Routine Video-Assisted Thoracoscropy Prior to Thoracotomy*

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We investigated the role of routine video-assisted thoracoscopic (VAT) prior to thoracotomy. From June 1993 to May 1995, we routinely performed VAT prior to all our elective thoracotomies in adults. Patients who planned to have video-assisted thoracic surgery (VATS), those who underwent emergency thoracotomy, and patients younger than 10 years old were excluded from this study. There were 63 patients (47 men and 16 women; age range, 16 to 84 years), of whom 39 (62%) had malignant disease and 24 (38%) had benign disease. In four cases, VAT could not be performed because of either pleural synphysis or inability to adequately collapse the upper lung. In six cases, thoracoscopic findings influenced subsequent management. Pleural metastases were found in two cases that led to abandonment of thoracotomy; in four cases, identification of chest wall involvement by a malignant or benign process led to proper planning of subsequent thoracotomy. There was no added morbidity from this procedure which took, on average, 6.2 min to complete (range, 3 to 17 min). There was no added cost for consumables. We conclude that: (1) routine VAT is a safe procedure; (2) it adds little to the overall cost or operating time; (3) it can provide useful information that could alter subsequent operative strategy. We recommend routine VAT prior to thoracotomy in patients with known or suspected intrathoracic malignancy and those suspected of having chest wall involvement on CT scans.

(CHEST 1996; 109:1099-1100)

**Key words:** routine video-assisted thoracoscopic; thoracotomy; video-assisted thoracic surgery

Although technically advanced procedures like thoracoscopic anatomic lung resections and thymectomy have been shown to be feasible, thoracotomy continues to be an important and often preferred approach in the management of a variety of intrathoracic diseases. Routine performance of video-assisted thoracoscopic (VAT) prior to thoracotomy for primary lung cancer has been suggested. However, this is not widely practiced on patients in whom thoracotomy is the planned approach. To our knowledge, there has been no published study focused on the practice of routine VAT. The author has adopted this practice on all adult patients for elective thoracotomy over the last 2 years. Our experience with this approach forms the basis of this article.

**Materials and Methods**

Since June 1993, we have adopted the practice of routine VAT prior to all our elective thoracoscopic procedures in adults. Three groups of patients were excluded: (1) patients who underwent emergency thoracotomy; (2) those for planned thoracoscopic procedures (including staging and surgical exploration for trauma); and (3) pediatric population (younger than 10 years old).

Over a 2-year period, we accumulated 63 patients (47 men and 16 women; age range, 16 to 84 years), of whom 39 (62%) had malignant diseases (24 primary lung cancers, 7 pulmonary metastases, and 8 mediastinal malignancies) and 24 (38%) had benign diseases (4 lung abscesses, 8 with tuberculosis, 2 empyema, 1 bullous emphysema, 2 hamartoma, 1 bronchogenic cyst, 1 sclerosis hemangioma, and 5 bronchiectasis). VAT was carried out just prior to thoracotomy. Other planned procedures like mediastinoscopy for staging of lung cancer were carried out as usual.

The patient was prepared and draped as for thoracotomy. Selective one-lung ventilation using a double-lumen endobronchial tube was routine. The operating table was flexed at 30° to open up the upper intercostal spaces. A 1.5-cm incision was made over the mid-axillary line at the seventh intercostal space. A 10-mm telescope (Stryker; Kalamazoo, Mich) was advanced through a 10.5-mm port (Thoracosport; Snowden & Spencer; Tucker, Ga). Exploratory thoracoscopic was then carried out with particular attention to search for pleural deposits, chest wall invasion, or pleural adhesions. Any instrument ports made, if necessary, were subsequently incorporated into the thoracotomy. No attempt was made to carry out any dissection thoracoscopically. Any thoracoscopic finding that would influence subsequent management was noted. After the thoracotomy, the camera port was utilized for the chest drain. Time taken to set up VAT and to complete the examination was recorded in each case. All the patients were followed up prospectively and any complications attributable to VAT were noted (like dysesthesia along the dermatonic distribution of the camera port or wound infection).

**Results**

In 4 cases (6.3%), VAT could not be performed be-
cause of either pleural symphysis (2) or inability to adequately collapse the upper lung (2). Of the remaining 59 cases, there were positive thoroscopic findings in 6 cases (10.2%) that influenced our subsequent management. Unexpected pleural deposits were found in two cases. Biopsy specimens were taken and histologically confirmed to be metastatic (adenocarcinoma in both cases on frozen section), thereby saving the patients from an unnecessary thoracotomy. In four cases, identification of chest wall involvement by either tumor invasion (two) or inflammatory reaction (two) led to accurate planning of subsequent thoracotomy to allow en bloc chest wall and pulmonary resection or to avoid an inflammatory mass directly beneath the thora¬
cotomy. Little time was needed for the set up and completion of VAT. Average time taken was 6.2 min (range, 3 to 17 min). So far, we have had no mortality or morbidity attributable to the prethoracotomy VAT.

DISCUSSION
I was once told that one contraindication for laparoscopy is when a laparotomy is planned for a patient. In thoracic surgery, there are still many who believe that it is unnecessary to routinely perform VAT on patients for whom thoracotomy is planned, even though this was suggested by Wain3 for patients with lung cancer. Opponents to this practice argue that it lengthens operating time, increases the cost of the operation, and rarely alters subsequent management.

I adopted the practice of routine VAT back in 1993, initially to give experience to our residents on handling the camera system. However, we found that it actually provided useful information and therefore we have continued this practice. Thoracotomy is probably one of the most painful incisions for patients, so every effort should be made to avoid an unnecessary thoracotomy. In our series, we discovered two unsuspected pleural metastases from patients clinically thought to have early lung cancer. Our data are compatible with the data of Wain3 who also found 2 unsuspected pleural metastases in 43 patients.

Routine prethoracotomy VAT can provide information useful to subsequent surgical management. Even for those patients in whom VAT could not be completed because of pleural symphysis, at least it alerted the surgeon when he/she proceeded to thoracotomy. Although CT scanning of the chest provides important preoperative information,5 it is notoriously unreliable in assessing chest wall involvement.6,7 CT scans cannot differentiate chest wall invasion from peripheral tumors with visceral pleural involvement alone.8 However, en bloc chest wall and pulmonary resection in cases of T3 tumors offers the patients the best survival potential.5 VAT allows precise planning of the thoracotomy to achieve this goal. For benign lesions with chest wall adhesions, VAT helped to precisely plan the thoracotomy so as to avoid dense adhesions at the level of the incision.

Setting up and performance of VAT require little extra effort when they are done routinely as reflected by the little time they took (on average, 6.2 min). The availability of the video camera set and a 30° lens, in addition, facilitates dissection over the lateral chest wall where visualization through a thoracotomy wound may prove difficult. We use only reusable accessories (like Thoracosport) and so there is no extra cost to the patient on consumables. Prethoracotomy VAT adds little to the overall time and cost of the operation. So far we have no morbidity attributable to this procedure.

VAT alone is not a very sensitive staging tool as it was shown that 6 of 16 T2 lesions with visceral pleural invasion (38%) and 5 of 11 N1 disease (45%) were missed by VAT.3 In fact, many N1 stations are difficult to approach thoracoscopically. Our discussion is not to rely on VAT for staging but rather to exclude a few patients from an unnecessary thoracotomy and to facilitate planning of thoracotomy in cases of chest wall involvement. We conclude that: (1) routine VAT is safe; (2) it adds little to the overall cost or operating time; and (3) it can provide useful information that could alter subsequent operative strategy. We therefore recommend routine VAT prior to thoracotomy for all patients with known or suspected intrathoracic malignancy and those with suspected chest wall involvement on CT scans.

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