Bronchial sleeve resections for carcinoid tumor in the first decade of life

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Abstract

Two male patients who were admitted to our department with wheezing, and symptoms of recurrent pneumonia, aged 7 and 10 years, were both diagnosed to have endobronchial masses in the right intermediate bronchus. We employed bronchial sleeve resections with pathological results of carcinoid tumor. Patients were discharged on postoperative days 7 and 8, respectively. The aim of this study is to emphasize the bronchial sleeve resection as a technically feasible procedure in the first decade of life.

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1. Introduction

Carcinoid tumors are the second most common tumor type arising in the tracheobronchial tree and account for 0.5–1.0% of all tumors of bronchial origin [1]. They are the most frequent primary pulmonary neoplasms of childhood [2]. Surgical resection is offered due to symptom free recovery [2]. Pulmonary paranchymal-saving procedures are usually preferred in patients with carcinoid tumor. Though pulmonary paranchymal-saving bronchoplastic surgery is reported to be applicable in the pediatric population, sleeve resection reports in the first decade of life are very rare [3].

The aim of this study is to review the sleeve resection technique in smaller and delicate airways of children, and to present carcinoid tumors treated with surgery in two pediatric patients.

2. Materials and methods

2.1. Case 1

A 7-year-old boy was admitted to our department with symptoms of wheezing and recurrent pneumonia. The bronchoscopic examination revealed an endobronchial mass in the distal part of right intermediate bronchus. The patient was operated and a superior sleeve segmentectomy of the right lower lobe was employed with interlobar, hilar and mediastinal lymph node dissection. Surgical margins of the intermediate bronchus were defined as tumor-free after a frozen section analysis. The anastomosis was achieved via 4/0 separated vicryl sutures. The anastomosis line was covered with a parietal pleural flap. He was discharged on postoperative day 7. The patient has been surviving the seventh year after the operation without any complication.

2.2. Case 2

A 10-year-old boy was admitted to our department with the suspect of a tumor in the right intermediate bronchus. One and a half year ago he had been diagnosed to have an endobronchial mass in the orifice of the right lower lobe. The patient had been referred to another chest surgery department and a right lower lobectomy had been performed. The pathological diagnosis was reported to be cystic bronchiectasis. However, the symptoms of recurrent pneumonia continued. The patient had been employed a rigid bronchoscopy which ended with a hemorrhage without a definite tissue cytology. The patient was referred to our department from then on. A virtual bronchoscopy via computerized thoracic tomography had been performed...
and the suspected lesion was demonstrated to persist in the intermediate bronchus (Fig. 1). After dissecting the tight pleural adhesions, the main pulmonary artery was prepared for security of the procedure and the stump of the lower lobe bronchus and superior segment artery were prepared and shortened in order to dissect the intermediate bronchus. A sleeve resection of the intermediate bronchus was employed just under the orifice of upper lobe bronchus and above the middle lobe orifice. The anastomosis was accomplished with continued technique via 4/0 PDS sutures in the membranous part and separated technique in the remaining. The patient was discharged on postoperative day 8 without any complication. The patient has been surviving the 13th postoperative month.

3. Discussion

Bronchial sleeve resection is seldom reported in patients who are in the first decade of life. The main reason is thought to be the rarity of the pathologies requiring such a procedure and the procedures being technically demanding in this age group.

Tracheobronchial sleeve resections in pediatric population were mainly discussed by Gaissert et al. [3]. Twelve patients age 8–19 years were discussed including four carcinoid tumors. The authors offered to consider particular attention to the surgical technique to avoid complications [3]. In pediatric population, bronchial tissue as well as vascular structures in the lobar hilus is fragile. Thus, gentle dissection is necessary. We dissected the main pulmonary artery in the second patient in order to control a major hemorrhage in case of an arterial injury due to tight adhesions. We preferred single suture technique since the bronchial diameter would be expected to increase as the patient grows up as it is preferred in the treatment of aortic coarctation with resection of the stenotic segment [4].

The most important point is to decide this option as a treatment modality, which could be assessed by bronchoscopy. Since the second patient had a hemorrhage during last bronchoscopy, we preferred virtual bronchoscopy. The fact that a previous bronchoscopy proved to be bloody is not the only reason to quit with the procedure; we also wanted to document the distal part of the intermediate bronchus [5]. Because in a patient with previous bloody bronchoscopy, the evaluation of the distal part of the intermediate bronchus could cause the same scenario in almost totally obstructed bronchus. In such circumstances the confirmation of resection lines are essential with frozen section analysis, more over, type of carcinoid tumor, typical or atypical, could be assessed, which would help to decide the type of mediastinal or regional lymph node dissection as well as type of resection. In a patient with confirmed diagnosis of atypical carcinoid, we could have preferred a lobar resection. Daily physical examination particularly to check unilateral wheezing and chest X-ray to diagnose an atelectasis were required. We did not perform routine control bronchoscopy in either of the patients. In this case report, we presented two young males who had sleeve resection in the first decade of their life. Seven years after the operation, the first patient keeps on his education in the high school without any health problem. The second patient has been surviving the 13th month symptom-free. His control computerized tomography revealed a healed anastomosis without stenosis (Fig. 2). After the patients’ growth to adolescent, the anastomosis line would be expected to stay in normal size relatively causing stenosis. But we do not expect to have such a complication since the anastomosis was employed completely via separated suture technique in the first patient and partially in the second. It seems it will take a long time

![Fig. 1. Computerized thoracic tomography demonstrating residual endobronchial mass in the second patient.](https://academic.oup.com/icvts/article-abstract/3/2/280/672370)

![Fig. 2. Postoperative CT which revealed a stenosis free anastomosis line.](https://academic.oup.com/icvts/article-abstract/3/2/280/672370)
to have reports for large series of bronchial sleeve resection in the first decade of life. Until then, collection of case reports is essential to have an idea about the bronchial sleeve resections in the first decade of life.

References


