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ORIGINAL ARTICLE

Granuloma Following Tracheostomy Closure: An Overlooked Cause of Chronic Cough

ATHAR ADNAN UPPAL[1], HUMA ASLAM[2], AZHAR FAROOQ[3], SALMAN AHMED NIAZ MANGRIO[4], MUHAMMAD ZIA[5], HAFIZ MUHAMMAD WASEEM YASEEN[6], MUHAMMAD IRFAN KHAN[7]

[1]*Professor, Department of ENT, Lahore Medical and Dental College/ Ghurki Teaching Hospital, Lahore*
[2]*Associate Professor, Department of Pathology, Sahiwal Medical College, Sahiwal*
[3]*Consultant ENT, Department of ENT, DHQ Hospital, Sheikhupura*
[4]*Assistant Professor, Department of ENT, Head and Neck Surgery, Dow International Medical College, Dow University of Health Sciences, Karachi*
[5]*Senior Registrar, Department of Anesthesia & ICU, Madina Teaching Hospital/ Punjab Medical College, Faisalabad*
[6]*Senior Registrar, Department of Anesthesia and Critical Care, Niazi Medical College, Sargodha*
[7]*HOD & Assistant Professor & Consultant Oral & Maxillofacial Surgeon Department of Oral / Maxillofacial Surgery & Dentistry, Lady Reading Hospital, MTI, Peshawar, Pakistan*
Correspondence to: Muhammad Irfan Khan, Email: drirfankahn@gmail.com

ABSTRACT

Objective: Aim was to determine the management of tracheal granuloma among patients of dry cough after tracheostomy.
Methods: Total 24 patients of both genders were presented in this study. After obtaining informed written consent detailed demographics of enrolled cases were recorded. All the patients were underwent for CT scan. Lesion of granuloma was completely excised via bronchoscopy. Outcomes among all cases were assessed.
Results: There were 16 (66.7%) males and 8 (33.3%) females among all cases. The patients mean age was 38.16 years. Among all, 12 (50%) had severity of dry cough, moderate cough was found in 8 (33.3%) cases and 4 (16.7%) cases had mild cough. After procedure we found effectiveness among 22 (91.7%) cases. Satisfaction rate was 20 (83.3%).
Conclusion: We concluded in this study after tracheostomy tracheal granuloma can be treated completed by using bronchoscopy to obtained good results.
Keywords: Tracheal granuloma, tracheostomy, outcomes, dry cough

INTRODUCTION

While tracheostomy has evolved in purpose alongside advances in critical care medicine, it is still an integral part of airway treatment[1]. In contrast to the well-documented early complications including bleeding and infection, tracheal granulomas and other later effects may go undetected despite their substantial influence on a patient's day-to-day functioning[2]. The development of granulomas can be accelerated by mechanical stimulation from a tracheostomy tube or by prolonged healing of a stoma[3]. Immediate detection and treatment of post-decannulation issues, such as granulomas and stenoses, is crucial to prevent airway damage from developing and to get the best potential outcomes[4].

In critical care units (ICUs), percutaneous dilatational tracheostomy (PDT) and percutaneous endoscopic gastrostomy (PEG) are common and well-studied procedures. Due to their extensive knowledge of airway anatomy, superior endoscopic skills, and experience in the field, interventional pulmonologists have just lately started to perform these procedures[5]. It is estimated that 10-15% of patients requiring artificial respiration will ultimately be implanted with a tracheostomy tube[6]. One large prospective cohort research found that 34% of patients who required assisted breathing for more than 48 hours required a tracheostomy[7]. Nearly half of tracheostomy patients required a PEG tube to supply their long-term nutritional needs[8,9].

MATERIALS AND METHODS

This prospective observational study was conducted at Department of ENT Head and Neck Surgery, Dow International Medical College, Dow University of Health Sciences, Karachi during November 2022 to May 2023, and comprised 24 patients. After getting written informed consent, we recorded all demographic information from the cases that were enrolled. In order to participate in this study, patients had to be at least 18 years old and provide written consent. Extremely ill patients or those who refused to provide written consent were not considered.

No patient was spared from the CT scan. During a bronchoscopy that was induced with midazolam and fentanyl for sedation, a tracheal granuloma measuring 7 cm above the tracheal carina was confirmed. Additionally, lidocaine, a topical anesthetic, was used. Following bronchoscopic removal, histopathological analysis confirmed that the granuloma was benign and composed of granulation tissue. After the incision was made, the patient's symptoms, which included shortness of breath and coughing, went away. During the whole year of follow-up, the patient was free of any indications that the granuloma or airway issues had returned. Utilizing SPSS 22.0, we examined all of the data.

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RESULTS

There were 16 (66.7%) males and 8 (33.3%) females among all cases. The patients mean age was 38.16 years. There were majority had poor socio-economic status. (table 1)

Table-1: Demographics of the presented cases

Variables	Frequency (24)	Percentage
Mean age (years)	38.16	
Gender		
Male	16	66.7
Female	8	33.3
Socio-economic status		
Poor	15	62.5
High	9	37.5

Among all, 12 (50%) had severity of dry cough, moderate cough was found in 8 (33.3%) cases and 4 (16.7%) cases had mild cough.(fig 1)

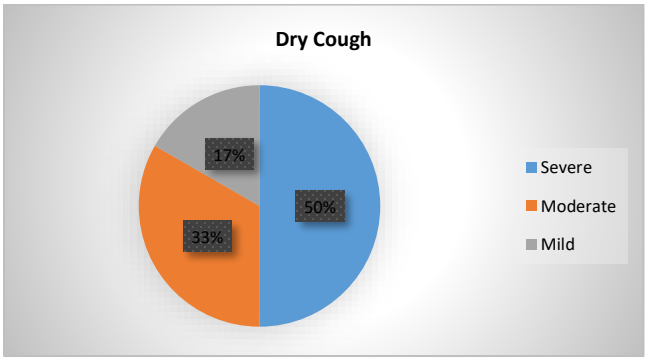

Figure-1: Severity of cough

After procedure we found effectiveness among 22 (91.7%) cases. Satisfaction rate was 20 (83.3%). (Table 2)

Table-2: Effectiveness and satisfaction rate among all cases

Variables	Frequency (24)	Percentage
Effectiveness		
Yes	22	91.7
No	2	8.3
Satisfaction Rate		
Yes	20	83.3
No	4	16.7

Recurrence rate was found in 1 (4.2%) cases.(table 2)

Table-2: Frequency of recurrence rate

Variables	Frequency (24)	Percentage
Recurrence		
Yes	1	4.2
No	23	95.8

DISCUSSION

Granulomas are a common late complication of tracheostomy, which is an overgrowth of granulation tissue at the incision site[10]. In theory, these lesions form when the stoma site experiences abnormal healing processes brought on by mechanical stimulation or prolonged inflammation[11]. The granuloma in this case was located at the very extremity of the tracheostomy tube, seven centimeters above the tracheal carina. Granulomas can form in these conditions due to inadequate suctioning, foreign body reactions to the tracheostomy tube material, or trauma caused by the cuff.

This is just one example of how granulomas might manifest as dyspnea, chronic dry cough, or changes in voice, all of which are nonspecific respiratory symptoms[12]. Since these symptoms are comparable to those of other respiratory ailments, a delayed diagnosis may be possible. Imaging techniques, particularly CT scans, are crucial for elucidating exophytic lesions in the tracheal lumen and guiding subsequent therapy and diagnostic approaches[13].

This imaging method is still the gold standard for diagnosing and treating tracheal granulomas during bronchoscopy. It provides direct visualization of the lesion, allowing for less invasive excision, which frequently results in rapid symptom alleviation and a fantastic prognosis[14]. Serious consequences, including secondary infections or airway occlusion, could result from delaying the diagnosis of these lesions. Problems such distal tracheal granulation tissue have arisen, highlighting the necessity for tailored surgical and therapeutic strategies[15].

Peristomal complications, especially in cases involving children, demonstrate the variety of symptoms and the necessity of treatment to forestall long-term consequences. Restoration of airway patency and improvement of quality of life in patients with persistent respiratory difficulties, especially after a tracheostomy or extended intubation, depends on the prompt diagnosis of tracheal granulomas[16].

Patients who experience ongoing respiratory difficulties after tracheostomy decannulation should have tracheal granuloma ruled out as a possible cause, as demonstrated in this case[17] Imaging and bronchoscopy allow for an early diagnosis, which is crucial for effective treatment. Many people say they start to feel better right after the safe and successful bronchoscopy excision procedure[18] Improving outcomes for patients undergoing tracheostomy and decannulation requires more understanding of this uncommon but significant complication.

CONCLUSION

We concluded in this study after tracheostomy tracheal granuloma can be treated completed by using bronchoscopy to obtained good results.

REFERENCES

1. Regular tracheostomy tube changes to prevent formation of granulation tissue. Yaremchuk K. Laryngoscope. 2003;113:1–10. doi: 10.1097/00005537-200301000-00001
2. Silicone stents in the management of benign tracheobronchial stenoses. Tolerance and early results in 63 patients. Martinez-Ballarin JI, Diaz-Jimenez JP, Castro MJ, Moya JA. Chest. 1996;109:626–629. doi: 10.1378/chest.109.3.626.
3. Complications of endotracheal intubation in the critically ill. Griesdale DE, Bosma TL, Kurth T, Isac G, Chittock DR. Intensive Care Med. 2008;34:1835–1842. doi: 10.1007/s00134-008-1205-6
4. Tracheal granulation as a cause of unrecognized airway narrowing. Bhatia G, Abraham V, Louis L. J Anaesthesiol Clin Pharmacol. 2012;28:235–238. doi: 10.4103/0970-9185.94907.
5. Belanger A, Akulian J. Interventional pulmonology in the intensive care unit: percutaneous tracheostomy and gastrostomy. Semin Respir Crit Care Med 2014;35:744-50.
6. Szmuk P, Ezri T, Evron S, et al. A brief history of tracheostomy and tracheal intubation, from the Bronze Age to the Space Age. Intensive Care Med 2008;34:222-8
7. Johnson-Obaseki S, Veljkovic A, Javidnia H. Complication rates of open surgical versus percutaneous tracheostomy in critically ill patients. Laryngoscope 2016;126:2459-67
8. Raimondi N, Vial MR, Calleja J, et al. Evidence-based guidelines for the use of tracheostomy in critically ill patients. J Crit Care 2017;38:304-18.
9. Klotz R, Probst P, Deininger M, et al. Percutaneous versus surgical strategy for tracheostomy: a systematic review and meta-analysis of perioperative and postoperative complications. Langenbecks Arch Surg 2018;403:137-49
10. Itkin M, DeLegge MH, Fang JC, et al. Multidisciplinary practical guidelines for gastrointestinal access for enteral nutrition and decompression from the Society of Interventional Radiology and American Gastroenterological Association (AGA) Institute, with endorsement by Canadian Interventional Radiological Association (CIRA) and Cardiovascular and Interventional Radiological Society of Europe (CIRSE). Gastroenterology 2011;141:742-65.
11. Gauderer MW, Ponsky JL, Izant RJ. Gastrostomy without laparotomy: a percutaneous endoscopic technique. J Pediatr Surg 1980;15:872-5.
12. Johnson TW, Seegmiller S, Epp L, et al. Addressing Frequent Issues of Home Enteral Nutrition Patients. Nutr Clin Pract 2019;34:186-95.
13. Veitch AM, Vanbiervliet G, Gershlick AH, et al. Endoscopy in patients on antiplatelet or anticoagulant therapy, including direct oral anticoagulants: British Society of Gastroenterology (BSG) and European Society of Gastrointestinal Endoscopy (ESGE) guidelines. Endoscopy 2016;48:c1.
14. Alberca-de-Las-Parras F, Marín F, Roldán-Schilling V, et al. Management of antithrombotic drugs in association with endoscopic procedures. Rev Esp Enferm Dig 2015;107:289-306.
15. Late complications of tracheostomy. Epstein SK. https://pubmed.ncbi.nlm.nih.gov/15807919/ Respir Care. 2005;50:542–549
16. A novel approach to excision of distal tracheal granulation tissue in tracheostomy patients with difficult anatomy. Rasband-Lindquist A, Sale K. https://pubmed.ncbi.nlm.nih.gov/27792824/ Ear Nose Throat J. 2016;95:454–456
17. Peristomal complications of paediatric tracheostomy. Prescott CA. Int J Pediatr Otorhinolaryngol. 1992;23:141–149. doi: 10.1016/0165-5876(92)90050-y.
18. Dias J, Sousa-Machado A, Costa S, Meireles L, Castro S. Granuloma Following Tracheostomy Closure: An Overlooked Cause of Chronic Cough. Cureus. 2025 Feb 16;17(2):e79127.

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