Fig 1. Lung perfusion scan performed on postoperative day 8 shows a perfusion defect in the upper half of the right lung allograft.

infarction of the left lower lobe after left single lung transplantation; a left lower lobectomy was undertaken, but the patient died shortly thereafter.

This is the first reported case of successful bilobectomy after lung transplantation; it is probable that the satisfactory performance of the contralateral allograft may have played a role in the successful outcome.

In conclusion, the occurrence of pulmonary venous obstruction after lung transplantation is a potentially serious complication that always requires a surgical approach. The operation is often technically demanding, as every second operation is, but the results are highly rewarding; revision and refashioning of the atrial anastomosis or, as the present case

Fig 2. Computed tomographic scan performed on postoperative day 9 shows a consolidation of the posterior portion of the right upper lobe and the lateral segment of the middle lobe.

has shown, major pulmonary resection in the case of irreversible lung injury is associated with an excellent outcome.

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AGGRESSIVE SURGERY FOR TREATING A PULMONARY METASTASIS OF A BENIGN GIANT CELL TUMOR OF THE BONE: RESULTS IN FOUR CASES

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Received for publication March 19, 1998; accepted for publication April 13, 1998.

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J Thorac Cardiovasc Surg 1998;116:649-51

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0022-5223/98 \$5.00 + 0 12/54/90872

A benign giant cell tumor of the bone (BGCTB) is difficult to categorize because its clinical course cannot be predicted. Approximately 50 cases of a pulmonary metastasis from a BGCTB have been reported in the literature.¹ A pulmonary metastasis from a BGCTB does not necessarily mean a bad prognosis, but it has been the cause of death in 16% to 25% of reported cases.^{2,3} Our method of managing a pulmonary metastasis of a BGCTB is that it should be treated aggressively, as long as the required operation does not impair pul-

Table I. *Patients with pulmonary metastases from a BGCTB: treatment of primary lesion and subsequent local recurrence*

Case	Age/gender at diagnosis	Primary site	Treatment of primary	Treatment of local recurrence	Time until pulmonary metastases diagnosed (mo)
1	30/F	Right proximal tibia	Curettage, bone graft	Above-the-knee amputation	54
2	20/F	Left proximal tibia	Curettage, bone graft	Wide resection	9
3	24/M	Right distal radius	Curettage, bone graft	Wide resection	53
4	15/F	Left proximal tibia	Curettage, bone graft	Wide resection	33

Table II. *Treatment of pulmonary metastases and results*

Case	Surgical treatment (thoracotomy)	Lung involvement	Follow-up (mo)
1	Left	3 lung nodules	24
	Left	3 lung nodules	26
	Left	1 lung nodule	76*
2	Right	6 lung nodules	24
	Bilateral	5 right lung nodules	
		24 left lung nodules	28
3	Right	2 lung nodules	76*
	Bilateral	1 right lung nodule	
		1 left lung nodule	39*
4	Bilateral	7 right nodules	
		13 left nodules	24*

*No evidence of disease.

monary functioning. This article presents our results in treating 4 patients with pulmonary BGCTB metastasis.

Patients and methods. Forty-seven patients with BGCTB were treated at our facility between 1979 and 1997. Four of these patients had a documented pulmonary BGCTB metastasis (Table I). A local recurrence was manifested in all cases. The interval between the operation for local recurrence and the subsequent diagnosis of a pulmonary metastasis was 9 to 54 months (average, 37 months). Plain radiographs and computed tomography scans of the chest were used for the localization of the pulmonary nodules.

Results. The lung was found to be the only site of a metastatic involvement in all 4 patients, who thus underwent a complete resection their pulmonary metastasis (Table II). Two of these patients remained tumor-free after their initial bilateral thoracotomy for their pulmonary metastasis; however, the remaining 2 patients who were surgically treated (cases 1 and 2) experienced the development of a metastatic recurrence in the lung. Both patients did not stay tumor-free after their second thoracotomy and had to undergo a third thoracotomy. None of the 4 patients were given chemotherapy or radiotherapy. Each was followed up at 6-month intervals at which time computed tomography scans of the chest were performed. After undergoing the surgical interventions, all patients are still alive (24 to 76 months after the operation).

Discussion. Although the overall BGCTB survival is much higher than for other metastasized lung tumors, BGCTB pul-

monary metastasis have been implicated as the cause of death. The natural history of a BGCTB with pulmonary metastasis is as unpredictable as that of the primary BGCTB. On the basis of what is presently known, lesions from BGCTB pulmonary metastasis can be divided into 3 types: (1) those that show spontaneous regression or cessation of growth; (2) those that show continuous slow growth; and (3) those that show rapid growth. It has been reported that metastatic lesions of the lung have disappeared after just a biopsy⁴ and that some pulmonary lesions spontaneously regress.¹ However, of the few reported cases of an untreated pulmonary BGCTB metastasis, most patients die quite rapidly of the disease.⁴

For therapy, a thoracotomy and a complete excision of the pulmonary nodules has proved successful,⁴ and the literature strongly favors the surgical extirpation of all pulmonary nodules.² Some studies that included patients with BGCTB that was treated by operation and whose follow-ups have been pursued have reported no signs of a BGCTB recurrence at 18 or more years after a resection.² Another study has also found that some patients have become asymptomatic, even though they had a progressive pulmonary disease, and are alive and well.⁵ Further, cases have been reported of recurring and progressive pulmonary metastasis after the surgical removal of previous pulmonary nodules.² In this latter regard, it has been reported that other patients who underwent a partial or a complete excision of their pulmonary nodules also died of the condition.⁴ However, a thoracotomy and the complete excision of recurring, metastatic, pulmonary nodules has been found beneficial for long-term survival.²

Our management policy for the 4 cases of this study was a complete extirpation of their pulmonary metastasis, even for the 2 patients who had repeated metastatic recurrences. The 2 patients have also remained disease free at 76 months after the third thoracotomy. As for methods of treatment for a BGCTB metastasis, radiation has been used without apparent success⁵ and chemotherapy has only occasionally proved successful.⁴ Therefore for cases of recurring lung metastasis from a BGCTB, we believe that an aggressive thoracotomy remains the best therapy, provided that the metastasis can be totally removed without impairing pulmonary functioning.

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IS COMPLETE SYSTEMATIC NODAL DISSECTION BY THORACOSCOPIC SURGERY POSSIBLE? A PROSPECTIVE TRIAL OF VIDEO-ASSISTED LOBECTOMY FOR CANCER OF THE RIGHT LUNG

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Recently, video-assisted thoracic surgery (VATS) has been widely applied to various intrathoracic benign diseases. The procedure is apparently less invasive than any other conventional standard thoracotomy and is also cosmetically pleasing to patients. If VATS can be applied to the treatment of primary lung cancer, numerous benefits for patients can be expected, even if a small thoracotomy is needed to complete the pulmonary resection. However, one problem remains in the application of the procedure for surgical treatment of primary lung cancer, that is, the possibility of incomplete systematic nodal dissection. To clarify the feasibility of sufficient dissection with VATS, we conducted a prospective clinical trial in 6 patients with clinical stage I cancer of the right lung.

Patients and methods. Patients with stage I cancer of the right lung were chosen for the present assessment because the upper mediastinal and pretracheal nodes can be dissected without the difficulty that is encountered in cancer of the left lung. Inasmuch as this is the first trial, cases in which bronchoplasty or angioplasty was anticipated were excluded. The present study was approved by our institutional review board and complete informed consent on this trial of thoracoscopy for surgical treatment of lung cancer was obtained from each patient.

With a small skin incision 7 to 8 cm in length, the right fifth intercostal space was entered just below the lower angle of the scapular bone. Respiratory muscles and ribs were not severed. Two additional thoracoports were placed in the fourth and seventh intercostal spaces at the anterior and mid to posterior axillary lines, respectively. Through the small wound

Table I. Profile of patients and the disease state in the present study

	Primary site	Pathology	cTNM	Operative procedure
1 (71, M)	Upper lobe	Adenocarcinoma	T1 N0 M0	RUML
2 (68, F)	Upper lobe	Adenocarcinoma	T1 N0 M0	RUL
3 (60, F)	Upper lobe	Adenocarcinoma	T1 N0 M0	RUML
4 (68, F)	Upper lobe	Adenocarcinoma	T1 N0 M0	RUL
5 (79, F)	Middle lobe	Adenocarcinoma	T1 N0 M0	RML
6 (76, F)	Upper lobe	Adenocarcinoma	T1 N0 M0	RUL

RUML, Right upper and middle lobectomy; *RUL*, right upper lobectomy; *RML*, right middle lobectomy.

and the 2 thoracoports, a designated pulmonary lobe(s) was resected with hilar and mediastinal lymph node dissection (VATS lobectomy with lymph node dissection). In most cases, the pulmonary vein and bronchus were transected with staplers and branches of pulmonary artery were ligated and transected through the small thoracotomy wound. After VATS lobectomy with lymph node dissection, a standard thoracotomy was subsequently carried out by a different surgeon to complete systematic nodal dissection.

At VATS lobectomy, the number of dissected lymph nodes at each station and the weight of dissected tissues including fat tissue were recorded. The location and the number of remaining lymph nodes and the weight of dissected tissues found at additional thoracotomy were recorded as well. Percent of remaining nodes was calculated both for number and for weight. Operating time required for VATS lobectomy with lymph node dissection and the amount of bleeding during the procedure were also recorded.

Results. To date, 6 patients have been treated. The primary lesion was located in the upper lobe in 5 patients and in the middle lobe in the other patient. Upper lobectomy was performed in 4 patients and upper and middle lobectomy in 2 patients. Clinical stage was T1 N0 M0 in all patients (Table I).

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Received for publication June 4, 1998; accepted for publication June 9, 1998.

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J Thorac Cardiovasc Surg 1998;116:651-2

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0022-5223/98 \$5.00 + 0 12/54/92470