are the frequent indications. Subcutaneous emphysema was the main complication of tracheostomy in the study.

Keywords

Tracheotomy, Surgery, Maxillofacial, Indications, Complications

1. Introduction

Tracheotomy is a vital surgical procedure which consists of a temporary or permanent opening of the anterior surface of the cervical trachea and the placement of a tracheostomy tube which maintains respiration by short-circuiting the supraglottic airways [1] [2]. Known under different names such as laryngotomy, pharyngotomy, and bronchotomy, the word "tracheotomy" appeared in literature for the first time in 1649 and was officially introduced by HEISLER, a German surgeon, in 1718. Over time, the indications and the technique of tracheotomy have evolved with the development of head and neck surgery and resuscitation [2]. Thus, two types of tracheotomy are described: surgical tracheotomy and percutaneous tracheotomy [3]. If tracheotomy is a frequent surgical procedure in ENT and intensive care units [4], in stomatology and maxillofacial surgery units, the indications for tracheotomy are just as frequent and it is performed by the maxillofacial surgeon working in the unit. However, very few studies on tracheotomy performed in stomatology and maxillofacial surgery departments are available in the literature [5]. The aim of our study is to describe the epidemiological profile, identify the indications and give the prognosis of tracheotomies performed in the stomatology and maxillofacial surgery department of Cocody teaching hospital.

2. Patients and Method

This was a retrospective study with a single-center descriptive aim carried out in the stomatology and maxillofacial surgery department of the Cocody teaching Hospital over a period of 2 years from December 1, 2022 to November 30, 2024.

The inclusion criteria were patients tracheotomized during the study period by a maxillofacial surgeon from the department whose medical file was sufficiently documented.

The non-inclusion criteria were tracheotomies that were not performed by a maxillofacial surgeon in the department; and poorly completed patient records.

The variables studied were: age, sex, profession, medical history, patient origin, the indications, circumstances and prognosis of tracheotomy. Patients were individually followed over a period of 6 months.

Data were collected using a survey form from the patients' medical observation records.

Patients' consent was obtained to use their images for purely scientific purposes. Anonymity and privacy were respected.

We used SPSS 2.0 software for data analysis.

3. Results

During the last two years, 15 tracheostomies were performed with an annual incidence of 7.5. The age group between 20 and 39 years was common in 9 cases (**Table 1**). There were 7 men and 8 women. The patients all had a medical history (**Table 2**). Regarding profession, traders were represented in 7 cases (**Table 3**). The commune of Abobo was the place of origin in 5 cases (**Table 4**). Tracheotomy

was elective in 11 cases (73.3%) and permanent constriction of the jaws was the predominant indication in 6 cases (Table 5). The course was simple in 10 cases (66.7%) and punctuated by complications in 5 cases (33.3%), including one death (Table 6). Complications were dominated by subcutaneous emphysema occurring after 24 hours (Table 7).

Table 1. Distribution of patients according to age.

Age	Number of Cases	Percentage %
0 - 20	0	0
21 - 40	3	20
41 - 60	9	60
>60	3	20
Total	**15**	**100**

The age group most affected was 40 and 60 years old and included 9 patients (60%).

Table 2. Distribution of patients according to medical history.

Antecedent	Cases	Total %
HTA	7	46.67
Diabetes	5	33.33
HIV	1	6.67
Tobacco	6	40
Alcohol	9	60
Asthma	1	6.67

Each patient had at least medical history.

Table 3. Distribution of patients according to occupation.

Occupation	Cases	Total %
Traders	7	46.67
Teachers	1	6.67
farmers	3	20
Students	1	6.66
Unemployed	3	20
Total %	**15**	**100**

The most affected profession was traders and included 7 patients (46.67%).

Table 4. Distribution of patients according to origin.

Residence	Cases	Total %
Abobo	5	33.33

Continued

Cocody	2	13.33
Yopougon	3	20
Adjamé	3	20
Other towns	2	13.34
Total%	**15**	**100**

The most of patients came from ABOBO (5 patients).

Table 5. Distribution of patients according to indications and the circumstances of the tracheotomy

Indications	In Emergency	Elective	Total Number	Total %
cervico-facial odontogenic cellulitis	4	0	4	26.67
maxillo-facial Tumors	0	5	5	33.33
Permanent constriction of the jaws	0	6	6	40.00
Total	4	11	15	100.00
Total %	**26.67**	**73.33**	**100.00**	**100.00**

Table 6. Distribution of patients according to indications and circumstances of tracheotomy.

Complications	Emphysema	Cardio-Respiratory Arrest	Favorable	Total Number	Total (%)
cervico-facial odontogenic cellulitis	2	1	1	4	26.67
maxillo-facial Tumors	1	0	4	5	33.33
Permanent constriction of the jaws	1	0	5	6	40.00
Total	4	1	10	15	100.00
Total (%)	**26.67**	**6.67**	**66.67**	**100.00**	**100.00**

The evolution was favorable in 10 cases and complicated in 5 cases including 01 death.

Table 7. Distribution of patients according to the period of occurrence of complications

Complications	Emphysema	Cardio-Respiratory Arrest	Total Number	Total (%)
Intraoperative	0	1	1	20.00
In 24 hours	1	0	1	20.00
After 24 hours	3	0	3	60.00
Total	4	1	5	100.00
Total (%)	**80.00**	**20.00**	**100.00**	

The majority of complications occurred after 24 hours.

The indication is dominated by permanent constrictions of the jaws with a number of 6 cases (40%) followed by tumors with 5 cases (33.3%) and cervicofacial cellulitis with 4 cases (26.6%) (Figure 1 and Figure 2).

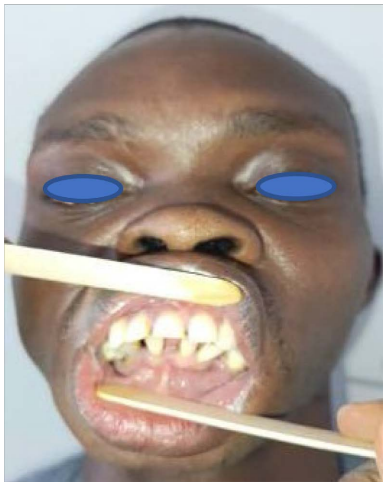

Figure 1. Permanent constriction of the jaws.

Figure 2. Intubation after tracheostomy.

4. Discussion

Tracheotomy is one of the most commonly performed surgical procedures in intensive care, otolaryngology and maxillofacial surgery departments. In the intensive care and otolaryngology units, numerous studies have reported a prevalence of tracheostomy greater than 10% [6]-[8]. On the other hand, in maxillofacial surgery departments, the literature provides very few studies. To our knowledge, the only study carried out in a maxillofacial surgery department is that of ZEGBEH *et al.* [5], who reported an annual incidence of 9.75. In our study the incidence of tracheotomy is 7.5. These incidents specific to maxillofacial surgery are not insignificant and reflect the frequency of tracheotomies in maxillofacial surgery de-

partments. The age group most affected in our study was 20 - 40 years old. The majority of patients in the study are young subjects. There is a similarity with the results of ZEGBE *et al.* However, the age range in the study by DALIL *et al.* [4] is 41 - 60 years and is consistent with several other studies carried out in otolaryngology departments [9] [10]. Most patients in otolaryngology studies are adult subjects. The gap between age groups could be linked to the variation in the main indications for tracheostomy between maxillofacial surgery and otorhinolaryngology. Indeed, with regard to indications for maxillofacial surgery, cervico-facial cellulitis of dental origin which predominates in the study by ZEGBE *et al.* mainly affect young people. In our study, the permanent constrictions of the jaws which represent the main indication, currently, begin in childhood and lead the patient to quickly consult at a young age. On the other hand, in otolaryngology, oral or laryngeal cancer is the major indication for tracheotomy and represents a pathology in adults [10]. Several otolaryngological studies report a constant male predominance which could be linked to the high frequency of malignant tumors of the larynx. For some authors [11] [12], laryngeal cancer affects men more than women. In studies of maxillofacial surgery, the sex ratio is variable. ZEGBE *et al.* [5] reported a male predominance while our study revealed a female predominance. This variability would reflect the fact that the indications for tracheotomies in maxillofacial surgery departments are not linked to sex. Most of the study population were traders living in Abobo, each with at least a previous medical examination. The sociodemographic characteristics of patients have not been studied in the literature. They reveal, in the local context, the precarious living conditions of patients which expose them to pathologies such as permanent constrictions of the jaws, large orofacial tumors and cervico-facial cellulitis of dental origin which are the most common indications of tracheotomies in maxillofacial surgery departments influencing the vital prognosis, by the cardio-respiratory arrest recorded in our study as in that of ZEGBE *et al.* [5]. Tracheotomies in the study were performed to allow tracheal intubation. Permanent constrictions of the jaws (6 cases), maxillofacial tumors (5 cases) and diffuse cervico-facial cellulitis (4 cases) were the indications for tracheotomy in our study. Tracheotomies were performed in patients who had permanent constriction of the jaws with an inability to open them preventing the use of a laryngoscope or a maxillofacial tumor obstructing the upper airways where they were elective. Their high prevalence could be explained by the unavailability of the fiberscope or by the failure of naso-tracheal intubation under fiberoscopy because of an impossibility or severe limitation of mouth opening. For JC Favier *et al.* [13], Fiberscopic intubation or fibro-intubation is the reference technique in adults in the event of scheduled difficult intubation. ZEGBE *et al.* [5] reported a predominance of indications for tracheotomy linked to head and neck cellulitis. In our study, cervicofacial cellulitis was the least frequent indication and tracheotomies were performed urgently due to edema obstructing the upper airways and preventing orotracheal intubation. The low prevalence of head and neck cellulitis in our study is due to the use of the

laryngeal mask during cellulite drainage in the operating room. This method of general anesthesia has helped to significantly reduce the number of tracheal intubations via tracheotomy. Elmaleh J. *et al.* [14] indicate the laryngeal mask as a less invasive alternative to tracheal intubation, for airway management in cases of difficult intubation. Tracheotomy is a surgical procedure which carries significant morbidity and mortality. Our study recorded 5 cases of complications including 4 cases of subcutaneous cervicothoracic emphysema (26.67%) and 1 death by cardio-respiratory arrest. Emphysema was the most observed complication, contrary to the study by ZEGBE *et al.* [5]. RACHID *et al.* [15] also reported a high prevalence of cervicothoracic subcutaneous emphysema in 7 patients or in 31.82% during the first 24 hours after tracheotomy. The occurrence of emphysema in our study beyond 24 hours could be explained by the closure of the skin edges of the incision by performing stitches after decannulation of the patient. However, our study could be enriched by a study with a larger sample. As this study is the first in the department, a study with a larger sample will allow us to determine the real prognosis of tracheostomy.

5. Conclusion

Tracheotomy is a common surgical procedure in maxillofacial surgery. The profile of the tracheotomized patient in the stomatology and maxillofacial surgery department is the young female subject, of modest socio-economic condition, presenting permanent constriction of the jaws, a huge oral or maxillofacial tumor and, to a degree, cervico-facial cellulitis. Subcutaneous emphysema was the main complication of tracheotomy in this study. This study calls for the training of maxillofacial surgeons in mastering the surgical performance and monitoring of tracheotomy.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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