

LYMPHOGENIC SKIP METASTASES AND ADJACENT SEGMENTAL METASTASES MAY OCCUR IN LIMITED RESECTION FOR SUBPLEURAL LUNG CANCER

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Background: Limited pulmonary resections including lung segmentectomy for peripheral small lung cancer have attracted attention in recent years. However, a surgical consensus has not been established. It has been pointed out that there are not only lymph flows to pulmonary hilum along pulmonary vessels or bronchi but also pleural lymph flows directly into the mediastinum or adjacent lung lobe. There are some lung cancer cases with pleural indentation less than twenty millimeters. In these cases, it is concerned that lymph flows carry metastases from the lung segment directly into the mediastinal lymph nodes and adjacent segments without passing through the hilar lymph nodes. In other words, skip lymph node metastases and adjacent segmental metastases might be caused. However, there have been few reports investigating pleural lymph flows exceeding the lung segment.

Objective: The present study was designed to evaluate whether pleural lymph flows exceeding the lung segment could be detected using indocyanine green (ICG) and a fluorescence imaging system intraoperatively.

Methods: Twenty patients (Twenty one lung segments) undergoing lung segmentectomy or lobectomy for a tumor were enrolled in this study. A jet ventilation is selectively applied under bronchofiberscopy to the burdened bronchus to develop an anatomic border between the inflated segment to be evaluated and the deflated area. A 1.0 ml solution containing the fluorescent dye ICG (2.5 mg/ml) was injected into three to five subpleural sites of the segment. Fluorescence imaging device (HyperEye Medical System, MIZUHO IKAKOGYO CO.,LTD. Tokyo, Japan) was used to monitor the ICG-containing lymph flows from the injection site for five minutes. We evaluated the presence of pleural lymph flows exceeding the lung segment.

Results: We observed pleural lymph flows in fifteen out of twenty one cases (71.4%), and pleural lymph flows exceeding the lung segment in eleven out of twenty one cases (52.4%). There is no pleural lymph flow from superior segment of bilateral lower lobe exceeding the segment in studies of several segments.

Conclusions: Pleural lymph flows exceeding the lung segment can be observed in vivo. Skip lymph node metastases and adjacent segmental metastases may occur through subpleural lymph channels in limited pulmonary resections for subpleural lung cancer cases.

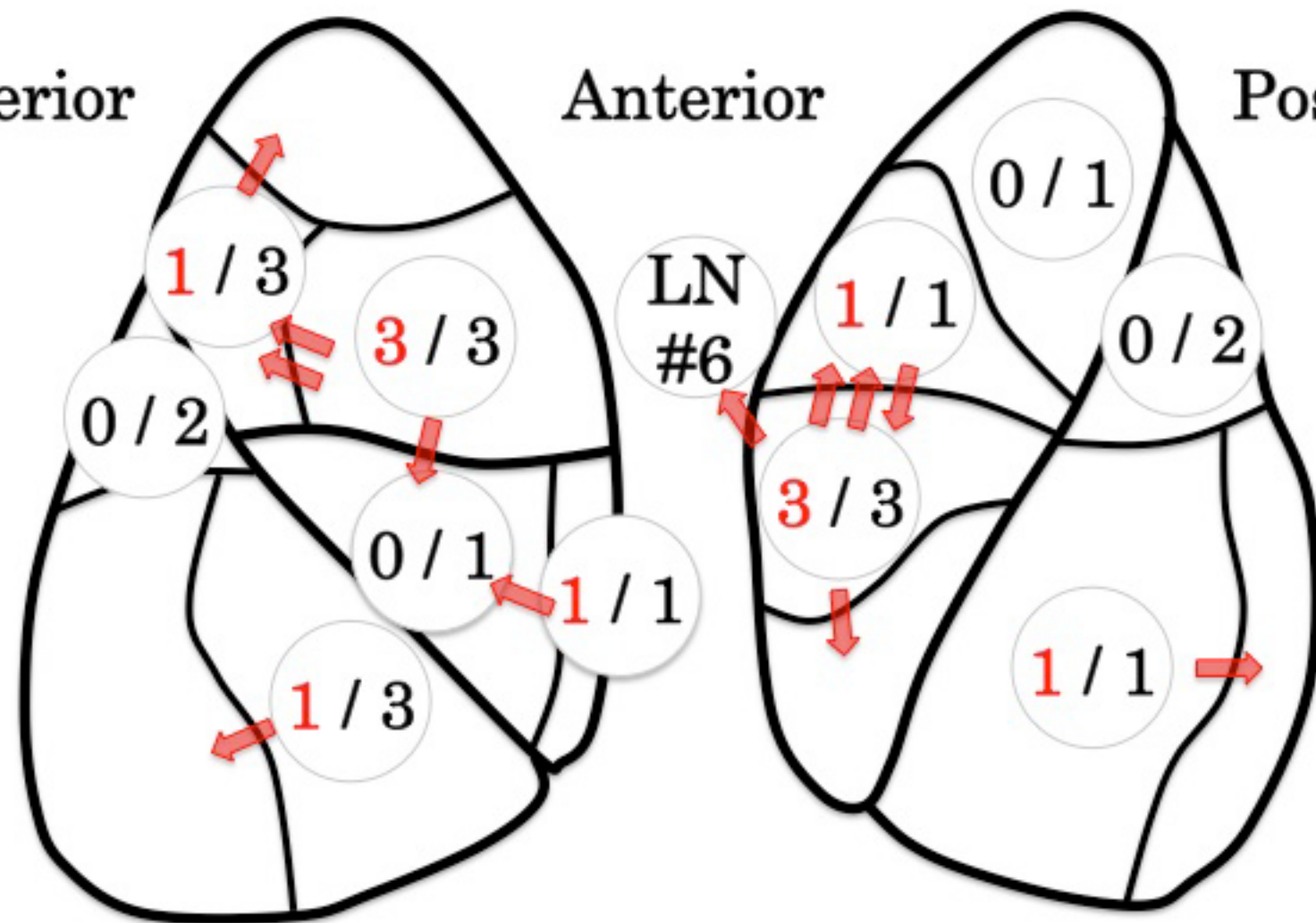
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