Autologous Fibrin sealant (Vivostat®) in General Thoracic Surgery - Post interventional survey at three exemplary patients

Case Study
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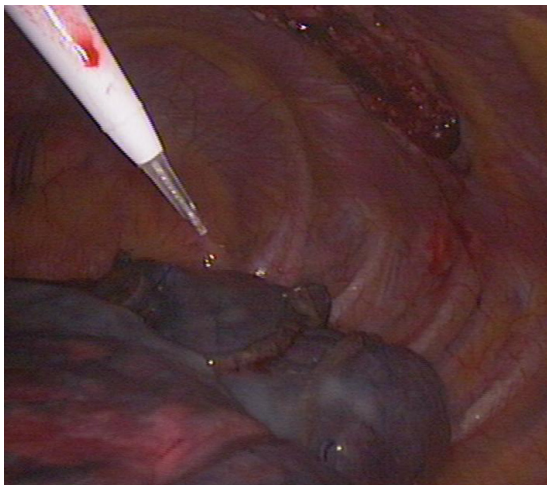
Objective:
Thoracic surgical procedures are often combined with a prolonged symptomatic of air leakage; chest tube removement is delayed and healing process as well as hospital stay are prolonged. Beneath an excellent surgical technique several devices are available to support an air-tight closure of the resection margins in the lung tissue.

The Vivostat® system delivers autologous fibrin right beside the patient side. In this prospective post-interventional survey the use of the Vivostat® system in three exemplary patients is described.

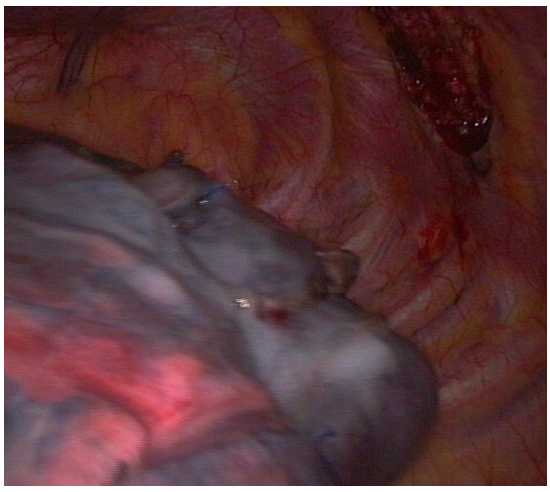
Case 1
Patient No. 1 is a 71 year old male who was sent to the department after the diagnosis of a pleural mesothelioma of epithelial differentiation. In the peripheral clinic a mini-thorakotomy was performed to set up the histological diagnosis, no resection was done. The co-morbidities were small, only a chronic atrial fibrillation was recorded, and no major operations were done before.

After preoperative evaluation and discussion of the therapeutic regimen in the tumor board, a parietal pleurectomy was performed. The small injuries of the lung tissue, which are typical for this resection, were covered with 6.0 ml of autologous fibrin sealant.

The postoperative course was regular; the last chest tube could be removed on the morning of the 3rd postoperative day. Because of a strong pain symptomatic, a sophisticated anlagesia management was necessary. The patient was dismissed on the 18th postoperative day. Further chemotherapy and hemithoracic radiation are initiated.



Vivostat® Fibrin Sealant is easily applied using the Spraypen®



Vivostat® Fibrin Sealant (white layer) polymerizes instantly upon application

Case 2
Patient No. 2 is a 68 year old male, suffering from a non-small-cell lung cancer in the left upper lobe. Two years ago, a right upper lobectomy was performed because of a squamos cell carcinoma. Co-morbidities were multiple in this patient: a COPD with heterogenous lung emphysema due to a strong history of smoking of more than 80 pack-years, a Type-II diabetes, and lung silicosis due to a long history of working in a stone coal mine.

The very detailed preoperative assessment showed the possibility of a limited anatomic resection, so a left side thoracocotomy lead to an anatomic segmentectomy and systematic lymphadenectomy of segment 1 after extended adhesiolysis.

5.7 ml of autologous fibrin sealant was applied to avoid prolonged air leakage. Postoperative course was without major complications and the last chest tube could be removed on the morning of the 4th postoperative day. Histologically a large cell neuroendocrine lung cancer was diagnosed; definitive stage was pT1pN0, G3, R0. The patient was dismissed on the 8th postoperative day and no adjuvant therapy is recommended. The patient now undergoes regularly post tumor examinations every three months.

Case 3
Patient No. 3 is a 60 year old male with a 4 year history of colorectal cancer. After rectum extirpation a liver metastasectomy and a bilateral pulmonary metastasectomy was necessary. The patient was sent to our department with new detected nodules in the right lung. In addition to the former resections, a history of smoking was recorded. An adjuvant chemotherapie was performed 4 years ago.

After finishing preoperative examinations without a contraindication for resection, the re-thoracotomy on the right side was performed. Complete adhesiolysis was necessary due to the pre-operation, and partial pleurectomy and decortication of the lower lobe was done. The central position of a large nodule in the lower lobe made the lobectomy necessary; a wedge resection from the upper lobe was done three times (S1, S2, S3). 6.0 ml of autologous fibrin sealant was sprayed over the resection margins and the lung tissue to close some small air leakages.

Despite the extended resection the postoperative course was without major problems. The last chest tube could be removed on the 4th postoperative day, no air leakage was recorded. The histopathological examination proved the metastasis of the rectal adenocarcinoma. One wedge resection from the upper lobe was without tumor tissue, a subpleural lymph node was detected, which contained no malignancy. All resection margins were free of tumors, and a R0-resection was described in all samples. The patient left the department on the 9th postoperative day, and he will undergo regular post tumor examinations.

Vivostat® autologous fibrin sealant was prepared without any problems in all cases, and the application procedure was recorded as safe and comfortable by all surgeons using the Vivostat® system.

The postoperative courses were without any special events, even considering that this special group of patients have a complicated history of pre-operations and comorbidities. Health processes were quite regular, the time until complete removement of chest tubes must be considered as quite regular.

Regarding all these aspects, the Vivostat® system demonstrated to be a suitable device in general thoracic surgery; preparation, handling and application left a very good impression with all users, physicians and nurses.