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## Dye Marking Helps Surgeons to Pursue Lung Nodules As Small As 2 mm

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### DIRECT APPLICABILITY TO LUNG LESIONS THAT REQUIRE DEFINITIVE DIAGNOSIS

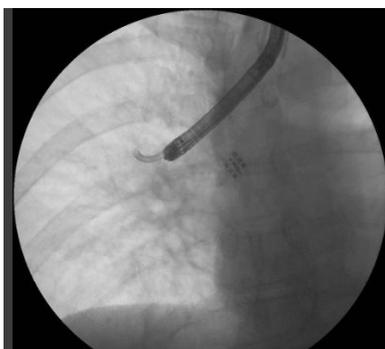
#### INTRODUCTION:

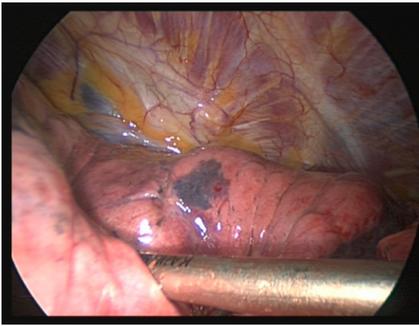
The superDimension® Electromagnetic Navigation Bronchoscopy® (ENB™) system navigates to peripheral lung lesions outside the reach of a bronchoscope. This technology provides physicians of multiple specialties the ability to diagnose, stage and prepare to treat distal lung disease. This case report describes a technique of transbronchial injection of dye markers to provide enhanced visual localization of the tumor to guide the minimally invasive video-assisted thoracoscopic surgery (VATS).

#### CASE REPORT:

A 50+year-old female, previous smoker who developed a persistent cough in recent months which would not resolve.

The patient had a CT scan which showed a very small, 2 mm posterior right upper lobe (RUL) lesion very near the pleura. The original recommendation by her doctor was to “watch and wait.” However, she refused to do so and sought out care at the University Hospital of North Carolina where she was referred to Dr. Feins. Upon review of her case she asked Dr. Feins to surgically remove the lesion.





An ENB™ procedure was done prior to VATS to dye mark the lesion. After navigation to the lesion, the Locatable Guide Catheter was locked in place and a 25G needle was inserted through the guide to inject approximately .5 – 1 cc of indigo carmine dye to the lesion and the adjacent pleura for easier location during the VATS procedure. (In this case, there was no attempt to biopsy the lesion during the procedure as the agreement with the patient beforehand was to remove it surgically.)

#### **DISCUSSION:**

A VATS procedure was performed the day following the dye markers placement. As expected, the dye was visible and on top of this 2 mm lesion, allowing localization and removal of this small lesion while preserving as much healthy lung tissue as possible. The lesion was excised in approximately 10 minutes. The excised tissue was sent to pathology and was diagnosed as an adenocarcinoma. A lobectomy was performed removing the patient's RUL.

#### **CONCLUSION:**

“Lung lesions that are small and not readily visible on the surface of the lung are very often difficult if not impossible to localize and remove with standard thoracoscopy. The superDimension® system allows the surgeon to bronchoscopically mark the pleural surface directly adjacent to small and otherwise unidentifiable lung lesions. A thoroscopic wedge excision of this area of tissue results in removal of the lesion in question.

While in this case the superDimension dye localization procedure was done on the day before thoracoscopic removal, it is also possible for the two procedures to be done at a single sitting under general anesthesia. The procedure has direct applicability to lung lesions that require definitive diagnosis such as suspected small lung cancers, suspected metastatic lung lesions, and infectious processes where excision is necessary.”

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