

Bronchoscopic Treatment with Argon Plasma Coagulation for Recurrent Typical Carcinoids: Report of a Case

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Abstract. Carcinoid tumors are recognized as a low-grade malignancy. Recurrence of bronchopulmonary typical carcinoids is extremely rare. We herein report a case of recurrent multiple intraluminal bronchial typical carcinoids that were successfully removed using argon plasma coagulation by bronchoscopic approach. A 48-year-old man, who had undergone resection of a pulmonary typical carcinoid 8 years previously, suffered from a productive cough and hemoptysis for a month. Bronchoscopic examination revealed multiple intraluminal bronchial polypoid tumors. Based on histopathological findings, we diagnosed recurrence of typical carcinoids. The patient underwent argon plasma coagulation (APC) treatment by bronchoscopic approach several times. APC treatment is considered to be a safer method than conventional bronchoscopic treatment with neodymium-yttrium aluminum garnet (Nd-YAG) laser or electrocautery. After a series of treatments, his symptoms completely improved and no recurrence was found during 10 months of follow-up.

In general, typical carcinoid is considered to be a low-grade malignancy. Therefore, typical carcinoid tumors grow slowly and rarely metastasize (5-10 %) (1, 2). Patients with a typical carcinoid have a good prognosis, with a survival rate at 10 years of up to 87 % (1, 2). We herein report a rare case of a patient with multiple metastatic intraluminal bronchial typical carcinoids. Bronchoscopic treatment with argon plasma coagulation (APC) is also described.

Case Report

A 48-year-old man was admitted to our hospital because of a productive cough and hemoptysis. He had undergone left upper lobectomy for pulmonary typical carcinoid 8 years

previously and had been followed-up by chest X-ray examination every 6 months for 5 years. As no recurrent signs were seen for 5 postoperative years, he had not come to our hospital. Chest X-ray showed an ill-defined shadow in the left middle lung field (Figure 1A). Chest computed tomography showed an irregular-shaped nodule, which was 3 cm in diameter, in S⁶ of the left lung and a polyp-like lesion protruding into the tracheal lumen, but no mediastinal lymphadenopathy (Figure 1B, 1C). Bronchoscopic examination revealed multiple intraluminal bronchial polypoid tumors (Figure 2A, 2B, 2C). Histopathological examination indicated typical carcinoid. Because the intraluminal bronchial tumor was histologically similar to the previously resected pulmonary typical carcinoid, we diagnosed recurrence (Figure 3A, 3B). On the other hand, the nodule in S⁶ of the left lung was examined by aspiration cytology and diagnosed as tuberculosis. The patient underwent argon plasma coagulation (APC) treatment by bronchoscopic approach four times. During the treatment, no complications occurred. After a series of APC treatments, his symptoms completely improved and no recurrence was found during 10 months of follow-up (Figure 4A, 4B, 4C). The patient was also administered anti-tuberculous drugs (isonicotinic acid hydrazide, rifampicin and ethambutol). Six-month follow-up with chest computed tomography showed that the nodule in S⁶ of the left lung had disappeared. The patient is asymptomatic and in excellent general condition.

Discussion

Carcinoids are morphologically classified into three types: polyp type, iceberg type and peripheral type. The polyp type occurs in main stem bronchi and the iceberg type occurs in the lobar bronchi. Davila *et al.* reported that 75 % of bronchial carcinoid tumors arise in the lobar bronchi, 10% occur in the main stem bronchi and 15% originate in the periphery of the lung (3). In our case, multiple polypoid lesions were observed in the main stem bronchi. Therefore, our diagnosis was a polyp type typical carcinoid. This was confirmed by histological examination.

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Key Words: Bronchopulmonary carcinoid, bronchoscopic treatment, argon plasma coagulation.

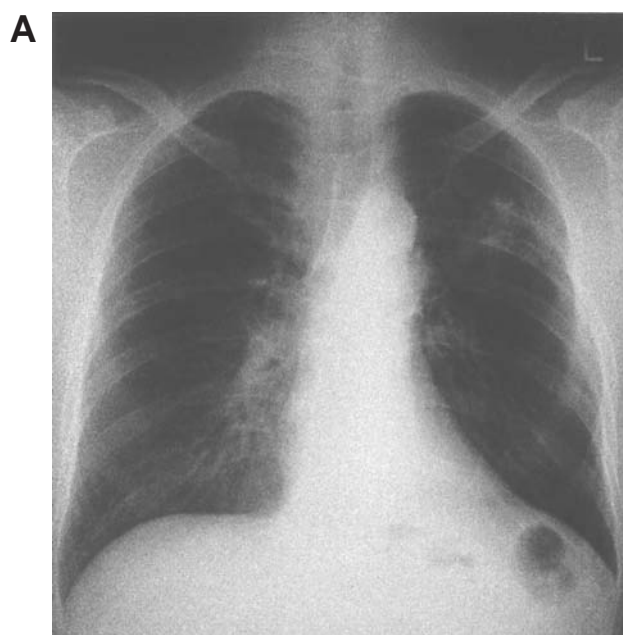


Figure 1A. A chest X-ray on admission showed an ill-defined shadow in the left lung field.



Figure 1B. A chest computed tomography scan showed a hazy shadow in the left S⁶.

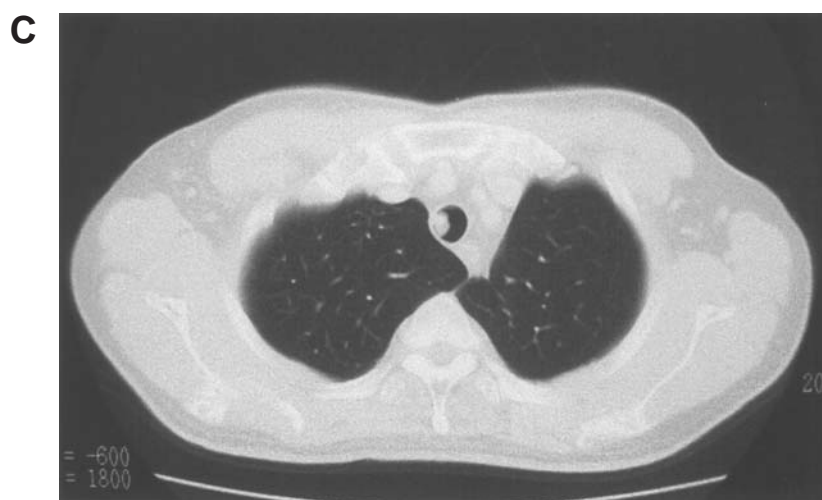


Figure 1C. A chest computed tomography scan showed an intraluminal tumor of the trachea.

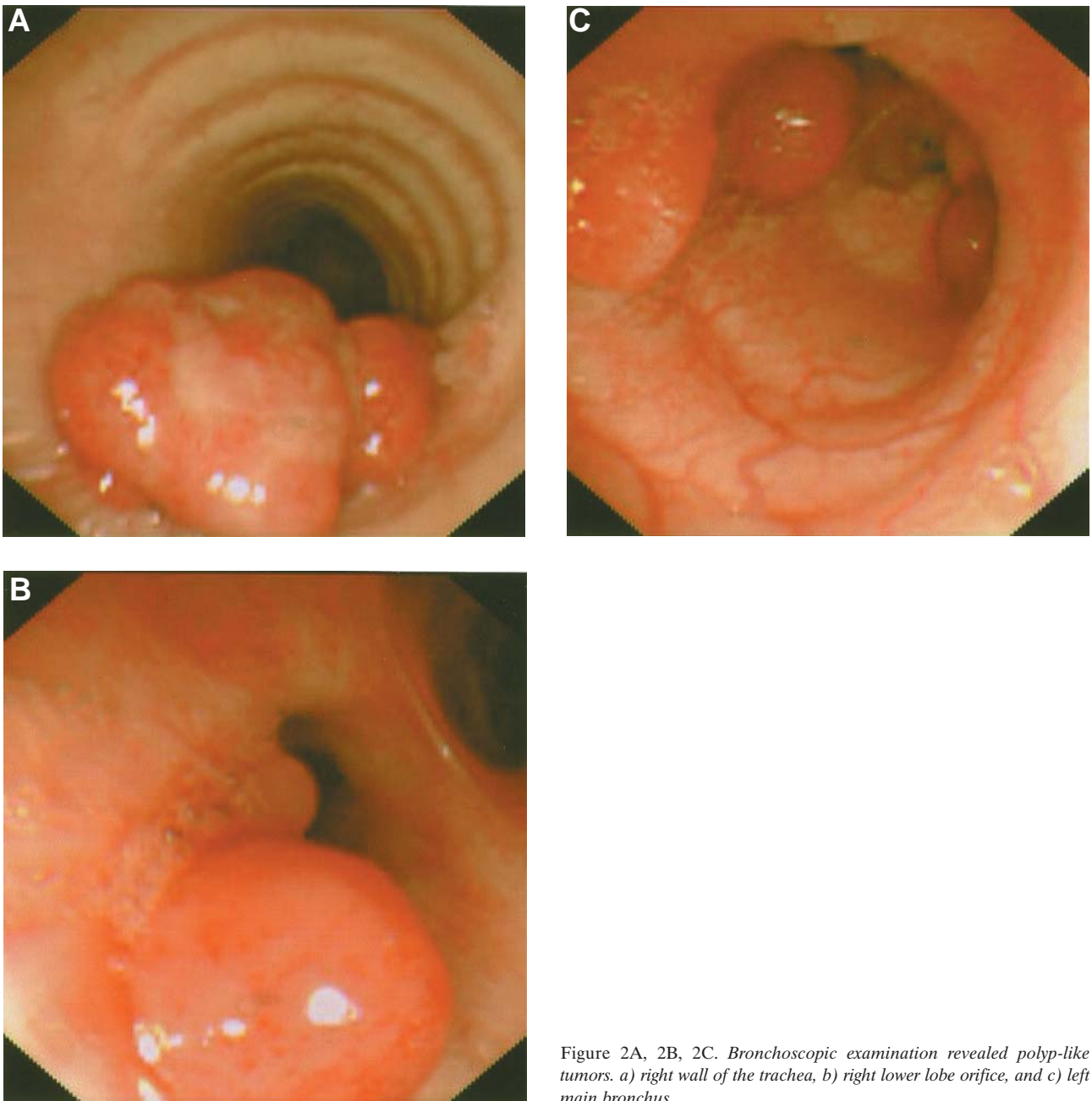


Figure 2A, 2B, 2C. Bronchoscopic examination revealed polyp-like tumors. a) right wall of the trachea, b) right lower lobe orifice, and c) left main bronchus.

The best way to cure patients with a typical carcinoid is surgical treatment. Recently, the effect of bronchoscopic treatment has been studied, and some authors have suggested that bronchoscopic treatment might be an effective alternative to surgical resection in a subgroup of patients with resectable intraluminal typical bronchial carcinoid (4-6). Sutedia *et al*. reported that no tumor remnant was found in patients who underwent Nd-YAG laser treatment as indicated by the surgical

evidence (4). In these studies, Nd-YAG laser or electrocautery was used for the bronchoscopic treatment. However, some severe complications, such as perforation (7-9) and fire (10, 11), were reported with Nd-YAG laser treatment. In contrast, APC treatment is safer than the other treatments for several reasons: (1) effective and safe coagulation, especially of larger areas, with shallow but uniform coagulation depth, (2) controllable depth of coagulation (0.5-3.0 mm), and (3) low smoke and

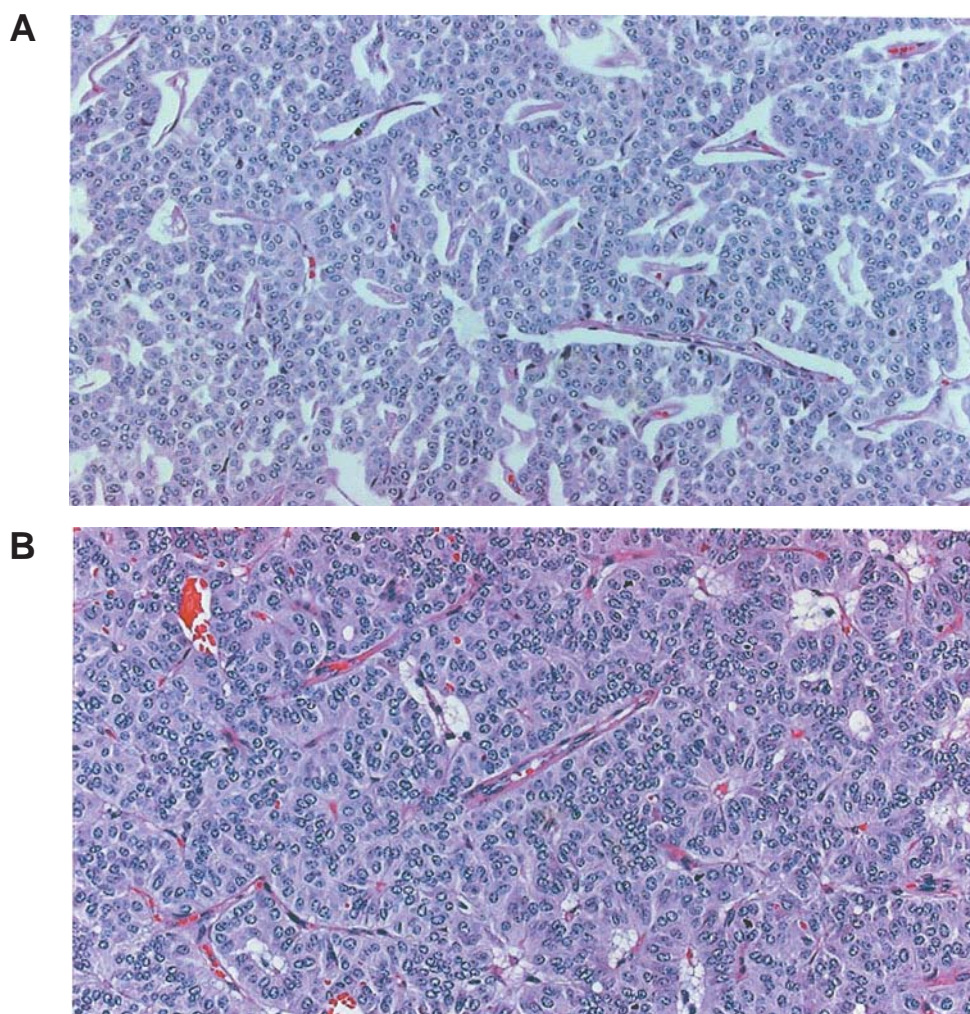


Figure 3A, 3B. Microscopic findings. a) The resected specimen in previous operation showed carcinoid cells arranged in a trabecular pattern (H&E, $\times 400$). b) The resected specimen by bronchoscopic treatment showed carcinoid cells arranged in a trabecular pattern and rosette formation (H&E, $\times 400$).

vapor production (12, 13). Furthermore, in our case, no recurrence was found during 10 months of follow-up.

In conclusion, the present case of multiple intraluminal typical bronchial carcinoid shows that APC treatment is an effective and safe method compared to the other conventional methods.

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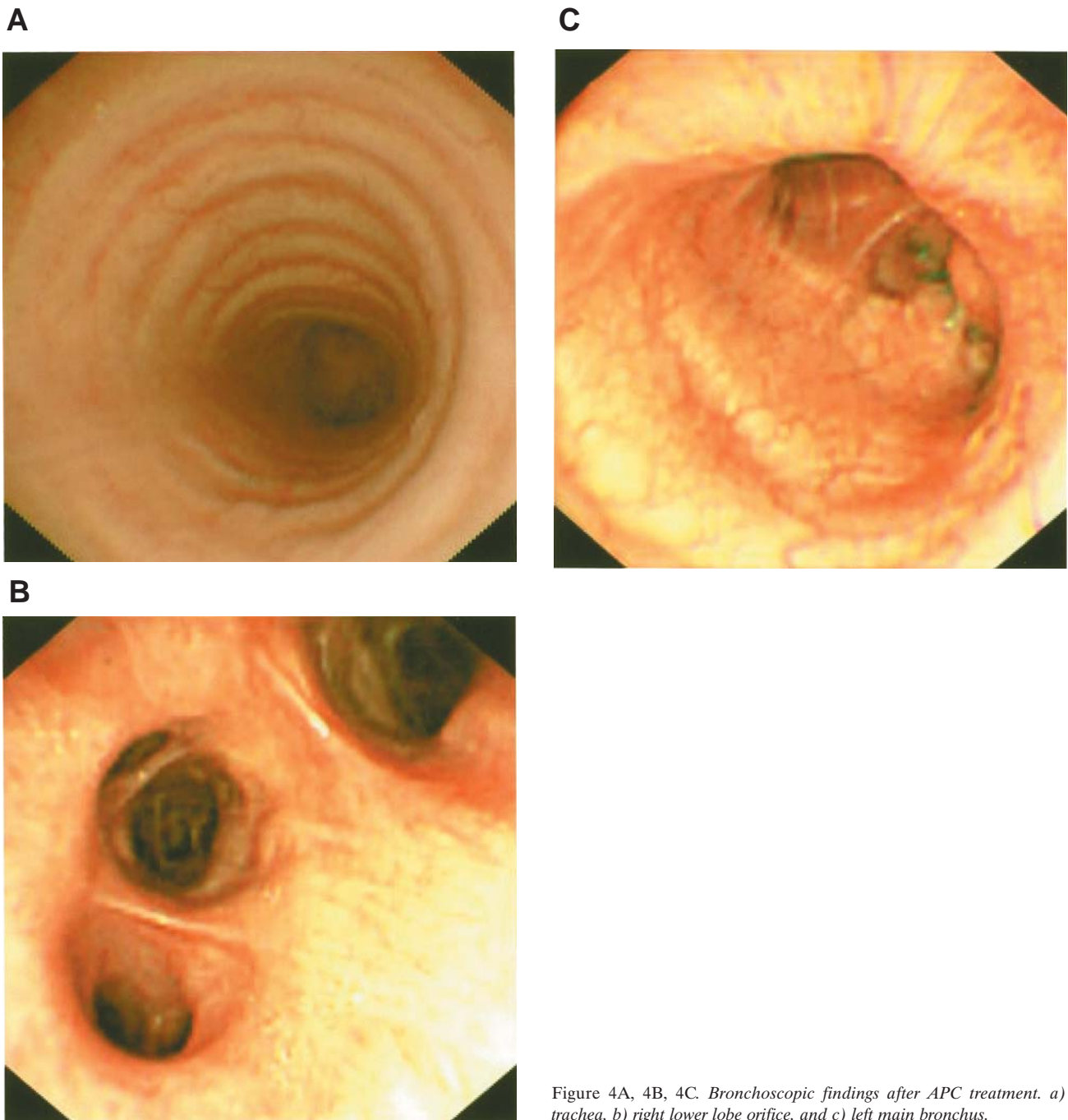


Figure 4A, 4B, 4C. *Bronchoscopic findings after APC treatment. a) trachea, b) right lower lobe orifice, and c) left main bronchus.*

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