

Real-Time Diagnosing and Staging of Lung Cancer with nCLE

■ European Respiratory Journal ■

June 2019

Publication Title: NEEDLE-BASED CONFOCAL LASER ENDOMICROSCOPY FOR REAL-TIME DIAGNOSING AND STAGING OF LUNG CANCER

[HTTPS://DOI.ORG/10.1183/13993003.01520-2018](https://doi.org/10.1183/13993003.01520-2018)

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STUDY DESIGN

Objective: To prove safety, feasibility, characteristics, and interpretability of needle-based Confocal Laser Endomicroscopy (nCLE) imaging in lung cancer



21 patients with
27 lesions evaluated



Single-center
study



nCLE criteria developed for
the presence of lung cancer

RESULTS

90.0%

accuracy of nCLE imaging for
detecting malignancy in **tumors**

89.6%

accuracy of nCLE imaging for detecting
malignancy in **metastatic lymph nodes**

3 nCLE criteria identified for the detection of malignancy:

1. Dark enlarged pleomorphic cells
2. Dark cell clusters consisting of overlapping cell-structures (“dark clumps”)
3. The continuous movement of a part of the cells in one direction (“directional streaming”)

- Substantial (mean κ -value = 0.70) intra-observer reliability for diagnosing malignancy.
- Substantial (mean κ -value = 0.68) inter-observer agreement overall for the presence of malignancy.

CONCLUSION

Results show that nCLE has the potential to be used as a guidance tool to identify the optimal area for biopsy.

nCLE has the potential to be a real-time feedback technique for diagnostic, staging, and treatment procedures in lung cancer.

Integration of nCLE into the developed robotic bronchoscope navigational technology may result in an optimal real-time bronchoscope lung cancer detection tool.

Key Takeaway: Endosonography-guided nCLE imaging in lung cancer is feasible and safe. nCLE *in vivo* images in real-time of malignant cells were consistently interpreted.