

Obstructive Subglottic Granuloma after Removal of a Minitracheostomy Tube

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We report herein a patient with subglottic granuloma after removal of a minitracheostomy tube (Minitrach II, SIMS Portex Inc., Hythe, Kent, UK). The patient underwent pulmonary resection for lung cancer followed by insertion of the minitracheostomy tube for prevention of sputum retention. The tube was removed 4 days after insertion. Twelve weeks later, the patient developed severe dyspnea and stridor. Bronchoscopy showed an obstructive subglottic granuloma arising from the anterior wall. The granuloma was removed by coring out using a conventional tracheal tube, followed by local injection of methylprednisolone acetate. The patient is now asymptomatic without regrowth of the granulation tissue 12 weeks after the treatment. With complication in mind, attention should be paid to patients suffering dyspnea or stridor after removal of a minitracheostomy tube. (Ann Thorac Cardiovasc Surg 2006; 12: 265–6)

Key words: minitracheostomy, subglottic stenosis, subglottic granuloma

Introduction

The minitracheostomy (Minitrach II, SIMS Portex Inc., Hythe, Kent, UK) is a 4-mm diameter cricothyroidostomy tube that can be inserted percutaneously.¹⁾ A minitracheostomy device is sometimes inserted after thoracic surgery for prevention of sputum retention.²⁾ Complications caused by minitracheostomy tubes reported up to now have included bleeding, local hematoma and hoarseness.^{1,3)} Here we report on a patient with obstructive subglottic granuloma 12 weeks after removal of a minitracheostomy tube.

Case Report

A 58-year-old man underwent an uncomplicated left upper lobectomy for squamous cell carcinoma on November 27, 2004. The patient had a history of ischemic heart dis-

ease, and his preoperative forced expiratory volume in 1 second was 50% of the predicted value. He had failed to stop tobacco smoking before the operation. A minitracheostomy tube was inserted for prevention of sputum retention immediately after the operation, using the Seldinger technique through the cricothyroid membrane. The postoperative course was uneventful. The tube was removed on the 4th postoperative day, and the patient was discharged on the 8th postoperative day. Eight weeks after extubation, the patient developed stridor and gradually worsening dyspnea. Twelve weeks after extubation, he was admitted to our hospital because of his severe breathing difficulty. Bronchoscopy showed an obstructive granuloma arising from the anterior wall of the subglottic area (Fig. 1). Under local anesthesia, the granuloma was cored out using a conventional tracheal tube, resulting in removal of most of the granuloma tissue (Fig. 2). Twenty milligrams of methylprednisolone acetate was locally injected via the cricothyroid membrane. The patient's symptoms disappeared immediately after removal of the granuloma. Pathological examination showed inflammatory granulation without specific findings. The patient is asymptomatic without regrowth of the granuloma tissue 12 weeks after the treatment.

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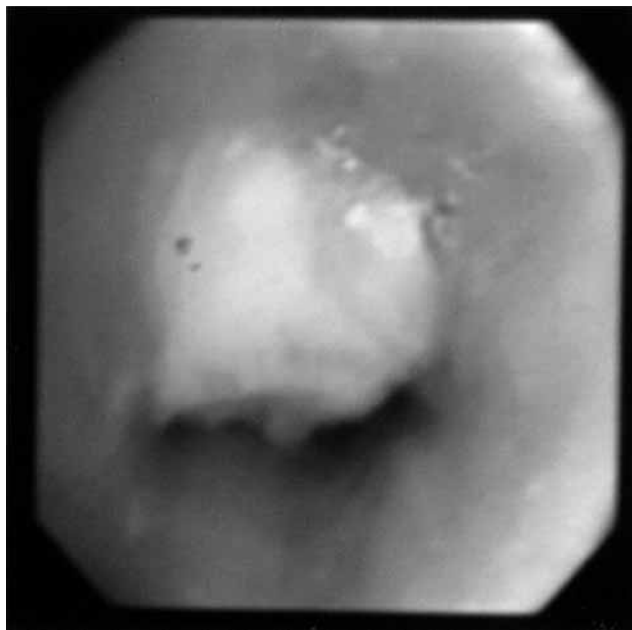


Fig. 1. Bronchoscopy showed subglottic granuloma from the anterior wall of the trachea obstructing the subglottic area.

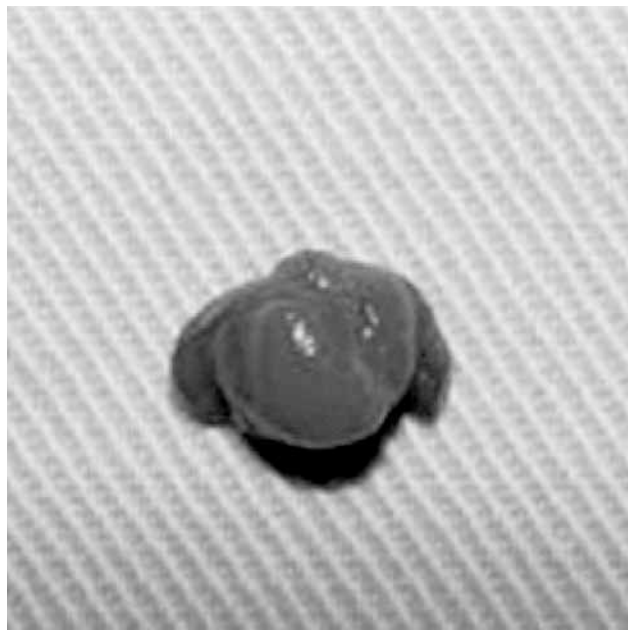


Fig. 2. Gross photograph of resected subglottic granuloma.

Discussion

Insertion of a minitracheostomy tube through the cricothyroid membrane is useful for removing airway secretions after thoracic surgery, especially in patients with a high risk of atelectasis and pneumonia. There have been several reports of complications associated with the use of a minitracheostomy tube, including bleeding, local hematoma and hoarseness.^{1,3)} However, to our knowledge, there have been no reports of obstructive granuloma after minitracheostomy. Subglottic stenosis usually occurs secondary to endotracheal intubation, surgical tracheostomy, trauma and systemic diseases such as amyloidosis, tuberculosis and Wegener's granulomatosis. Park et al. reported that injury to the subglottic area might result in stenosis because the cricoid cartilage is a complete ring lacking flexibility, the blood supply to the cricoid cartilage is limited, and the cricoid cartilage is susceptible to local infection, causing granulation.⁴⁾ Raghuraman et al. reported that fractures of the cricoid cartilage might also be responsible for subglottic stenosis following percutaneous dilatational tracheostomy.⁵⁾ While the present patient did not suffer fracture of the cricoid cartilage, minute injury to the cartilage might have occurred during inser-

tion of the minitracheostomy tube, causing local infection which then led to obstructive granuloma long after extubation. This complication should be kept in mind and attention should be paid to patients who develop stridor or dyspnea after removal of a minitracheostomy tube.

References

1. Wain JC, Wilson DJ, Mathisen DJ. Clinical experience with minitracheostomy. *Ann Thorac Surg* 1990; **49**: 881–6.
2. Bonde P, Papachristos I, McCraith A, et al. Sputum retention after lung operation: prospective, randomized trial shows superiority of prophylactic minitracheostomy in high-risk patients. *Ann Thorac Surg* 2002; **74**: 196–203.
3. Browne J, McShane D, Donnelly M. An unusual complication of minitracheostomy. *Eur J Anaesthesiol* 1999; **16**: 571–3.
4. Park SS, Streitz JM Jr, Rebeiz EE, Shapshay SM. Idiopathic subglottic stenosis. *Arch Otolaryngol Head Neck Surg* 1995; **121**: 894–7.
5. Raghuraman G, Rajan S, Marzouk JK, Mullhi D, Smith FG. Is tracheal stenosis caused by percutaneous tracheostomy different from that by surgical tracheostomy? *Chest* 2005; **127**: 879–85.