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Tracheostomy in Tertiary Care Health Institution

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ABSTRACT

Background: Tracheostomy is the most obliging and one of the oldest operations in the history of surgery. It is channel between the trachea and skin in the midline in the neck. Most common indications are upper airway obstruction, mechanical respiratory insufficiency and pulmonary toileting etc.

Methods: It is a retrospective study done in a teaching hospital in eastern Nepal from 2005-2008. Medical records of 175 tracheostomized patients were reviewed. Demographic variations, indications and outcome were recorded and analyzed.

Results: Age ranged from 1 to 88 years. Most common age group was 21-30 years followed by 51-60 years. Common indications for tracheostomy were upper air way obstruction (34.3%), prolonged intubation (20%). Common diagnoses were tumor of larynx/hypopharynx (26.3%), infectious causes (20.6%) and cut throat (13.7%).

Conclusions: Most common indication for tracheostomy in tertiary care health institution in Eastern Nepal was upper airway obstruction. Procedure is safe if done properly.

Keywords: prolonged intubation; tracheostomy; upper air way obstruction.

INTRODUCTION

Treacheostomy is one of the oldest operations in the history of surgery. It is channel between the trachea and skin in the midline of the neck. In 1921 Chevalier Jackson modified indications and techniques for modern tracheostomy.[1] Today tracheostomy is most commonly performed in patients with upper air way obstruction and prolonged intubation. Although cricothyroidotomy and percutaneous tracheotomy are available alternatives, open method of tracheotomy provides more rapid and safe method to secure airway.[2] The most common indication of tracheotomy has changed from inflammatory causes in the past to prolonged intubation in the present day.[3]

Aim of this study is to find out the indication and early complication of tracheotomy at tertiary care health institution in Eastern Nepal.

METHODS

It is a retrospective study of patients who underwent tracheostomy from Janauary 2005 to December 2008 at BP Koirala Institute of Health Sciences (BPKIHS) at Dharan in Eastern Nepal. The study proposal was reviewed and approved by BPKIHS ethical committee. Data was obtained from inpatient records and operative notes from Otorhinolaryngology (ENT) ward, operation theatre (OT), Intensive Care Unit (ICU), Internal Medicine & Surgery ward. Total of 175 patients undergoing tracheotomy were included in this review. Biostatistical data on age, sex, indication for tracheotomy, procedure detail, co-morbidities & outcome were extracted. Tracheotomy procedure was performed on an elective or emergency basis LA/GA in the operating room & ICU. All data were compiled and analyzed using SPSS 17.0 version.

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RESULTS

Total of 175 patients had undergone tracheostomy during study period with age range 1-88 years with mean age 44 years. Out of total, 123 (70%) were male and 52 (30%) female. The male to female ratio was 2.4:1. The majority of patients were in third decade (Table 1).

Table 1. Age distribution of patients.

Age group	n (%)
<10	7 (4)
10 - 20	15 (8.6)
21 -30	40 (22.9)
31 -40	22 (12.6)
41-50	20 (11.4)
51-60	33 (18.9)
61-70	24 (13.7)
71-80	11 (6.3)
81-90	3 (1.7)
Total	175 (100)

The most common indication was stridor in 34.3% patients, followed by prolonged intubation 20% and cut throat injuries in 13.7% (Table 2). Of all patients, tumor (26.3%), infectious diseases (20.6%) and trauma neck (13.7%) were common diagnoses (Table3). There were 40 patients in the age group of 21-30 years with trauma 14 (35%) and tetanus eight (20%) as the common indications for tracheotomy. The common indications of tracheotomy in the age group of 51-60 years were tumours 16(48.5%) and neck trauma seven (21.2%). Surgical access to the airways was successful in all the patients. Complications were seen in 23 (13.2%) of cases. Stoma site infection was found in eight (4.5%), peri-operative haemorrhage in six (3.6%), early post operative surgical emphysema in four (2.3%) and diffcult decanulation in five (2.8%) cases. There were no deaths due to the procedure.

Table 2. Indication of tracheostomy.

Indication	n (%)
Upper airway obstruction	60 (34.3)
Prolong intubation	35 (20.0)
Repair neck cut injury	24 (13.7)
Anticipated laryngospasm	20 (11.4)
Laryngeal oedema	16 (9.1)
Respiratory failure	12 (6.9)
Difficult inbutation	6 (3.4)
Respiratory paralysis	2 (1.1)
Total	175 (100)

Table 3. Common diagnosis of tracheostomised patients.

Diagnosis	n (%)
Tumor of Larynx, Hypopharyx	46 (26.3)
Infection (Neck abscess, tetanus)	36 (20.6)
Cut throat	24 (13.7)
Burn	14 (8.0)
Poisoning (OrganoPhosphorus)	12 (6.9)
Medical condition (COPD, DKA,ACS,GBS*)	11 (6.3)
Surgical (head injury, laparotomy)	9 (5.1)
Granulomatous disease (tuberculosis, sarcoidosis0	6 (3.4)
F.B. Trachea	5 (2.9)
Bite (bear ,snake)	4 (2.3)
Mandible fracture	2 (1.1)
Gynaecolgical condition (eg Ectopic pregnancy)	3 (1.7)
Gun Shot injury	2 (1.1)
Post Thyroidectomy	1 (0.6)
Total	175 (100.0)

*COPD= chronic obstructive pulmonary disease, DKA=diabetic ketoacidiosis, ACS=Acute coronary syndrome, GBS=Gullien Barrie Syndrome.

DISCUSSION

Chevalier Jackson established the standard modern indication and technique of tracheotomy.[1] In recent years the majority of the tracheotomies are performed electively in intubated patients in intensive care units.[4] However, one of the most important indications for tracheotomy is upper airway obstruction. The establishment of an emergency surgical airway for acute upper airway obstruction becomes critical when establishment of the airway by other means fails or is not possible.

Tracheotomy was commonly performed in 21-30 years of age followed by 51-60 years age group in this study. Cut throat injury, poisoning & RTA requiring tracheotomy was found in 21-30 year age group whereas cancer of larynx and hypopharynx were common indications for tracheotomy in 51-60 years age group. The most common indication of tracheostomy in our study was upper air way obstruction (34.3%) followed by prolonged intubatuion (20%). Similar findings were found on study done by Babu et al,[5] in rural India and Orji et al in Nigeria.[6]

Laryngeal/hypopharyngeal tumor was found in 23.8% of cases. High tracheostomy was done for those cases. Though incidence of the stomal recurrence increases with such tracheostomy procedure,[7] the creation of tracheotomy was inevitable in these cases who presented with stridor. The observed significant number of patients in the age 51-70 years could be explained by the predominance of carcinoma of larynx/hypopharynx as the cause of upper airway obstruction. The fifth to sixth decade of life tend to be more affected and there may be a positive history of ingestion and smoking which are strong aetiological factors for development of head and neck malignacies.[8]

All cut throat injuries were above the level of cricoid cartilage exposing laryngeal and hypopharyngeal lumen. Seven of the cut throat injuries were homicidal injuries and rest were suicidal. Suicide is one of the 10 leading causes of death in the world with more than a million deaths occurring annually.[9] It occurs 20.4 times more frequently in individuals with major depression than the general population and therefore these patients will require psychiatric intervention.[10]

Though some authors support fibre-optic intubation for patients with ludwing angina and retropharyngeal abscess, we prefer to do open method of tracheotomy as a first choice.[11] The trial intubation can cause rupture of pus into the oral cavity with subsequent aspiration, airway oedema and laryngospasm, further worsening the airway obstruction.[12]

Twenty-three (13.2%) of our patients experienced complications which is comparable to other studies.[2,5] Stoma site infection eight (4.5%) cases was managed by wound dressing and antibiotics treatment directed by culture and sensitivity test. Haemorrhage due to thyroid isthmus was encountered in four and due to anterior jugular vein in two patients. Both these cases were managed efficiently by achieving complete haemostasis. Early post operative surgical emphysema was found in four (2.3%) lower than amusa YB et al (4.5%),[8] patients and regressed spontaneously. Diffcult decanulation occurred in five (2.8%) cases slightly lower than Orji et al (3.8%).[6] Two cases were GB Syndrome and one each in bilateral recurrent laryngeal nerve palsy after blunt neck trauma, post thyroidectomy and organophosporous poisoing. All cases successfully were decannulated in three months after appropriate management.

CONCLUSIONS

Most common indication for tracheostomy in tertiary care health institution in Eastern Nepal was upper airway obstruction. Procedure is safe if done properly.

REFERENCES

1. Jackson C. Tracheostomy. Laryngoscope. 1909; 19:285–90.
2. Yuen HW, Loy AH, Johari S. Urgent awake tracheotomy for impending airway obstruction. Otolaryngol Head Neck Surg. 2007 May;136(5):838-42.
3. Parilla C, Scarano E, Guidi ML, Galli J, Paludetti G. Current trends in pediatric tracheostomies. Int J Pediatr Otorhinolaryngol. 2007;71(10):1563-7.
4. Goldenberg D, Golz A, Netzer A, Joachims HZ. Tracheotomy: changing indications and a review of 1,130 cases. J Otolaryngol. 2002;31:211–5.
5. V Babu. S, Mohiyuddin A, Narasimhan I, G.K N, Venkatesh U, Nair P. Emergency tracheotomy – a six year experience of a rural tertiary hospital. The Internet Journal of Otorhinolaryngology. 2010;12(1).
6. Orji FT, Ezeanolue BC. Update on the pattern of trachostomies at a tertiary health institution after 27 years. Nigerian Journal of Otorhinolaryngology. 2006;3(1):8-15.
7. Bignardi L, Garioli C, Staffieri A. Tracheostomal recurrence after laryngectomy. Arch Otolaryngol.1983;238:107-13.
8. Amusa Yb, Akinpelu VO, Fadiora SO, Agbabakwuru EA. Tracheostomy in surgical practice: experience in Nigerian Tertiary Hospital .West Afr J Med. 2004;23(1)32-4.
9. Mohanty S, Sahu G, Mohanty MK, Patnaik M. Suicide in India: a four year retrospective study. J Forensic Leg Med. 2007;14(4):185-9.
10. Terra JL. Suicide risk and depression. Rev Prat. 2008;58(4):385-8.
11. Kulkarni AH, Pai SD, Bhattarai B, Rao ST, Ambareesha M. Ludwig's angina and airway considerations: a case report. Cases Journal. 2008;1(1):19.
12. Spitalnic SJ, Sucov A. Ludwig's angina; case report and review. J Emerg Med. 1995;13:499-503.