Port site metastasis as a complication of thoracoscopic metastasectomy

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European Journal of Surgical Oncology 2001; 27: 327-328
Introduction
We report a case of port site recurrence after thoracosopic resection of pulmonary metastasis from an adenocarcinoma of the rectum. This case stresses the importance of careful manipulation and concealed removal of malignant pulmonary lesions if the minimal invasive technique is applied.

Case report
In 1987 a 59-year-old man was treated for a $T_3N_0M_0$ rectal adenocarcinoma. He underwent abdominal-perineal resection of the rectum and adjuvant radiotherapy of the pelvis. In 1992 on a routine chest X-ray a suspicious lesion was noted. A Computed Tomography (CT) scan showed three peripherally located lesions suspicious for metastases, located in the upper and lower lobe of the right lung. In the absence of signs of local relapse of primary tumour and metastases at other sites, the patient was advised to undergo surgical removal of the metastases. He consented to take part in a study protocol providing initial thoracoscopic removal of the lesions by endostapling technique, followed by confirmation thoracotomy.

In November 1992 the patient underwent thoracoscopic metastasectomy. The lesion in the right upper lobe could easily be found and resected by the stapling technique. The size of the resected specimen was too large (3 cm) to fit through one of the port sites. The incision in the sixth intercostal space at the midaxillary line was enlarged and the specimen was removed with resistance without being placed in an endoscopic specimen retrieval bag. The second lesion, located at the level of the pulmonary ligament in the lower lobe, could be identified but removal was difficult. Thoracotomy was performed through the fifth intercostal bed, and the remaining two lesions were removed by the stapling technique. Postoperative recovery was uneventful.

In the summer of 1994 the patient complained of pain in the sixth intercostal space. A chest X-ray showed a pleural thickening in the right lateral thorax wall but no evidence of tumour relapse or new metastases. Because of his increasing complaints of pain in October a MRI was made. It showed a tumour in the sixth intercostal space, corresponding with the former withdrawal port-site. In December 1994 a full-thickness thoracic wall resection including parts of the fourth till seventh rib and a wedge resection of the adherent middle lobe was performed. Histology showed moderately differentiated adenocarcinoma of similar appearance to that in the rectum.

As the tumour was at the level of one of the port sites, tumour seeding and outgrowth was strongly suspected. No adjuvant treatment was given.

In November 1996 a CT scan showed two new pulmonary metastases, which where again removed by thoracotomy. In September 1999 the patient is alive with multiple pulmonary metastases.
**Discussion**

Minimal invasive video-assisted thoracoscopic surgery (VATS) appears an attractive alternative for removal of peripherally located pulmonary lesions. The advantage of VATS over resection through thoracotomy is the limited surgical trauma and consequently reduction of pain-related operative morbidity. Additional benefits are a faster postoperative recovery, shorter hospital stay, less medical costs and faster resumption of work. However the benefits are counterbalanced by the risk of incomplete resection of metastatic disease, by the limited ability to clearly define tissue margins and by the inability to palpate potential lesions that were not detected by CT.

Port site recurrence (PSR) in VATS is an uncommon complication of minimal invasive surgery for malignant lesions. PSR may be diagnosed by symptoms (a painless/painful subcutaneous mass with or without effusion, dyspnoea) or an asymptomatic radiographic mass. Johnstone et al. reported five cases of PSR’s within six months. PSR seems to be attributable to several mechanisms. The technical problems that may be responsible are two-fold. First, the withdrawal of tumour mass through relatively small incisions may cause direct seeding of tumour cells to the port site. Secondly, endoscopic manipulation may result in tumour spillage within the pleural cavity. Probably the port site acts as a favourable bed for seeding.

A number of precautions need to be taken to avoid PSR’s. The use of thoracports instead of stab incisions, atraumatic tissue handling and the use of endoscopic specimen retrieval bags (for instance the EndoCatch®) are factors that may reduce the risk of PSR’s. VATS removal of lung metastasis appears to be beneficial to patients. However if VATS metastasectomy is considered, precautions should be taken to avoid PSR.

**References**

9. Johnstone PAS, Rohde DC, Swartz SE, Fetter JE, Wexner SD. Port site recurrences after laparoscopic and
