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Original Article

Tracheostomy in head-neck malignancy

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Abstract:

Objectives: To find out the frequency ,indications and effects of tracheostomy in head-neck malignancy.

Methods: Total 100 cases of head-neck malignancy that needed tracheostomy were studied in the department of Otolaryngology and Head-Neck surgery of Dhaka Medical College Hospital and Begum Khaleda Zia Medical College and Shahid Sohrawardi Hospital, Dhaka.

Results: The mean age of the subjects was 53.60 years. Out of 100 cases male were 86 and female were 14 with male to female ratio 6.14:1. The highest number of the subjects were related to cultivation and majority of the subjects came from poor socio-economic status. Malignancy in head-neck region is multifactorial disease. Regarding habits 71% were smoker, 21% were habituated with chewing betel nut and leaf. Only 2% were alcoholic. In 93% tracheostomy was done on an emergency basis and rest 7% was elective. Carcinoma of larynx was the most frequent indication (65%), which was followed by carcinoma pyriform fossa (28%), carcinoma base of the tongue (3%), carcinoma tonsil 2% and carcinoma thyroid gland 2%. The rate of complications was 41%. Surgical emphysema was the commonest complications (19%), which were followed by haemorrhage (7%), wound infection (4%), tube displacement (3%), tube blockage (3%), crusting (2%), stomal stenosis and subglottic stenosis (1%). No fatality was found in this study.

Conclusion: The rate of complication of tracheostomy is high in patients of head-neck malignancy with respiratory distress.

Key words: *Tracheostomy, Head Neck Cancer.*

Introduction:

The term tracheostomy is used to refer to the creation of a surgical opening into the trachea. Tracheostomy is used when a formal opening or stoma is made.[1] It is a surgical procedure which is often life saving. Frequently it has long been used for acute respiratory tract obstruction regardless of the cause.[2] The early history of tracheostomy started with Galen and Aretaeus. Galen approved the operation and successfully opened the windpipe of a goat. Some authors credited Asclepiades of Bittynia (Second century AD) with the honor of being the first to perform the operation. Tracheostomy was performed in ancient times & the recording of such events have been documented by Asclepiades, the Greek Physician in 100BC.[3]

Tracheostomy is thought as an important life saving procedure in many conditions and has become a well-established procedure with more specific indications. It was found that tracheostomy is safer alternative to intubations when prolong artificial airway is required.[4]

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Tracheostomy is a frequently performed procedure and historically has had a high rate of complications.[5] It is one of the lives saving procedure. There is a very wise aphorism that if a tracheostomy comes into ones mind then it is the time to do it.[6] It has been found that in ICU approximately 13% of patients will have a tracheostomy at any one time.[7]

In the recent years more and more airway problems are managed with either endotracheal intubations or percutaneous endoscopically guided tracheostomy.[8] But the last one is not yet routinely practised in our country. So surgical tracheostomy are practiced here in vast majority of cases to manage airway problems.

Head and neck region is a frequent site of malignancy. Many of these malignancies arise in and around the upper aerodigestive tract. In advanced stage, these malignancies give rise to development of respiratory distress. A great number of patients with head and neck in our country do not present at early stages, due to ignorance, poverty and lack of health care. They often present at advanced stages with respiratory distress. In this situation, only tracheostomy can save the life. Main indication of tracheostomy in our country particularly in adult is upper airway obstruction due to head and neck malignancy.[9] Tracheostomy is a very common operation in any otolaryngology and head neck surgery department. But even in this era of antibiotics and aseptic surgery, tracheostomy is not free from complications. Although these complications are usually not serious, but occasional serious complications may arise which may cause death of the patient.[10]

Methods:

A cross sectional study was done with 100 patients having respiratory distress with head-neck malignancy during October 2006 to March 2007 in Dhaka Medical College Hospital and Begum Khaleda Zia Medical College & Shahid Sohrawardi Hospital. Aims of this study were to find out the frequency, indications, and effects of tracheostomy in head-neck malignancy in our country and to find out the causes of morbidity of tracheostomy. Patient having respiratory distress due to causes other than head-neck malignancy and head-neck malignancy without respiratory distress were excluded from this study. Data was collected in a prescribed data collection sheet, collected data were complied and analyzed and results were presented in suitable charts, figures.

Results:

In this study the lowest age of the subject was 25 years and the highest age was 80 years and the highest number of patients were in 6th decade (43%).

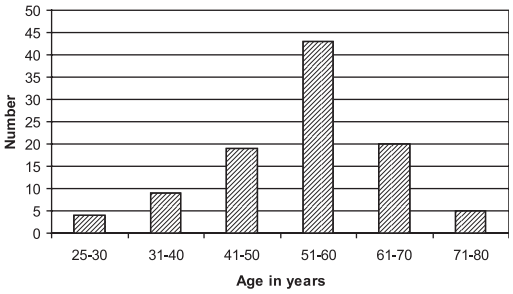

Fig-1: *Age distribution of tracheostomy patients with head-neck malignancy.*

Among the study subjects 86 were male and 14 were female; male to female ratio was 6.14:1. Out of 100 cases poor group was seen to be the commonest group scoring to 70% and affluent group was least 2% only.

The highest number of the study subjects was related to cultivation (32%), followed by businessman (23%), service holder (17%), day labourer (13%), housewife (08%), driver (03%), teacher (02%) and fisherman (02%).

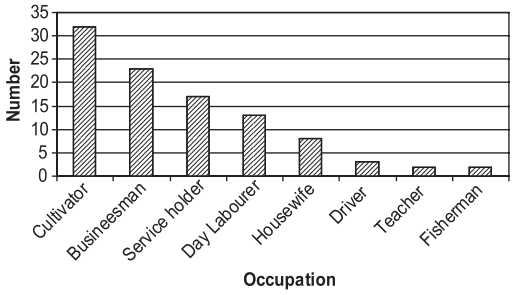

Fig-2: *Distribution of occupation of the subjects*

Out of 100 cases 71% cases were smoker, habituated with chewing betel nut & betel leaf were 21% and only 2% were alcoholic.

Here carcinoma larynx was most frequent (65%) indication and carcinoma of the tonsil & thyroid gland were the least frequent indication for tracheostomy. Out of 100 cases 93% cases were emergency and 7% cases were elective.

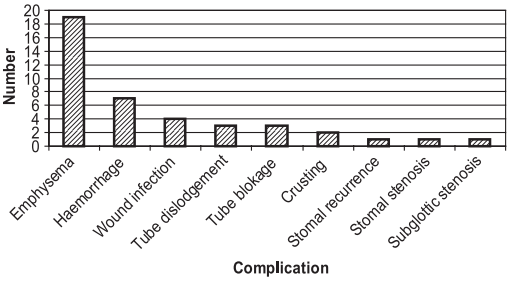

Fig-3: *Distribution of complications of tracheostomy*

Out of 100 case overall complication was 41% and the most common complication was surgical emphysema 19%. The other complication included haemorrhage 7%, wound infection 4%, tube dislodgement 3%, tube blockage 3% and crusting 2%. Stomal stenosis and subglottic stenosis were the complications observed infrequently.

Discussion:

Tracheostomy is a life saving operation. It is one of the most common surgical procedures, but not always without complications.[11] In this study 100 cases of tracheostomy were studied prospectively to see their various socio-demographic characters, the indications of tracheostomy and its complications. The values were compared with those of others.

The age range of the subjects varied from 25 years to 80 years. The mean age was found 53.60 yrs with highest frequency in the age group 51-60 years. In a previous study the mean age was found to be 41.40 years with highest frequency in the age group 45-60 years, which was not similar to our study, where 6th and 7th decades were the commonest age group.[12]

Study of sex distribution among the 100 cases of tracheostomy showed that 86 cases were male and 14 cases were female. Male to female ratio was 6.14:1. In a previous study the male to female ratio was found to be 6.91:1, which was similar to our study.[13]

In this study 70% of the cases came from poor socio-economic group. In another two previous studies carried out in this country, it was found to be 54% and 51.48%, which were not similar to our study.[14]

In this study the most common occupational group was cultivators (32%), which was followed by businessman (23%), service holders (17%), day laborer (13%) & house wife (08%). Less common occupational groups were drivers, teachers & fishermen. In a previous study it was found to be cultivators (28.40%), bu sinessman (18.34%), service holder (15.98%), day laborer (11.24%), and housewife (5.92%), which was almost similar to our study.[15]

In the study of the distribution of personal habits of the subjects it showed that 71% of

the study subjects were smoker, 21% cases were habituated in chewing betel nut & betel leaf, 2% were alcoholic and 6% were habituated with nothing. In the previous study carried in our country it was found to be 74% smoker and 42% betel leaf chewer, which is almost similar to this study.[16]

This is revealed that the commonest indications of tracheostomy in head and neck malignancy were laryngeal carcinoma 65%, followed by carcinoma pyriform fossa 28%. Less common indications were carcinoma of base of the tongue 3%, carcinoma of tonsil 2% and carcinoma of thyroid gland 2%. In the previous two studies carried out in this country it was found to be carcinoma larynx 54.44% followed by advanced hypopharyngeal carcinoma 8.88% and carcinoma larynx 47% followed by carcinoma hypopharynx 12% respectively, which were almost similar to our study.[11,17]

In our study most of the tracheostomies were emergency 93% and the rest 7% were elective. In the previous study carried out in this country it was found to be emergency tracheostomies 91% and elective only 9%, which was similar to our study.[11]

But findings of our study varied widely from other studies carried out abroad where emergency tracheostomy were found only (16% to 23%).[2,6] This wide variation may reflect poor health care system, illiteracy & poor socio-economic condition of the country where most of the patients presented at an advanced stage of the diseases requiring the measures as an emergency one to save the life.

The rate of complications of tracheostomy was 41% in this study. Most retrospective studies have assessed the overall incidence of complications and these ranged from 5% to 40%.[18] The value in our study is within the range of this review.

In this study surgical emphysema was the commonest complication (19%). In the previous two studies carried out in this country it was found to be 9.47% and 21% respectively, which was similar to the result of our study.[11,17] Surgical emphysema can be alarming, but is seldom fatal. It is mostly confined to the neck but can extend to the face and chest wall. It usually presents within the first day and is self-limiting by the seventh day, unless the precipitating factor persists. Too tight closure of the skin or subcutaneous tissue, too large incision in the trachea, improperly fitting tracheostomy tube and excessive coughing are the causative factors. The risk of tracheostomy tube being displaced is increased in cases of marked surgical emphysema due to local increase in the neck swelling.[18]

The second commonest complication was haemorrhage; it was found in 7% cases. In the previous study in Dhaka Medical College Hospital it was found to be 5% and 5.33%, which was similar to our study.[11,17] Haemorrhage is most commonly arising from anterior jugular veins and thyroid gland. In one study the authors described haemorrhage as the most common fatal complication; out of 36 deaths due to direct complications of tracheostomy 10 deaths were due to haemorrhage.[19] But in this study the bleeding were minor and treated conservatively.

In this study wound infection was found 4% cases. In previous two studies carried out in home it was found to be 2.96% and 4%,which was identical to our study. In a study bacterial contamination in the neck wound was found in 35% cases in open tracheostomy. Fortunately infection in the neck in tracheostomy is local, indolent and produces local cellulites with some granulation tissues. Antibiotics are seldom necessary as the wound is open and drainage is adequate.[1]

In our study tube displacement was found in 3% cases. In other studies carried out in home and abroad it was found to be 4%, 2.96% and 1.5% respectively, which was almost similar to this study.[17] Length of the tube and thickness of the neck are clearly the most important factors; post operative oedema, haematoma and emphysema will cause a broadening of the distance between the skin surface and the anterior wall of the trachea.[1] it is a complication which is potentially life threatening .

Tube blockage was found in 3% cases. In three previous studies it was found to he in 2.7%, 3.55% and 2% cases respectively, which was similar to this study.[1,11,l7] A tracheostomy alters the basic physiology of the inspired air from filtered, warm and humidified to dry cold air coming into direct contact with the trachea. This alteration dries the tracheal and pulmonary secretions and interferes with the ciliary capacity to move the mucous blanket and thus causes production of thick, tenacious mucous scabs and crusts. If the situation is not controlled the scab will increase in size, with the result that they are difficult or impossible to cough out or even removed by suction.[19]

Crusting, stomal recurrence, stomal stenosis and subglottic stenosis were found less commonly in this study. Other studies also showed a few or no incidence of these types of complications.[20,21] Another study showed a relatively same incidence of crust formation.[6]

Although different studies showed incidence of dysphasia, pneumothorax, aspiration, tracheo-oesophageal fistula, tracheo-cutaneons fistula and cardiac arrest, we found no such complications. In this study no fatality was found. The fatality was due to cardiac arrest during tracheostomy, the rate varied from 0% to 5% in different studies.[2,21,22]

The reason for a high incidence of complications in our study may he due to the fact that most of the patient came to the hospital in a state of severe respiratory distress and they became very much restless during emergency tracheostomy resulting in clumsy procedure. Another possibility of such a higher rate of complications is most of the tracheostomy in this series were done by the junior resident doctors.

Conclusion:

This study analysed 100 cases of tracheostomy in head and neck malignancy in the department of otolaryngology and head neck surgery of Dhaka Medical College Hospital & Begum Khaleda Zia Medical College & Shahid Sohrawardi Hospital, Dhaka. Tracheostomy was a life saving procedure and was done to relieve respiratory distress. In this study there was a high rate of complications, which may be due to the fact that most of the patients came to the hospital in a state of severe respiratory distress and they became very much restless during emergency tracheostomy resulting in clumsy procedure. Most of the complications were preventable and could have been avoided by careful operative technique and meticulous post operative management.

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