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CASE REPORT

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Resection of tracheal mucosa-associated lymphoid tissue (MALT) lymphoma by bronchoscopic high-frequency electrosurgical snare: Case report

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Abstract

There is no standard method of bronchoscopic local therapy for tracheal tumours. We herein present a case involving a 61-year-old woman who was diagnosed with tracheal mucosa-associated lymphoid tissue lymphoma and underwent resection by a bronchoscopic high-frequency electrosurgical snare. Few reports to date have described such use of high-frequency electrosurgical snares; however, they are effective for the treatment of tracheal tumours, especially pedunculated tumours.

KEYWORDS

airway stenosis, bronchoscopic high-frequency electrosurgical snare, case report, tracheal mucosa-associated lymphoid tissue lymphoma

INTRODUCTION

Various options are available for local therapy of tracheal tumours, including laser resection, cryotherapy, airway stent placement, and bronchoscopic high-frequency electrosurgical therapy. These therapies are selected according to not only the tumour size and location but also the equipment available at each facility and the skills of the medical staff. Therefore, literature on individual treatment methods is scarce. We herein report a case of mucosa-associated lymphoid tissue (MALT) lymphoma with tracheal metastasis from the left lower jaw that was resected with a bronchoscopic high-frequency electrosurgical snare.

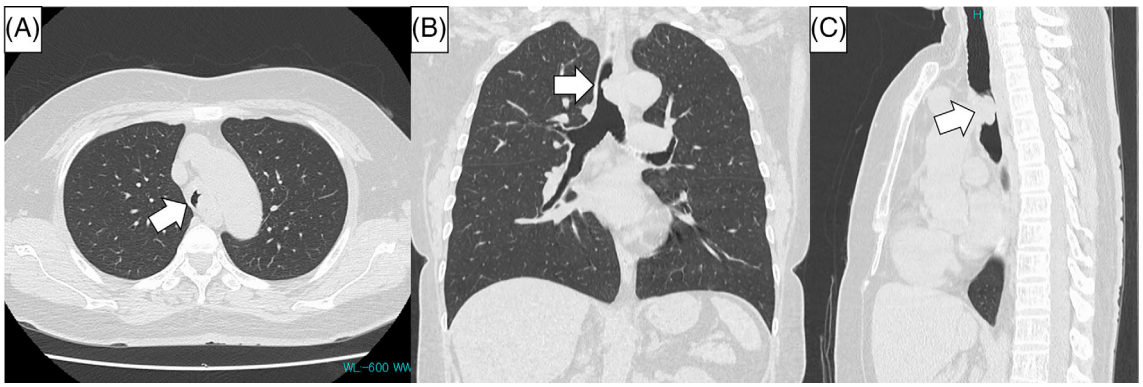

FIGURE 1 Computed tomography of the lung at the first visit in the (A) axial plane, (B) sagittal plane, and (C) coronal plane. The tracheal tumour (arrow) severely narrowed the airway.

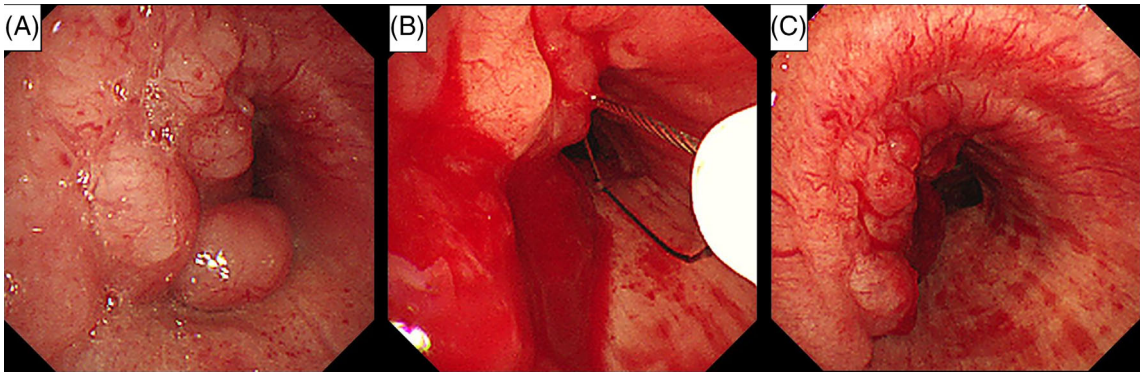

FIGURE 2 (A) The protruding tumour in the 9-o'clock region of the trachea was observed with a bronchoscope. (B) The tumour was resected with a high-frequency electrosurgical snare. (C) The airway narrowing was improved by the snare resection.

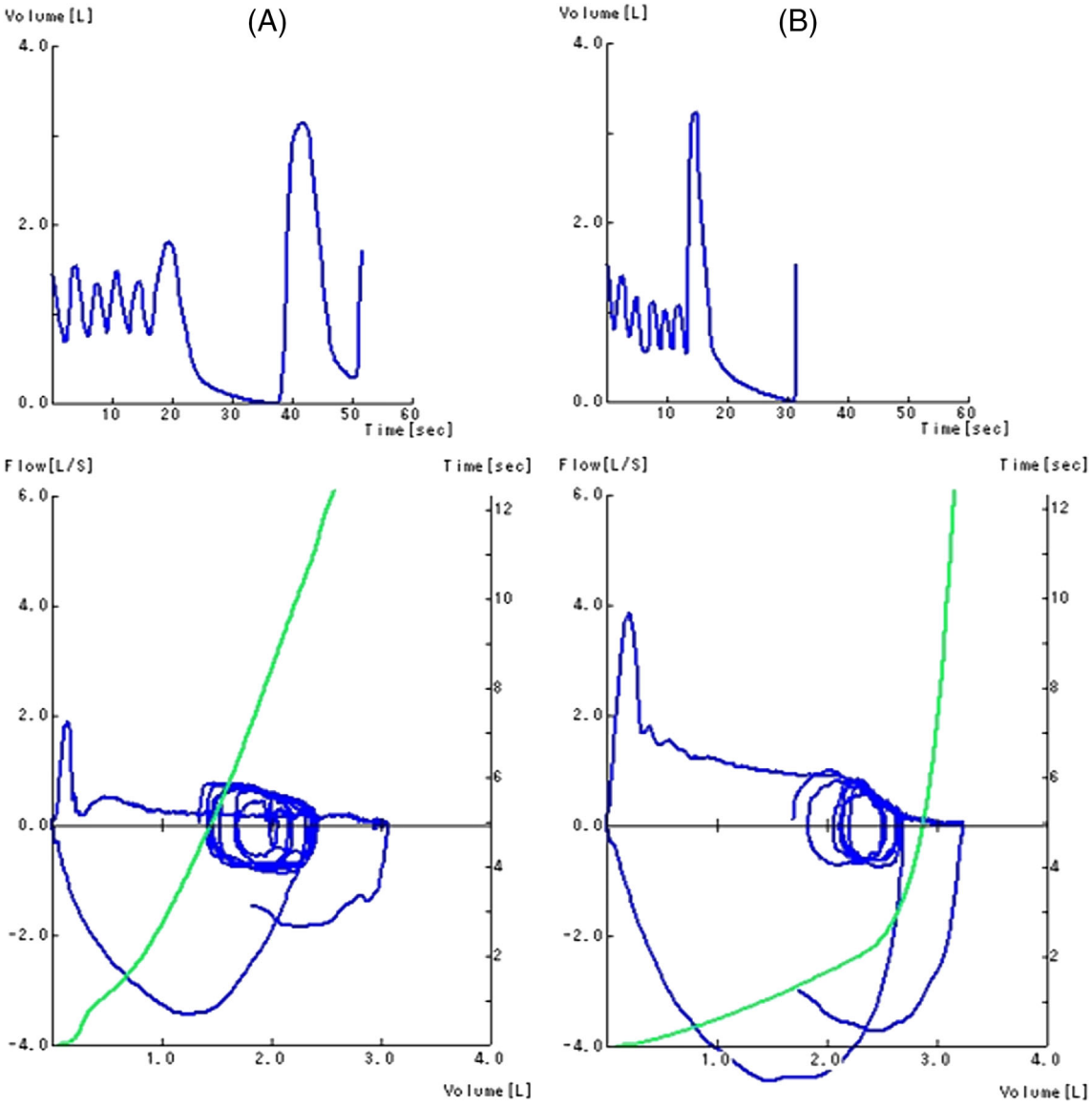

FIGURE 3 (A) Pre-treatment pulmonary function tests showed severe upper airway narrowing. (B)The flow volume loops after the treatment showed improvement in tracheal stenosis.

CASE REPORT

A 61-year-old woman was referred to our hospital for evaluation of dyspnea, cough, and stridor. Although her oxygen saturation on room air was 96%, computed tomography (CT) revealed a protruding lesion in the trachea, and severe airway stenosis was observed (Figure 1). Laboratory tests revealed no abnormalities.

Bronchoscopy revealed multiple elevated lesions in the 9-o'clock region of the trachea, approximately 8 cm above the carina (Figure 2A). The surface of the lesions was smooth, but the presence of hypervascularity and redness suggested a malignant tumour. Although we performed a transbronchial lung biopsy, local therapy for this tumour was needed to prevent airway obstruction before diagnosis. Use of a high-frequency electrosurgical snare was considered the best method in terms of efficacy and safety because the tumour was raised and had stalks.

The patient was sedated with midazolam and fentanyl and intubated with an 8.0-mm tube. We inserted a flexible bronchoscope (BF type 1T260; Olympus, Tokyo, Japan) and used a high-frequency electrosurgical snare loop to pinch one of the stalks. The tumour was resected at the root of the stalk with one cycle of energization at 30 W for 2 s. We resected other two stalks using the same procedure (Figure 2B, C). Next, we used argon plasma coagulation to cauterize the tumour. As a result, the airway stenosis improved without complications such as bleeding or respiratory failure. Pre-treatment pulmonary function tests (PFTs) demonstrated a forced vital capacity (FVC) of 3.07 L, a forced expiratory volume in 1 second (FEV_1) of 0.44 L and an FEV_1/FVC ratio of 14.3% (Figure 3A). However, after treatment, these values improved to 3.23 L, 1.41 L, and 43.8%, respectively (Figure 3B). The patient's dyspnea was dramatically improved.

Histopathological analysis of the specimen resected from the tracheal lesion showed that tumour tissue with a vaguely nodular pattern was growing subepithelially. The tumour cells were medium-sized lymphocytes and showed monotonous proliferation. Immunostaining confirmed CD20-positive and CD79a-positive B-lymphocyte infiltration. Other immunostaining showed CD10(−), bcl-2(+), Bcl-6(−), MUM-1(−), and cyclin D1(−). Few Ki-67-positive cells were seen. As a result, the diagnosis was extranodal marginal zone lymphoma of mucosa-associated lymphoid tissue (MALToma). Positron emission tomography/CT (PET/CT) evaluation to search for the primary tumour revealed hyperintensity in the left lower jaw; therefore, fine-needle aspiration biopsy was performed. The cytology findings were extremely similar to those of the tracheal tumour. The patient's left lower jaw had been slightly swollen for about 1 year. Because there was no PET/CT accumulation except in the left lower jaw, the tracheal tumour was considered to have originated in the left lower jaw. After the diagnosis, the patient underwent systemic chemotherapy and her respiratory symptoms did not recur.

DISCUSSION

Tracheal MALT lymphoma, whether primary or secondary, is rare.[1] Non-gastric MALT lymphoma may be followed closely without therapeutic intervention if it is asymptomatic or localized. Takegahara et al.[2] reported a case in which tracheal MALT lymphoma was diagnosed but could be followed up without exacerbation. Because systemic chemotherapy is expected to be effective, emergency local treatment is rarely required, and treatment methods are determined by the skill level of the staff and the equipment available at each facility. In other reports of local treatment for tracheal MALT lymphoma, Tsurutani et al.[3] used neodymium-doped yttrium-aluminium-garnet laser therapy and Ding et al.[4] performed stent treatment. Although we had experience with stent placement and argon plasma coagulation, we did not choose either treatment; the former carries a risk of stent dislodgment due to the chemotherapeutic effect, and cautery in the latter would have been difficult to control because of the severe stenosis and large tumour size. Instead, a high-frequency electrosurgical snare was considered the best treatment for the pedunculated tumour in this case. The amount of tumour tissue obtained by a single snare resection procedure is large, and it involves less invasion to normal tissues. Few reports have described treatment with high-frequency snares, and most such cases involved general anaesthesia; however, a combination of local anaesthesia and sedation is also possible, as in the present case.[5] We successfully performed snare resection of tracheal MALT lymphoma, and the use of a high-frequency electrosurgical snare is also expected to be effective for other pedunculated tumours. Interestingly, when the patient visited the haematology department, she displayed minimal respiratory symptoms, so observation was proposed as an option. While MALT lymphoma is known to respond to chemotherapy and radiation therapy, such treatments entail risks of adverse effects. The possibility of observation suggests that local treatment via bronchoscopy may be a viable alternative, potentially obviating the need for such interventions. This represents a significant consideration in expanding the range of treatment options available to patients, however, further accumulation of cases is needed to elucidate usefulness of snare resection of tracheal MALT lymphoma.

AUTHOR CONTRIBUTIONS

Writing-original draft: Satoshi Nakamura; *writing-review and editing*: Satoshi Nakamura, Yasuyuki Kishikawa, Ai Koike, Yuriko Takahata, Yuki Okamatsu, Akitaka Fujita, Masako Arimura-Omori, Taishi Harada. All authors have read and agreed to the published version of the manuscript.

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CONFLICT OF INTEREST STATEMENT

None declared.

DATA AVAILABILITY STATEMENT

Data available on request from the authors.

ETHICS STATEMENT

The authors declare that appropriate written informed consent was obtained for the publication of this manuscript and accompanying images.

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