

Direct visualization of peripheral lung nodules with Iriscope

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Introduction

- Iriscope, an ultra-thin video-endoscopic probe of 1.3 mm, was developed to be inserted in the working channel of the bronchoscope to achieve a direct view of peripheral lung nodules unreachable by standard videobronchoscopes.
- Aims of this study:
 - evaluate the efficiency and safety of Iriscope to visualize peripheral bronchi
 - describe the endobronchial aspect of peripheral lesions
 - compare it to the final pathological diagnosis
 - evaluate the reproducibility of Iriscope to visualize endobronchial aspect of peripheral lesions between users.



Methods

- Multicentric prospective observational
- n= 96 patients
- Average nodule size : 24 ± 10 mm
- Guidance : CBCT and/or ENB and/or R-EBUS and/or Fluoroscopy
- Use of a guide sheath mandatory : ensure that tissue samples were taken at the same position where the lesion was visualized with Iriscope
- The Iriscope videos of all centers were collected, anonymized and shuffled
- A reader from each center (BB, AB and BRZ) blindly reviewed and described the visualized patterns in all videos
- > Comparisons were made between the patterns and the final diagnosis

Patient and Nodules Characteristics	All (n=96)
Age, y mean \pm SD	69 \pm 8
Gender (Men) n (%)	50 (52)
Smoking (Tobacco) n (%)	
- Active	39 (41)
- Past	40 (42)
- Never	17 (17)
Nodule size (mm) mean \pm SD	24.2 \pm 9.8
Type of nodule n (%)	
- Solid	57 (59)
- Subsolid	24 (25)
- Nonsolid	15 (16)
Bronchus sign n (%)	43 (45)
Endoscopic guidance techniques	
ENB n (%)	83 (86)
CBCT n (%)	19 (20)
R-EBUS n (%)	47 (49)
Fluoroscopy n (%)	33 (34)

Results

- Prevalence of malignancy = 93%
- Technical failure in 7 patients (7%)
- Presence of blood in all cases
- No adverse event attributable to Iriscope

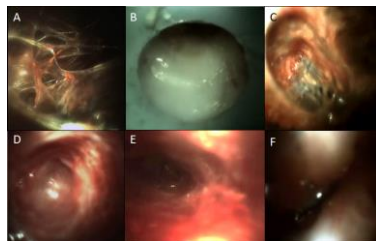


Figure legend

Characteristic example of the different patterns visualized with Iriscope showing emphysema (A), white plaque (B), anthracosis (C), obstruction (D), granulomatous mucosa (E), and extrinsic compression (F).

- The three readers acknowledged exactly the same patterns in 9% of the videos
- Considering at least one identical pattern observed per video, the same pattern was observed in 60 % by 3 readers
- Considering at least one identical pattern observed per video, the same pattern was observed in 97 % by 2 readers

Pattern	n (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
White plaque	50 (52)	59	75	98	8
Compression	3 (3)	4	100	100	5
Obstruction and compression	23 (24)	27	75	96	5
Obstruction	18 (19)	20	75	94	4
White plaque or obstruction or compression	61 (64)	71	50	97	8
Emphysema	8 (8)	90	0	91	0
Anthracosis	24 (25)	27	50	92	3
Granulomatous mucosa	18 (19)	19	50	89	3
Normal	9 (9)	20	0	75	0

Conclusions

- Iriscope is a new and efficient probe to visualize peripheral bronchi
- White plaque, obstruction and extrinsic compression patterns described by Iriscope are associated with malignancy
- Easy to use and reproducible

Conflicts of interest

Lys Medical (Waterloo, Belgium) developed and provided Iriscope. Olivier Taton, Benjamin Bondue, and Dimitri Leduc received consultancy fee and have stock options in Lys Medical society. The remaining authors have nothing to declare.