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RESEARCH

Characteristics of Patients Undergoing Tracheostomy at Prof.I.G.N.G. Ngoerah General Hospital 2021 - 2022

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ABSTRACT

Background: Airway emergencies can increase morbidity and mortality, therefore, rapid, precise, and effective assessment and treatment are essential. Tracheostomy is a procedure used to treat patients with inadequate ventilation and upper airway obstruction. **Purpose:** The purpose of this study was to determine the characteristics of patients who underwent tracheostomy in the (ORL-HNS) Otorhinolaryngology – Head and Neck Surgery Department of Prof. Dr. I.G.N.G Ngoerah General Hospital for the period January 1, 2021 - December 31, 2022. **Method:** This study uses a retrospective descriptive research design by taking secondary data from medical records of patients who underwent tracheostomy at Prof. Dr. I.G.N.G Ngoerah General Hospital..**Result :** the 115 patients who underwent tracheostomy at Prof. Dr. I.G.N.G Ngoerah General Hospital, Denpasar, from January 1, 2021, to December 31, 2022, the majority were elderly and predominantly male. Most patients experienced stage 1 airway obstruction, making almost all procedures elective. The most common diagnosis indicating tracheostomy was prolonged intubation. Only a small proportion of patients experienced complications, including cutaneous emphysema and infection. The incision used in all patients was a high incision, with a vertical incision surgically inserted. Most patients used a tracheostomy cannula for >60 days.

Keywords: Tracheostomy, Upper Airway Obstruction, Characteristics

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JOOB 001 Volume I No.I, p 12-16

INTRODUCTION

Airway emergencies can increase morbidity and mortality, therefore, rapid, precise, and effective assessment and treatment are essential. Tracheostomy is a procedure used to treat patients with inadequate ventilation and upper airway obstruction.[1,2,3,4] The incision made in the trachea is called a tracheotomy, while the stoma creation is followed by the insertion of a tracheal cannula to allow air to enter the lungs using a bypass of the upper airway, called a tracheostomy.[5,6,7,8] Tracheostomies can be temporary (short-term for acute problems), or long-term (usually permanent and removable). [9,10,11,12]

Tracheostomies are classified based on the incision location, procedure time, incision type, and tracheostomy technique. Based on the incision location, tracheostomies are classified as high- and low-placed.[13,14,15,16]

Tracheostomies are divided into emergency and immediate tracheostomies with minimal preparation and elective tracheostomies with adequate preparation. Meanwhile, based on the type of incision, there are vertical and horizontal incisions.2 As science advances, tracheal incision techniques for tracheostomy have also evolved. Numerous studies have been conducted to analyze safe and effective tracheostomy techniques to minimize morbidity. Tracheal incision techniques are divided into vertical, box, H-shaped, cruciate, and U-shaped.[17,18,19]

Tracheostomy is a common surgical procedure that has been widely performed in the United States. In the past eleven years, 1,352,432 adult patients received tracheostomies, representing 9.1% of the population. Results showed that tracheostomies were more common in surgical patients, men, and racial/ethnic groups.[3,4]

Prolonged endotracheal intubation increases the risk of laryngeal injury and ventilator-associated pneumonia, therefore, tracheostomy is preferred over endotracheal intubation. Based on previous research on the survival of people using different airways, with a follow-up period of >4 years, it was found that patients with endotracheal intubation had a higher risk of death compared to those using a tracheostomy. [5,6]

The purpose of this study was to determine the characteristics of patients who underwent tracheostomy in the ORL-HNS department/KSM of Prof. Dr. I.G.N.G Ngoerah General Hospital for the period January 1, 2021 - December 31, 2022.

The results of this study are expected to provide an overview of the characteristics of patients undergoing tracheostomy in the ORL-HNS Department of Prof. Dr. I.G.N.G Ngoerah General Hospital from January 1, 2021, to December 31, 2022.

METHOD

This study uses a retrospective descriptive research design by taking secondary data from medical records of patients who underwent tracheostomy at Prof. Dr. I.G.N.G Ngoerah General Hospital.

Inclusion criteria: patients who underwent tracheostomy at Prof. Dr. I.G.N.G Ngoerah General Hospital between January 1, 2021 and December 31, 2022.

Exclusion criteria: patients with incomplete medical records that included information on all studied variables.

Data were taken from medical records of patients who underwent tracheostomy in the ORL-HNS department of Prof. Dr. I.G.N.G Ngoerah General Hospital for the period January 1, 2021-December 31, 2022. The examination results were recorded in a data collection sheet for further analysis.

RESULT

Table 1. Characteristics of patients undergoing tracheostomy based on age

Age	Number	(%)
0-10	0	0
11-20	4	3,.7
21-30	8	6.95
31-40	7	6.08
41-50	11	9.56

JOOB 001 Volume I No.I, p 12-16

51-60	27	23.47
61-70	17	14.78
71-80	41	35.65
Total	115	100

Based on table 1, there are 41 sufferers or 35.65% aged 71-80 years, 27 sufferers or 23.47% aged 51-60 years, 17 sufferers or 14.78% aged 61-70 years, 11 sufferers or 9.56% aged 41-50 years, 8 sufferers or 6.95% aged 21-30 years, 7 sufferers or 6.08% aged 31-40 years, 4 sufferers or 3.47% aged 11-20 years, and 0 sufferers or 0% aged 0-10 years.

Table 2. Characteristics of patients undergoing tracheostomy based on gender.

Gender	Number	(%)
Male	79	68.69
Female	36	31.30
Total	115	100

Based on table 2, there were 79 patients who underwent tracheostomy or 68.69% were male and 36 patients or 31.30% were female.

Table 3. Characteristics of patients undergoing tracheostomy based on the degree of airway obstruction.

Degree of Obstruction	Number	(%)
Stage I	93	80.86
Stage II	7	6.08
Stage III	15	13.04
Stage IV	0	0
Total	115	100

Based on table 3, there were 93 sufferers with stage I airway obstruction or 80.86%, 15 sufferers with stage III or 13.04% and 7 sufferers with stage II or 6.08%.

Table 4. Characteristics of patients undergoing tracheostomy based on the cause of obstruction.

Caused	Number	(%)
Prolonged intubation	84	73.04
Laryngeal tumor	14	12.17
Hypopharyngeal tumor	3	2.6
Nasopharyngeal cancer	2	1.73
Tongue cancer	2	1.73
Thyroid cancer	2	1.73
Nasopharyngeal tumor	2	1.73
Laryngeal cancer	1	0.86
Tonsil tumor	1	0.86
Submandibular infiltrate	1	0.86
Vocal cord tumor	1	0.86
Non-Hodgkin's lymphoma	1	0.86
Angiofibroma	1	0.86
Total	115	100

Based on Table 4, there were 84 patients, or 73.04%, with prolonged intubation, 14 patients, or 12.17%, with laryngeal tumors, 3 patients, or 2.60%, with hypopharyngeal tumors. There were 2 patients, or 1.73% each, with nasopharyngeal cancer and tongue cancer, thyroid cancer, nasopharyngeal tumor, and 1 patient, or 0.86% each, with laryngeal cancer, tonsil tumor, submandibular infiltrate, vocal cord tumor, non-Hodgkin's lymphoma, and angiofibroma.

Table 5. Characteristics of patients undergoing tracheostomy based on the time of the procedure.

Action Time	Number	(%)
Elective	100	86.96
Emergency	15	13.04
Total	115	100

Based on table 5, there were 100 people or 86.95% of patients with elective procedures and 100 people or 13.04% with emergency procedures.

Table 6. Characteristics of patients undergoing tracheostomy based on incision location.

Types of Incisions	Number	(%)
High location	115	100
Low position	0	0
Total	115	100

Based on table 6, there were 115 people or 100% of sufferers with high position.

Table 7. Characteristics of patients undergoing tracheostomy based on incision type.

Types of Incisions	Number	(%)
Vertikal	115	100
Horizontal	0	0
Total	115	100

Based on table 7, there were 115 people or 100% of patients with vertical incisions.

Table 8. Characteristics of patients undergoing tracheostomy based on tracheostomy technique.

Tracheostomy technique	Number	(%)
Surgery	115	100
Percutaneous Dilation	0	0
Total	115	100

Based on table 8, there were 115 people or 100% of patients with surgical tracheostomy technique.

Table 9. Characteristics of patients undergoing tracheostomy based on complications.

Complications	Number	(%)
Subcutaneous emphysema	4	3.47
Infection	2	1.73
Without complications	99	86.08
Total	115	100

Based on table 9, there were 4 sufferers or 3.47% with complications of subcutaneous emphysema, 2 sufferers or 1.73% with complications of infection and 99 sufferers or 86.08% without complications.

Table 10. Characteristics of patients undergoing tracheostomy based on the length of use of the tracheostomy cannula.

Duration of use (day)	Number	(%)
0-10	0	0
11-20	5	4.34
21-30	8	6.95
31-40	8	6.95
41-50	4	3.47
51-60	31	26.95
>60	59	51.30
Total	115	100

Based on table 10, there were 59 sufferers or 51.30% with a duration of use of tracheostomy cannula up to > 60 days, 31 sufferers or 26.95% with a duration of use of tracheostomy cannula up to 41-50 days, 8 sufferers or 6.95% with a duration of use of tracheostomy cannula respectively at 21-30 days and 31-40 days, 5 sufferers or 4.34% with a duration of use of tracheostomy cannula up to 11-20 days, 4 sufferers or 3.47% with a duration of use of tracheostomy cannula up to 21-50 days.

DISCUSSION

The 115 patients who underwent tracheostomy at Prof. Dr. I.G.N.G Ngoerah General Hospital, Denpasar, from January 1, 2021, to December 31, 2022, the majority were elderly and predominantly male. Most patients experienced stage 1 airway obstruction, making almost all procedures elective. The most common diagnosis indicating tracheostomy was prolonged intubation. Only a small proportion of patients experienced complications, including cutaneous emphysema and infection. The incision used in all patients was a high incision, with a vertical incision surgically inserted. Most patients used a tracheostomy cannula for >60 days.

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REFERENCE

1. Casamento, A., Bailey, M., Robbins, R., Pilcher, D., Warrillow, S., Ghosh, A., & Bellomo, R. (2018). Patient characteristics, incidence, technique, outcomes and early prediction of tracheostomy in the state of Victoria, Australia. Journal of Critical Care, 44, 278-284. https://doi.org/10.1016/j.jcrc.2017.11.034
2. Mehta AB, Syeda SN, Bajpayee L, Cooke CR, Walkey AJ, Wiener RS. Trends in Tracheostomy for

JOOB 001 Volume I No.I, p 12-16

Mechanically Ventilated Patients in the United States, 1993-2012. Am J Respir Crit Care Med. 2015 Aug 15;192(4):446-54. doi: 10.1164/rccm.201502-0239OC. PMID: 25955332; PMCID: PMC4595669.

3. Thille, A.W.; Boissier, F.; Ghezala, H.B.; Razazi, K.; Mekontso-Dessap, A.; Brun-Buisson, C. Risk factors for and prediction by caregivers of extubation failure in ICU patients: A prospective study. Crit. Care Med. 2014, 43, 613– 620.
4. McConville, J.F.; Kress, J.P. Weaning patients from the ventilator. N. Engl. J. Med. 2012, 367, 2233–2239.
5. Lai, H.-H.; Tseng, P.-Y.; Wang, C.-Y.; Wang, J.-Y. Long-Term Survival and Medical Costs of Patients with Prolonged Mechanical Ventilation and Tracheostomy: A Nationwide Cohort Study. Int. J. Environ. Res. Public Health 2021, 18, 10272. https://doi.org/10.3390/ ijerph181910272
6. Lai, C.C.; Shieh, J.M.; Chiang, S.R.; Chiang, K.H.; Weng, S.F.; Ho, C.H.; Tseng, K.L.; Cheng, K.C. The outcomes and prognostic factors of patients requiring prolonged mechanical ventilation. Sci. Rep. 2016, 6, 28034.
7. Herridge, M.S.; Chu, L.M.; Matte, A.; Tomlinson, G.; Chan, L.; Thomas, C.; Friedrich, J.O.; Mehta, S.; Lamontagne, F.; Levasseur, M.; et al. The RECOVER program: Disability risk groups and 1-year outcome after 7 or more days of mechanical ventilation. Am. J. Respir. Crit. Care Med. 2016, 194, 831–844.
8. Lewis CW, Carron JD, Perkins JA, Sie KCY, Feudtner C. Tracheotomy in Pediatric Patients: A National Perspective. Arch Otolaryngol Head Neck Surg. 2003;129(5):523–529. doi:10.1001/archotol.129.5.523
9. National Health Service; Ministry of Health and Welfare, R.O.C. (Taiwan). 2017 Health and Welfare Gender Statistic Tables and Figures. Available online: https://dep.mohw.gov.tw/dos/lp-1723-113-1-20.html (accessed on 13 February 2023).
10. National Health Service; Ministry of Health and Welfare, R.O.C. (Taiwan). 2016 Annual Report. Available online: https: //www.mohw.gov.tw/lp-137-2.html (accessed on 13 February 2023).
11. Abe, T., Madotto, F., Pham, T. et al. Epidemiology and patterns of tracheostomy practice in patients with acute respiratory distress syndrome in ICUs across 50 countries. Crit Care 22, 195 (2018). https://doi.org/10.1186/s13054-018-2126-6
12. Groves, D. S., & Durbin, C. G. (2007). Tracheostomy in the critically ill: indications, timing and techniques. Current Opinion in Critical Care, 13(1), 90–97. doi:10.1097/mcc.0b013e328011721e
13. Cheung, N. H., & Napolitano, L. M. (2014). Tracheostomy: Epidemiology, Indications, Timing, Technique, and Outcomes. Respiratory Care, 59(6), 895–919. doi:10.4187/respcare.02971
14. Delaney A, Bagshaw SM, Nalos M. Percutaneous dilatational tracheostomy versus surgical tracheostomy in critically ill patients: a systematic review and meta-analysis. Crit Care 2006;10(2):R55.
15. Rahayu, M. L., Setiawan, E. P., Sumerjana, I. K., Suryatika, I. B. M., Putra, I. W. G. A. E., Pinatih, K. T. M. N., ... & Widiantari, I. G. A. P. W. (2023). Making tinnitus songs according to the frequency and amplitude of the sound of tinnitus sufferers that are safe and comfortable for sufferers. *Indonesia Journal of Biomedical Science*, *17*(1), 28-32.
16. Rahayu, M. L., Wiranadha, I. M., Suryatika, I. B. M., Sumerjana, I. K., Purba, P. A. B., & Arthana, I. M. N. (2023). Comparison of the comfort of De Tinnitus music plus a sound generator compared to De Tinnitus music in healthy people. *Indonesia Journal of Biomedical Science*, *17*(2), 314-316.
17. Sutanegara, S. W. D., Saputra, K. A. D., Putra, I. W. G. A. E., Suryatika, I. B. M., & Arthana, I. M. N. (2023). Randomized Clinical Trial: Effectiveness of Tinnitus Treatment Using Music de Tinnitus Therapy Compared with Standard Therapy. *European Journal of Clinical Medicine*, *4*(6), 1-6.
18. Rahayu, M. L., Pinatih, G. N. I., Setiawan, E. P., Lesmana, I. W. L., Pinatih, K. T. M. N., Arthana, I. M. N., & Widiantari, I. G. A. P. W. (2022). Development of a tinnitus sound generator that matches the sound of tinnitus patient. *Bali Med J*, *11*(2), 1018-22.
19. Pinatih, G. N. I., Setiawan, E. P., Pranitasari, N. P. O. R., Dewantara, I. P. S., Pinatih, K. T. M. N., & Arthana, I. M. N. (2023). Tinnitus characteristics and risk factors in the Bali region. *Indonesia Journal of Biomedical Science*, *17*(2), 257-261.