

# Thoracic Surgery Division

## Introduction

The Thoracic Surgery Division deals with various kinds of neoplasms and allied diseases in the thorax, with the exception of the esophagus. Included are both primary and metastatic lung tumors, mediastinal tumors, pleural tumors (mesothelioma), and chest wall tumors. The surgical management of lung cancer patients has been the main clinical activity of the division, as well as the subject of most of its research. In addition to continuing to improve the procedures, such as the combined resection of neighboring vital structures and minimally invasive techniques (video-assisted thoracic surgery, VATS), it has become increasingly important to define the role of surgery in the multimodality treatment for patients with poor prognosis.

## Routine Activities

The division has four attending surgeons. Three subteams with attending surgeons and residents do all the inpatient care, operations, examinations, and outpatient care. The first year of the two-year fellowship program is devoted to patient care as a chief resident, and the second year is devoted to clinical/basic research. We have annually adopted two to three residents who want to major in general thoracic surgery. Beside two weekly division meetings for preoperative evaluation and inpatient review, the chest group has a plenary meeting to share basic information about the diagnosis and treatment of patients, especially those needing a multimodality approach.

The treatment strategy for patients with lung cancer is based on tumor histology (non-small cell vs. small cell), extent of disease (stage), and physical status of the patients. In lung cancer patients, surgical resection is usually indicated for stages I, II, and a part of IIIA of non-small cell histology and stages I and II of small cell histology. However, to improve the poor prognosis of patients with clinically and histologically proven mediastinal lymph node metastasis or with invasion to the neighboring vital structures, the optimal treatment modalities are sought in a clinical trial setting.

Salvage and palliative resections are also

important aspects of lung cancer surgery. Salvage surgery is intended to eradicate all the remaining or recurrent tumors when other modalities fail. Palliative resection is intended to treat jeopardizing symptoms such as intolerable pain or to avoid impending death caused by airway bleeding or other life-threatening situations.

For metastatic lung tumors, resection has been attempted on the basis of Thomfold's criteria; eligible patients are those who are at good risk, with no extrathoracic disease, with the primary site in control, and with completely resectable lung disease. Metastasis from the colorectal carcinoma is the most common. For mediastinal tumors, thymic epithelial tumors are most commonly encountered for resection. In the mediastinum, where a variety of tumor histologies can arise, the treatment must be carefully determined by the cytologic/histologic diagnosis before surgery. For this purpose, a CT-guided needle biopsy is replacing the formerly common biopsy under X-ray fluoroscopy. For patients with thymoma we adopt video-assisted resection of the tumor recently. The indication of VATS resection of mediastinal tumor is exclusive to small sized thymoma.

## Research Activities

Owing to the advent of new technology in CT scanning, minute lung cancers are being found in a screening setting and by chance. They usually present as "ground-glass opacity (GGO)" appearance on CT, and their pathology is early adenocarcinoma termed as "bronchioloalveolar carcinoma (BAC)". The surgical management of such GGO-BAC type of lung cancer remains undetermined in terms of extent of pulmonary parenchymal resection and lymph node dissection. Some cases might be followed up with careful watching by CT, since the existence of indolent tumors is known. We are seeking for the appropriate way of management of these patients. Related to the GGO-BAC, we have a clinical trial. The clinical trial investigates the relationship between radiological and pathological findings as to the GGO-BAC (JCOG 0201). We intended to predict pathological minimally invasive tumor based on radiological findings in order to select patients feasible for limited surgical resection. This trial is the first multi-institutional prospective study

for GGO-BAC, and the results will have an impact on clinical practice for GGO-BAC. More than 500 lung cancer cases have already been accrued to the study, and the study will be closed in the near future.

The lymph node dissection for lung cancer has been one of the major issues in lung cancer, which has been extensively studied in our division. We continue to improve the surgical technique of dissection based on the oncological and surgical considerations: the more effective and less invasive lymph node dissection termed as "selective mediastinal/hilar dissection" according to the location of primary tumor by the lobe.

The video-assisted surgery for thoracic malignancies is also an important challenge of our division. Especially the indication and surgical technique of video-assisted surgery for early lung cancer are points of great interest because of increased incidence of such minute tumors by improved CT devices and CT screening.

In 2003, there were several important publications. K. Nakagawa investigated prognostic factors in resected thymoma and proposed a new staging system for thymoma. This could be a new standard replacing the so-called "Masaoka's classification" which is frequently used for the staging of thymoma. H. Asamura reported the clinicopathological features of subcentimeter lung cancers. A similar study was reported from Mayo Clinic in 2002 and their 5-year survival rate was 60% for subcentimeter lung cancer patients, while it was 90% in our patients. We speculate that there might be some difference in lung cancer population between US and Japan, and our screening system may play a role.

## Clinical Trials

The survival benefit of preoperative and post-operative chemotherapy for stage IIIA disease was

evaluated in three JCOG studies (JCOG 92-09-055, JCOG 93-04-059, and JCOG 9805). Although JCOG-9805 was intended to evaluate the feasibility of surgical resection after concurrent chemo-radiotherapy in a phase II setting, this multi-institutional study was terminated because of the higher mortality rate experienced in other institutions involved in the study. Our group has chosen to continue this study in collaboration with the thoracic oncology group, and we continue to accrue the candidates. A similar preoperative approach with concurrent chemo-radiotherapy has been employed for a special type of lung cancer known as superior sulcus tumor (STS, JCOG 9806). In our division, we have experienced neither fatal toxicity nor serious surgical complication as a result of this approach. This study has just been closed and the result has been presented at the last ASCO annual meeting. Induction chemoradiotherapy followed by surgery is considered to be a standard treatment strategy for Pancoast tumor according to the results of ours. A clinical trial for stage IB - IIB NSCLC started. This clinical trial (JCOG0204) evaluates the feasibility of preoperative chemotherapy for those early stage lung cancers. This randomized phase II trial will give us another clue for the future multimodal treatment for early stage lung cancer.

JCOG trials usually deal with multimodal treatment strategy for lung cancer. JCOG 0201 is a unique trial for very early lung cancer. This study investigates the radiological-pathologic correlation and will give us criteria for the definition of "early peripheral lung cancer" which will be candidate for limited surgery. More than 500 cases have been accrued for this trial. The feasibility trial of limited surgical resection for those "early peripheral lung cancer" is mandatory in the near future.

● K. Suzuki ●

Number of Patients	2001	2002	2003
Lung carcinoma (all cases)	386	399	448
Lung carcinoma (resection)	347	350	394
Metastatic lung tumor	63	66	79
Mediastinal tumor	16	25	37
Pleural disease	16	6	7
Chest wall tumor	9	4	2
Total	602	547	664