

## The Combination Approach: Video-assisted Axillary Thoracotomy

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This communication describes a combined procedure for locating an apical lesion of the lung. Through a 3 cm skin incision, a video-assisted axillary thoracotomy was performed to treat 10 patients. There was no procedure-related morbidity. Because of the small skin incision, this technique resulted in excellent cosmetic results and early recoveries. Therefore, we consider this technique is superior to other methods in suitable patients.

### Introduction

Management of surgical pulmonary diseases by video-assisted thoracic surgery (VATS) has been generally accepted because it is minimally invasive<sup>1)</sup>. Even before VATS was developed, an axillary thoracotomy was performed as an adequate procedure<sup>2)~4)</sup>. This report describes a combination technique (axillary thoracotomy and thoracoscopy). We have devised a video-assisted axillary thoracotomy (VAAT) to minimize the skin incision by using thoracoscopy for apical lesions, and we have obtained satisfactory results through using this procedure.

### Technique

Under general anesthesia the patient was intubated with a double-lumen endotracheal tube. A 3 cm skin incision was made in the third intercostal space on the anterior axillary line, with the patient in the lateral decubitus position with the arm on the operative side abducted 90° (Fig. 1).

A thoracoport with 10.5 mm in diameter was

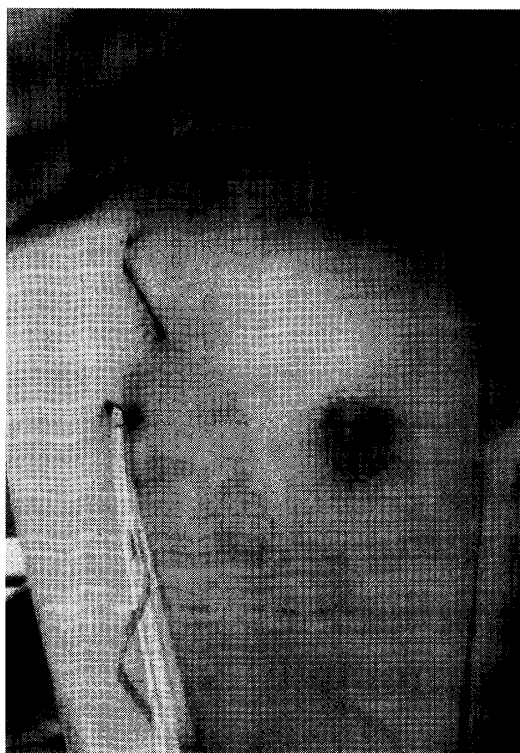
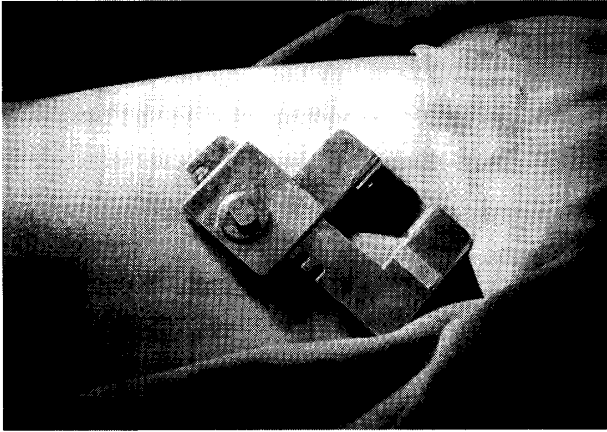


Fig. 1 Postoperative view

A 3 cm skin incision was made in the third intercostal space on the anterior axillary line.



**Fig. 2** Intraoperative view

The third intercostal space was widened by applying a small rib spreader.

placed inside the thoracic cavity by splitting the serratus anterior muscle, dividing the intercostal muscle, and the mobilizing long thoracic nerve and the lateral thoracic artery. A 10 mm 0° thoracoscope was inserted from the thoracoport to observe the pleural space to visualize adhesion and lesions. If adhesion was absent or slight, a forceps was inserted along the thoracoport. The third intercostal space was widened by applying a small rib spreader and the thoracoport was removed (Fig. 2).

The lesion was grasped with forceps and pulled just under the small rib spreader. The thoracoscope was simultaneously taken away from the thoracic cavity. The lesion was excised with a 45 mm VERSAFIRE GIA stapling device (United States Surgical, Norwalk, CT) under direct vision. When the chest wall was closed, a 16 Fr thoracic tube was subcutaneously passed from the height of the fifth intercostal space on the anterior axillary line, and was placed into the pleural space through the third intercostal space.

### Cases

VAAT was performed in 10 cases: eight patients with pneumothorax, one with hamartoma and the other with tuberculoma. The patients consisted of nine men and one woman. Their ages

ranged from 22 to 83 years (the mean age was 48 years). The mean operating time was  $55.2 \pm 21.6$  minutes, and blood loss during surgery was negligible in all cases. Rib dislocation or fracture at the thoracotomy site did not occur in any patients.

All the patients were extubated in the operating room, the drain was removed the first postoperative day, and they were discharged on the third day. There was no procedure-related morbidity.

### Discussion

VATS has influenced thoracic surgery because it is a minimally invasive procedure. VATS shows decreased postoperative pain, preservation of postoperative pulmonary function, and short hospital stay.

Conversely, Kim and coworkers proposed tran-axillary minithoracotomy (TAMT) versus VATS for spontaneous pneumothorax in 1996<sup>5)</sup>. There were no advantages of VATS over TAMT in the operating time, use of analgesics, duration of chest tube indwelling, and postoperative recurrence.

This combination approach is devised for minimizing the skin incision to excise the apical lesions, focusing on the merits of these two operative approaches and is a minimally invasive new procedure. The small skin incision is appealing since it is hidden under the arm. VAAT has the following advantages: ① Combined use minimizes the skin incision. ② The small skin incision gives excellent cosmetic results. ③ Lesions are observed directly. ④ It is possible to palpate pulmonary nodules. ⑤ Readily and rapidly converted to VATS or axillary thoracotomy. ⑥ Although the incision is combined with rib spreading, the decrease in the postoperative pain is equal to that reported with VATS. ⑦ Compared with TAMT, VAAT does not limit the operative fields.

In conclusion, this combination approach using axillary thoracotomy and thoracoscopy is a feasi-

ble method for the treatment of apical lesions.

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#### 胸腔鏡併用下縮小皮膚切開による腋窩開胸術

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近年, 内視鏡の発達, 改良により, 呼吸器外科領域においても, 肺疾患の診断, 外科治療に対して積極的に施行されている。特に, 自然気胸, 未確診腫瘍に対する胸腔鏡手術は一般的となった。一方, 自然気胸, 肺尖部病変に対しては, 従来, 腋窩開胸術が行われていた。腋窩開胸術は標準後側方切開に比べ, 呼吸筋を温存し, 術後肺機能低下が少なく, 術後の創部が上肢に隠れるという点で美容面も考慮している。

今回, 自然気胸, 肺良性腫瘍 10 例に対して, 胸腔鏡を併用し皮膚切開を縮小した腋窩切開術を施行した。術式としては, 皮膚切開は第 III 肋間前腋窩線上に約 3cm 加え, 胸腔鏡を併用し, 肺尖部の病変を直視下に切除した。術後, 気胸の再発はなく, 腫瘍の遺残は認めず, 全例術後経過良好であった。

胸腔鏡を併用し, 従来の標準的な術式がより低侵襲に施行でき, 症例に応じた術式の選択, 応用が可能になると考えられた。