

Percutaneous lung biopsy using Micromate™

Marco van Strijen, MD
Interventional Radiologist, St. Antonius Ziekenhuis, Nieuwegein, The Netherlands



Patient description

52-year old male

Patient referred for suspicion of rectal carcinoma.

CT scan was acquired for staging and a full lateral lesion has been identified in the left lung.

Key Takeaway

Using Micromate™ under live imaging allowed the clinical team to accurately target a lung lesion in the vicinity of the pleura, without complications such as pneumothorax.

Case Rating

When compared with state-of-the-art freehand targeting | doi: 10.2214/AJR.09.3647. PMID: 20410392.



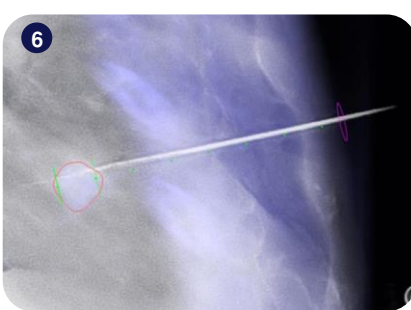
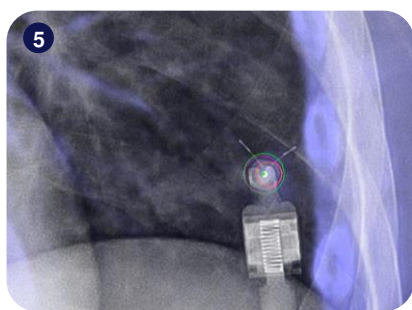
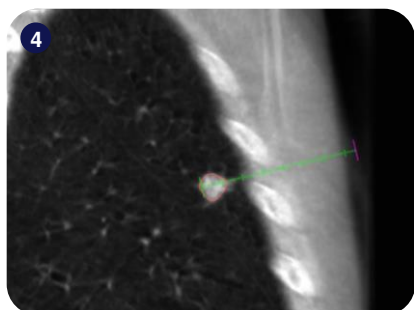
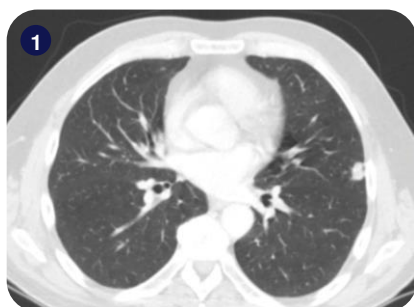
Radiation exposure (mSv)
3.79 mSv
70% less radiation



Procedure duration
16 min
43% faster

An intra-operative 3D scan of the patient in supine position was performed using a Philips Allura Xper FD20 angiography device. The suspicious lesion was segmented, and the surgical trajectory planned using the Xper Guide planning software. An intermediate target point for inserting the guidance needle has been defined at the proximal border of the segmented lesion, and a target point for the insertion of the biopsy needle has been defined at the distal border of the segmented lesion, to ensure tissue harvesting covered the whole lesion.

Micromate™ was then gross-positioned near the predefined entry-point and remotely controlled for alignment to the surgical plan under fluoroscopic live imaging. After the robotic alignment, an 18G biopsy needle was coaxially inserted three times through a 17G guiding needle for tissue harvesting. A metastatic colon carcinoma was diagnosed. The procedure lasted 16 minutes and the patient had no complications. Post-operative accuracy measurements indicated a trajectory alignment accuracy of 0.56mm on the Entry Point View and an angular displacement of 1.48 degrees along the trajectory in the Progress View.



1-3) Pre-operative CT scan views. The lateral left lung lesion is clearly visible; 4) Definition of the surgical plan. The red contour corresponds to the borders of the segmented lesion; 5) Alignment of Micromate™ to the surgical plan under live imaging; 6) Insertion of the biopsy needle through the guidance needle and tissue harvesting.