

superDimension[®] Electromagnetic Navigation Bronchoscopy[®] Enables Tattooing of 7mm Suspicious Lung Nodule to Aid da Vinci[®] Robotic-Assisted Pulmonary Resection

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Introduction:

Electromagnetic Navigation Bronchoscopy (ENB) provides the ability to navigate to very small peripheral nodules for diagnosis and treatment preparation in one procedure. Using ENB to tattoo these small nodules allows precise locatability of the nodule and also directs depth for robotic-assisted pulmonary resection as well as pulmonary VATS procedures. This case report describes how ENB when paired with da Vinci robotic-assisted pulmonary resection surgery continues to expand treatment options for patients.

Case Report:

64-year-old female, current smoker (2 packs/day for last 30 years) with a medical history significant for osteoarthritis, gastroesophageal reflux disease and lung cancer. She underwent a left upper lobectomy in 2004 for T1N0M0 non-small cell lung cancer (NSCLC).

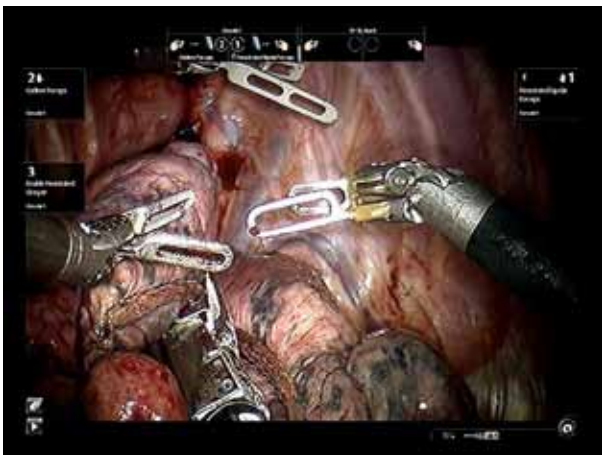
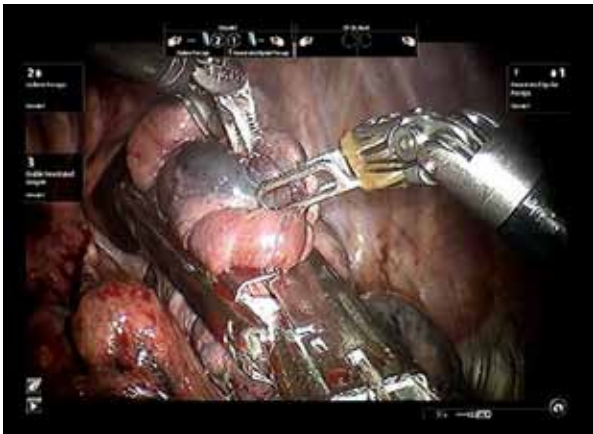
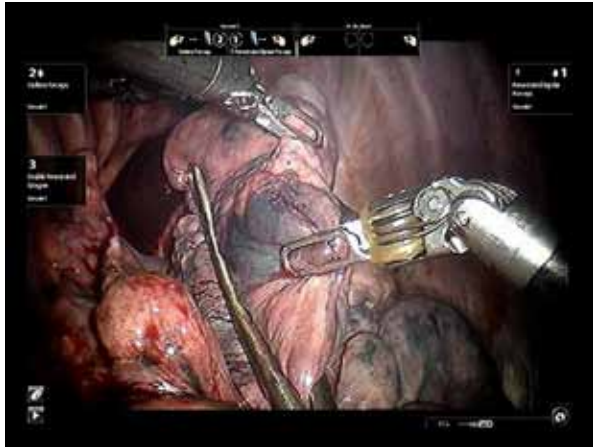
A surveillance chest CT-scan was performed in September 2009 which showed a new 0.5cm x 0.5cm nodule in the right upper lobe (RUL). Initial recommendation was observation. A follow-up CT-scan in March 2010 showed the nodule had increased to 7mm in size with volumetric measurement also increasing from 145 cubic mm to 257 cubic mm.

Discussion:

Since she had significant COPD with an FEV1 of 0.85 (45% predicted) as well as previously undergone a left upper lobe (LUL) lobectomy, an Electromagnetic Navigation Bronchoscopy procedure was planned to enable the early diagnosis of the new primary nodule in the RUL while it was still at a size that allowed for surgical treatment. Biopsies of the nodule confirmed non-small cell lung carcinoma.

Following completion of pulmonary rehabilitation, the RUL nodule was marked with indigo carmine dye to aid in robotic-assisted pulmonary resection. The following day the patient underwent a RUL segmentectomy with lymph node dissection using robotic-assisted technology. Due to the minimally invasive technique used during the segmentectomy, the patient was discharged on post-operative day two. The final pathology report showed a T1a lesion with negative lymph nodes corresponding to T1aN0 (Stage 1a) disease.

da Vinci® Robotic-Assisted Pulmonary Resection with ENB-Enabled Tattooing



Conclusion:

Due to the size and location of this nodule as well as the patient's severe COPD, the diagnostic yield from either transthoracic needle aspiration or conventional bronchoscopy would have been low. She also did not have the physiologic reserve to tolerate a lobectomy. Therefore, performing an Electromagnetic Navigation Bronchoscopy® provided an early diagnosis which allowed a segmentectomy while the lesion was still small. In addition, the ability to mark the lesion during the ENB procedure enabled her to undergo a minimally invasive robotic resection to lessen her post-operative morbidity. When Electromagnetic Navigation Bronchoscopy is paired with da Vinci robotic surgical technology, a powerful combination of enhanced minimally invasive diagnostic and treatment options can now be offered to patients.

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