

Sleeve resection for postlobectomy stump fistulas: a case report

Lobektomi sonrası güdük fistülleri için "sleeve" rezeksiyon: Olgu Sunumu

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In this article, we present three cases who had postresectional bronchial stump fistulas after resection for lung cancer. Two cases had right upper lobectomy and one case had a right upper double (bronchial and vascular) sleeve bilobectomy operation. Two cases underwent sleeve resections of the right main bronchus, while one patient underwent resection of the carina for the treatment of bronchopleural fistula. Sleeve resection may be an alternative treatment method for bronchopleural stump fistulas that develop after lung cancer resection.

Key words: Fistula; lung cancer; sleeve resection; surgery.

Treatment of a postresection bronchial stump fistula is related to the stage of primary lung cancer and size of the fistula.^[1] If the size of the fistula is small, endobronchial treatment can be an option.^[2] Reoperation with transposition of the omentum, muscle, pericardium, and diaphragm can be done if the patient is physically fit. If there is not enough stump tissue to re-resect and resuture, completion pneumonectomy could be a morbid choice for the treatment.

CASE REPORT

Case 1- A 55-year-old male who had previously had a right upper lobectomy at another location for stage Ia adenocarcinoma developed massive air leak. The patient had undergone re-thoracotomy and the stump had been explored, debrided and re-sutured. Massive air leak persisted, and he was transferred to our unit. Reexploration on the 23rd day after the primary operation revealed a defect in the upper lobe stump due to previous debridement. The fistulous segment was sleeve-resected, and anastomosis was completed with separated 4/0 polyglactin sutures (Vicryl, Ethicon, Johnson and Johnson, Somerville, NJ, USA). We transposed

Bu yazıda, akciğer kanseri rezeksiyonu sonrası bronş güdüğü fistülü olan üç olgu sunuldu. İki olguya sağ üst lobektomi, bir olguya sağ üst çift (bronşiyal ve vasküler) sleeve bilobektomi ameliyatı uygulandı. Bronkoplevral fistül gelişmesi üzerine tedavisi için iki olguya sağ ana bronş sleeve rezeksiyonu uygulanırken, bir olguya karina rezeksiyonu uygulandı. Sleeve rezeksiyon akciğer kanseri rezeksiyonu sonrası gelişen bronkoplevral fistül için alternatif bir tedavi yöntemi olabilir.

Anahtar sözcükler: Fistül; akciğer kanseri; sleeve rezeksiyon; cerrahi.

a pedicled latissimus dorsi muscle flap into the residual pleural space. He was discharged on day eight. The patient died after four years and five months due to mediastinal recurrence.

Case 2- A 62-year-old female had neoadjuvant chemoradiotherapy due to N2 right upper lobe adenocarcinoma. The patient had a right upper lobectomy with stapler closure. The bronchial stump was covered with parietal pleura. Air leak started on postoperative day four. Fiberoptic bronchoscopy revealed a fistula of 4 mm at the bronchial stump line. Air leakage persisted after endobronchial treatment with polidocanol (Aethoxysklerol Kreussler; Chemische Fabrik Kreussler & Co, GmbH, Wiesbaden, Germany). Reexploration revealed that there was a defect on the stump that was impossible to re-resect and resuture. The fistulous stump line was resected from the right main bronchus and intermediate bronchus. The anastomosis was accomplished with 4/0 polydioxanone sutures with a separated technique (PDS, Ethicon, Johnson and Johnson, Somerville, NJ). The patient was discharged on day eight. She died at the sixth postoperative month because of multiple metastases.

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Case 3– A 49-year-old male patient had a right upper double-sleeve bilobectomy (bronchial and vascular anastomosis) for stage IIIA epidermoid lung cancer and was discharged on day eight. The patient was readmitted with fever and dyspnea on the 18th postoperative day. Fiberoptic bronchoscopy showed dehiscence of the bronchial anastomosis. After an upper midline abdominal incision, the omentum was dissected free and rotated as a pedicle flap into the right thoracic cavity. Since the anastomosis was on the trachea-carinal level and re-anastomosis was impossible, we performed a completion pneumonectomy. The proximal stump was on the tracheal level and was closed as membranous to membranous and cartilagenous to cartilagenous parts with PDS 3/0 sutures. The next morning a massive air leak started. It was impossible to correct the pathology without a carinal sleeve resection. A resection of the carina and anastomosis of the trachea to the left main bronchus was performed. The patient did well in the postoperative period and was discharged on the 18th postoperative day. He is alive and is living symptom-free with no recurrence after 48 months.

DISCUSSION

A postoperative bronchial fistula within the first week after operation is believed to occur as a result of a technical failure.^[3] When the air leak occurs after eight days, it is generally due to a problem of bronchial healing.^[3] In our institute, the fistula rate for resection of lung cancer has not been studied extensively, but for the past two years, there have been four postoperative fistulas (2.2%) out of 176 resections for lung cancer. Only two patients have been revised within the first week after resection. Two of the three patients from this series had been operated on outside of our center and were admitted due to referral by their primary surgeons.

In our first two cases (1 and 2), bronchial fistulas were the result of technical failure. In case 2, the failure might have been associated with a bronchial healing problem which could have been a complication of neoadjuvant chemoradiotherapy. In case 3, the failure could have been a result of bronchial healing since we recognized the fistula on day 18. We excluded occlusion of pulmonary arterial anastomosis as a possible cause because the pulmonary vasculature in the contrast chest computed tomogram could be seen.

Strategically, cases 1 and 2 needed completion pneumonectomy because of the technical aspects of the previous bronchial resection line and a defect on the stump. We believe the theory previously reported by the Erino et al.^[4] which stated that the bronchus is an organ which is genetically programmed to stay open.

The major outcome of a segmental sleeve resection of the fistulous bronchus is prevention of pulmonary and cardiac deterioration by completion pneumonectomy as well as prevention of infection of the pneumonectomy space. We believe that supporting the fistulous stump with intercostal muscle or omentum is a possible option in patients who have a stump to be re-resected. In the study presented by Ris et al.,^[5] one patient with bronchopleural fistula following right upper lobectomy and 13 patients with right sided post-pneumonectomy bronchopleural fistula (BPF) underwent re-thoracotomy, debridement of the bronchial stump and closure of the airway defect by an extrathoracic muscle flap. Although case 1 and 2 had no stump to re-resect and resuture, it could still be proposed to approximate a muscle flap over the defect. An alternative technique is completion pneumonectomy by covering the pneumonectomy stump with intercostal muscle or omentum, as we did in our third patient. The preferred suture material might be monofilament for the anastomosis (we preferred PDS in the last two cases). We report that the long-term results of this operation are oncologically, physiologically, and anatomically safe. Treatment of a fistula after neoadjuvant chemoradiotherapy is known to be very difficult, but we believe further experiences could promote this technique. Thus, a sleeve resection of the right main bronchus might find a place in the algorithm of the treatment of postresectional right upper lobectomy stump fistulas in the future.

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