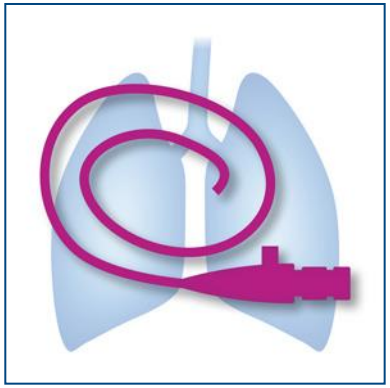
Pneumo Update Europe 2018

15 - 16 June, Budapest

Pulmonary Endoscopy

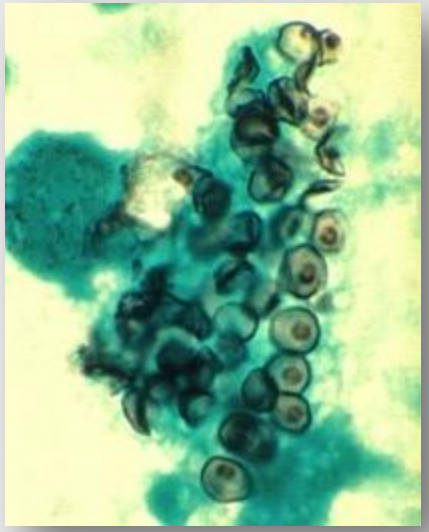


Felix Herth, Germany

Discussed papers

- Diagnostic bronchoscopy
- Cryo-biopsy
- Solitary pulmonary nodule
- Endosonography
- Interventions in obstructive lung diseaes
- Best of the rest

Diagnostic



Girard et al., Sensitivity of Cytology Specimens From Bronchial Aspirate or Washing During Bronchoscopy in the Diagnosis of Lung Malignancies
Clinical Lung Cancer 2017; 8(5):512-518

455 patients suspicious of lung cancer
TBB, TBNA, BL

retrospective analysis

sensitifity of the different methods

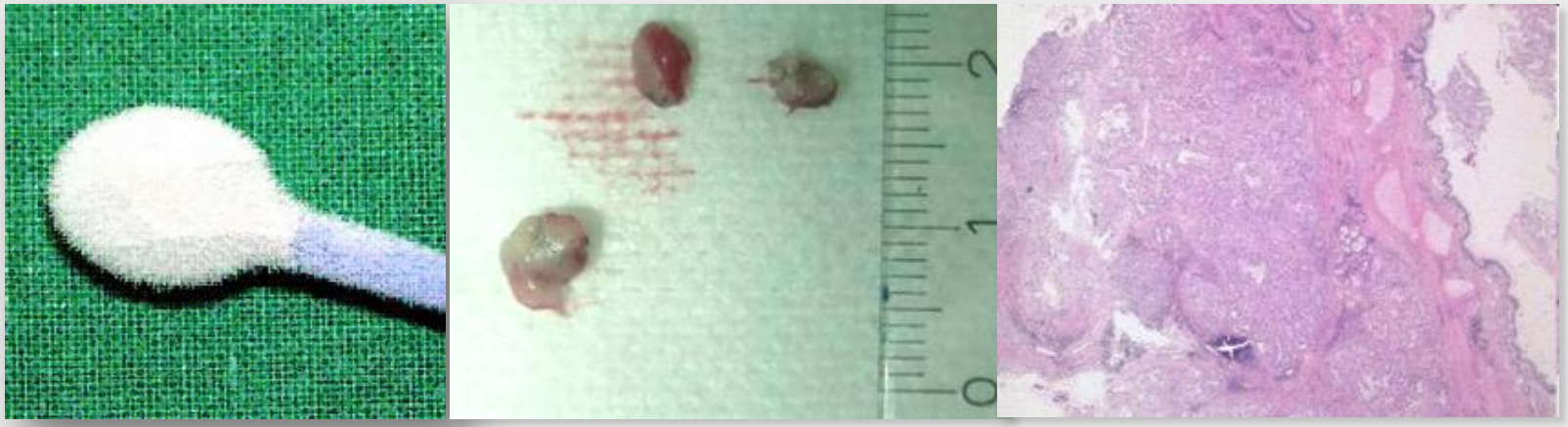
Histology	Tumors	
	n	Visible, n (%)
Lung cancer (n = 412)		
Adenocarcinoma	200	94 (47.0)
Squamous cell	115	97 (84.3)
Other NSCLC[a]	55	32 (58.2)
Small cell	38	31 (81.6)
Carcinoid	4	4 (100)
Lung metastases (n = 30)		
Colon	7	4 (57.1)
Other[b]	23	1 (4.3)
Miscellaneous[c]	13	8 (61.5)
Total, n (%)	455	271 (59.6)

Girard et al., Sensitivity of Cytology Specimens From Bronchial Aspirate or Washing During Bronchoscopy in the Diagnosis of Lung Malignancies
Clinical Lung Cancer 2017; 8(5):512-518

Table 2 Positivity of Biopsies and Sensitivity of Bronchial Cytology During Conventional Bronchoscopy Only (N = 366) Depending on the Endoscopic Visibility of Tumors

Conventional Bronchoscopy	Visible Tumors (n = 258)	Nonvisible Tumors (n = 108)	Overall (n = 366)
Biopsies, n	258	59	315
Positive biopsies, n (%)	225 (87.2)	13 (22.0)	238 (75.6)
Positive bronchial cytology, n	59[a]	3	62
Sensitivity of bronchial cytology during conventional bronchoscopy (95% CI)	22.9%	2.8%	16.9% (13.4-21.1)

Cryo- biopsy



Ravaglia C et al., Transbronchial Lung Cryobiopsy in Diffuse Parenchymal Lung Disease: Comparison between Biopsy from 1 Segment and Biopsy from 2 Segments
Respiration 2017;93:285–292

46 patients with ILD
MDT indication for biopsy
RT

group A: 4 biopsies of the same segment
Gruppe B: Je 2 biopsies of different segments

diagnostic value

	Group A (only 1 segment)	Group B (2 different segments)
Cases, *n*	22	23
Male, *n* (%)	13 (59)	15 (65)
Median age (range), years	65 (79–29)	59 (74–22)
Median FVC (range), %	85.00 (137–49)	90.00 (122–55)
Median DLCO (range), %	69.00 (121–37)	63.00 (100–38)
Median BMI (range)	27.50 (32.8–19.8)	25.95 (33.60–19.00)
Possible UIP on HRCT, *n* (%)	10 (45)	11 (48)
Inconsistent UIP on HRCT, *n* (%)	12 (55)	12 (52)

Ravaglia C et al., Transbronchial Lung Cryobiopsy in Diffuse Parenchymal Lung Disease: Comparison between Biopsy from 1 Segment and Biopsy from 2 Segments
Respiration 2017;93:285–292

	Group A (N = 22 patients)	Group B (N = 23 patients)
Performing only 1 sample	23% not diagnostic (5/22)	39% not diagnostic (9/23)
Combining 2 samples (from the same segment)	9% not diagnostic (2/22)	35% not diagnostic (8/23)
Combining 2 samples (from different segments)		4% not diagnostic (1/23)

Complications: .... no severe bleeding was observed, only mild-to-moderate bleeding (2 cases in group A and 2 cases in group B). Pneumothorax was documented in 16% of the cases (1 case in group A and 6 cases in group B) ...

Tomic et al., Acute Exacerbation of Interstitial Lung Disease After Cryobiopsy
J Bronchology Interv Pulmonol. 2017; 24(4):319-322

case report 59-year old female Frau

- **Cryo-Tbb (2 PE‘s from ML): NSIP**
- **No specific therapy**

- **3 weeks after biopsis**
- **Acute worsening**
- **no microbiological finding**
- **high dose corticoid**
- **slowly recovery**

Sánchez-Cabral et al., Utility of Transbronchial Lung Cryobiopsy in Non-Interstitial Diseases
Respiration 2017; 94(3):285-292

103 patients with indication for biopsy

BAL and Cryo-PE

diagnostic value

Diagnostic group		BAL			TLCB		
		n	total	%	*n*	total	%
1	Malignant	7	33	21.2	36	38	94.7
2	Infectious	31	40	77.5	24	40	60.0
3	Mixed[a]	1	2	50.0	2	2	100.0
4	Other diagnosis	1	19	5.3	18	19	94.7
Global diagnostic yield according to sample type[b]		39	98	39.8	78	103	75.7

Sánchez-Cabral et al., Utility of Transbronchial Lung Cryobiopsy in Non-Interstitial Diseases
Respiration 2017; 94(3):285-292

The incidence of complications was 4.9% (cases) with full recovery in all cases

- **3 Pneumothoraces (3%)**
- **3 moderate bleedings (3%)**

additional Cryo- papers

- **Cryo-biopsy easy to learn**

  Kronborg-White et al, Eur Clin Respir J, 2017

- **Thin Cryo-probe (1,1 mm) as effective as bigger ones**

  Yarmus et al, Chest, 2017

- **Cryo-biopsy is cost effective**

  Sharp et al, QJM, 2017

Solitary pulmonary nodule

Sandeep J. Khandhar et al., Electromagnetic navigation bronchoscopy to access lung lesions in 1,000 subjects: first results of the prospective, multicenter NAVIGATE study

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BMC Pulmonary Medicine (2017) 17:59

1000 patients indications for biopsy or markerr placement

Navigation mit electromagnetc system, Biopsy

effectiveness complications

	N = 1129 Lesions in 964 Subjects
Pre-test probability of malignancy (physician estimation)	67.1 ± 26.5 (790) [75.0] (0.0–100.0)
Pre-test probability of malignancy (Swenson's equation)[a]	61.6 ± 29.4 (789) [67.1] (2.9–100.0)
Average Lung Lesion Size, mm	
Mean ± SD (N)	23.6 ± 14.4 (1129)
Median, Range (min-max)	20.0 (3.0–118.0)
Interquartile Range (Q1-Q3)	16.0 (14.0–30.0)
< 20 mm	49.7% (561/1129)
≥ 20 mm	50.3% (568/1129)
Lesion Location	
Right Upper Lobe	31.7% (358/1129)
Right Middle Lobe	8.1% (91/1129)
Right Lower Lobe	19.0% (215/1129)
Left Upper Lobe	25.9% (292/1129)
Left Lower Lobe	15.3% (173/1129)

Sandeep J. Khandhar et al., Electromagnetic navigation bronchoscopy to access lung lesions in 1,000 subjects: first results of the prospective, multicenter NAVIGATE study

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BMC Pulmonary Medicine (2017) 17:59

Table 6 Pathology result aided by the index ENB procedure[a]

N = 910 subjects with navigation complete and tissue sample obtained	
Malignant	45.8% (417/910)
Lung cancer	40.1% (365/910)
Non-Small Cell Lung Cancer (NSCLC)	36.4% (331/910)
Adenocarcinoma	23.5% (214/910)
Squamous Carcinoma	11.4% (104/910)
Other NSCLC	1.5% (14/910)
Small Cell Carcinoma	2.9% (26/910)
Neuroendocrine Carcinoma	1.1% (10/910)
Metastatic Carcinoma of Extrathoracic Origin	4.4% (40/910)
Lymphoma	0.2% (2/910)
Malignant Cells (unable to characterize)	0.9% (8/910)
Other	0.3% (3/910)
Site-Reported Non-Malignant or Inconclusive Results	
Non-Malignant	40.9% (372/910)

Pneumo rate 5%

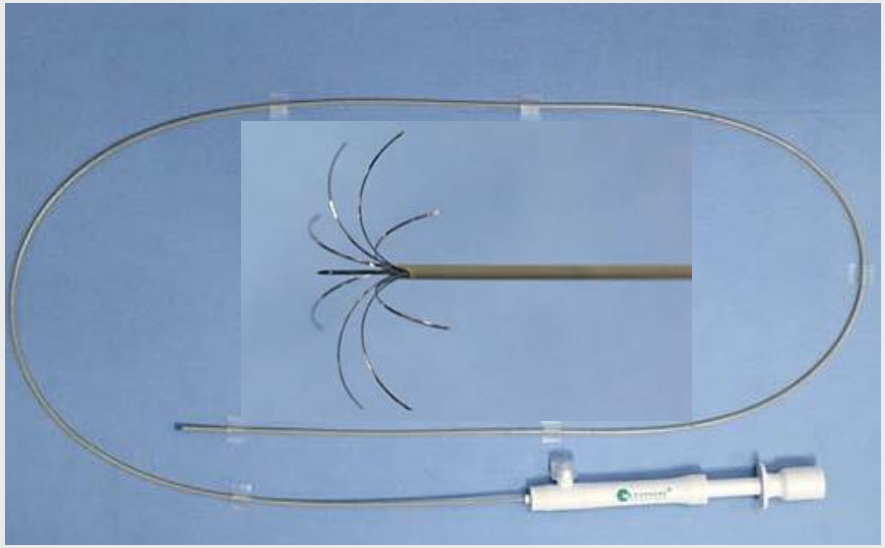
No follow-up available??

Xie F et al., Navigation Bronchoscopy-Guided Radiofrequency Ablation for Nonsurgical Peripheral Pulmonary Tumors. Respiration 2017; 94(3):293-298

3 patients
inoperabel
SPN 14 mm

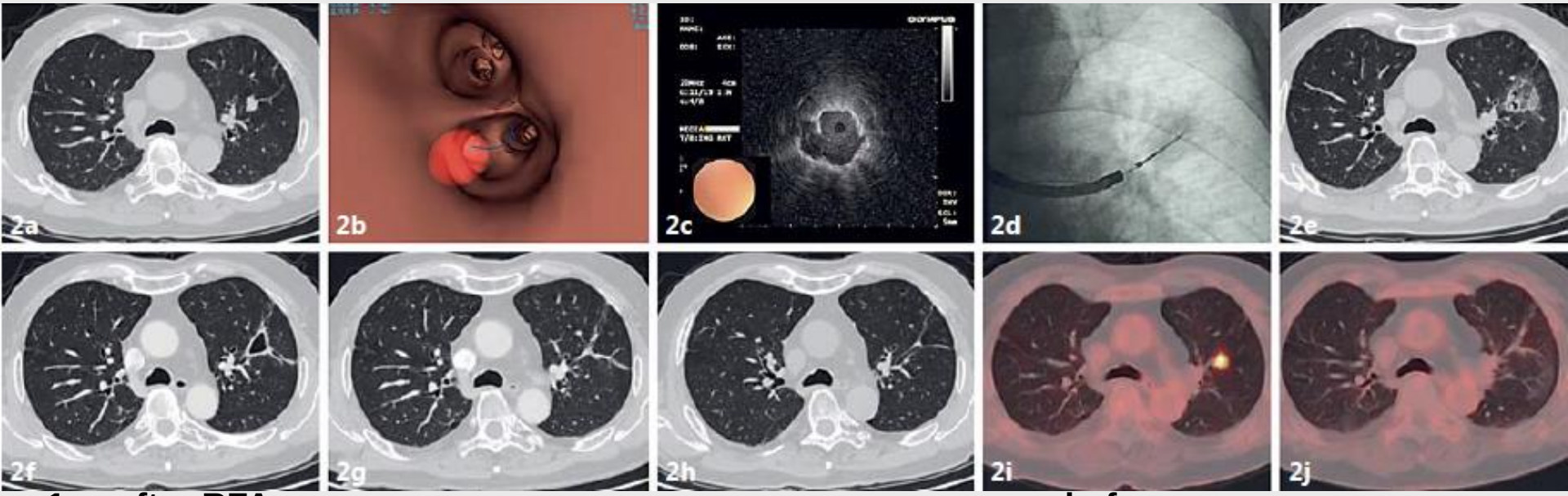
Navigation, radial EBUS, Biopsy, RFA

effectiveness
complications



Xie F et al., Navigation Bronchoscopy-Guided Radiofrequency Ablation for Nonsurgical Peripheral Pulmonary Tumors. Respiration 2017; 94(3):293-298

before



1 m after RFA | 3 m after RFA | 12 m after RFA | before | 3 m after RFA

No complications, 2 pts stable > 1 year

Take home message

- **BL in cancer without any value**
- **Cryo biopsy needs at least biopsies from two different segments**
- **EMN value still under discussion. Reimbursement?**
- **Endoscopic treatment options for SPN are coming**

Endosonography

Masahide Oki et al., How Many Passes Are Needed for Endobronchial Ultrasound-Guided Transbronchial Needle Aspiration for Sarcoidosis? A Prospective Multicenter Study Respiration 2018 epub ahead

109 patients suscipious of sarcoidosis

EBUS TBNA at least 6 passes

yield complications

Characteristics	Data
Number of patients	109
Median age (range), years	58 (24–82)
Sex	
Male	61 (56)
Female	48 (44)
Chest radiographic staging	
Stage I	58 (53)
Stage II	51 (47)
Serum angiotensin-converting enzyme	
≤25.0 U/L	88 (81)
>25.0 U/L	21 (19)
Total LN number evaluated by EBUS-TBNA	184
LN number evaluated by EBUS-TBNA per patient	
1 LN	36 (33)
2 LNs	71 (65)
3 LNs	2 (2)
LN location for EBUS-TBNA	
2R	1 (1)
4R	59 (32)
4L	5 (3)
7	92 (50)
10R	3 (2)
10L	2 (1)
11R	16 (9)
11L	6 (3)
Median LN size in shortest diameter (range), mm	15.7 (7.6–33.0)

Masahide Oki et al., How Many Passes Are Needed for Endobronchial Ultrasound-Guided Transbronchial Needle Aspiration for Sarcoidosis? A Prospective Multicenter Study Respiration 2018 epub ahead

Number of passes	Patients after needle pass, *n* (%)		
1	58 (63.0)		
		OR = 1.73 ($p = 0.0065$)	
2	69 (75.0)		
		OR = 1.45 ($p = 0.1188$)	
3	75 (81.5)		OR = 1.81 ($p = 0.0230$)
4	78 (84.8)		
		OR = 1.09 ($p = 0.9164$)	
5	79 (85.9)		OR = 1.30 ($p = 0.4947$)
6	81 (88.0)		

Odds ratio (OR) and *p* value were calculated by generalized estimating equations. The Tukey-Kramer test was used to adjust for multiple testing. EBUS-TBNA, endobronchial ultrasound-guided transbronchial needle aspiration.

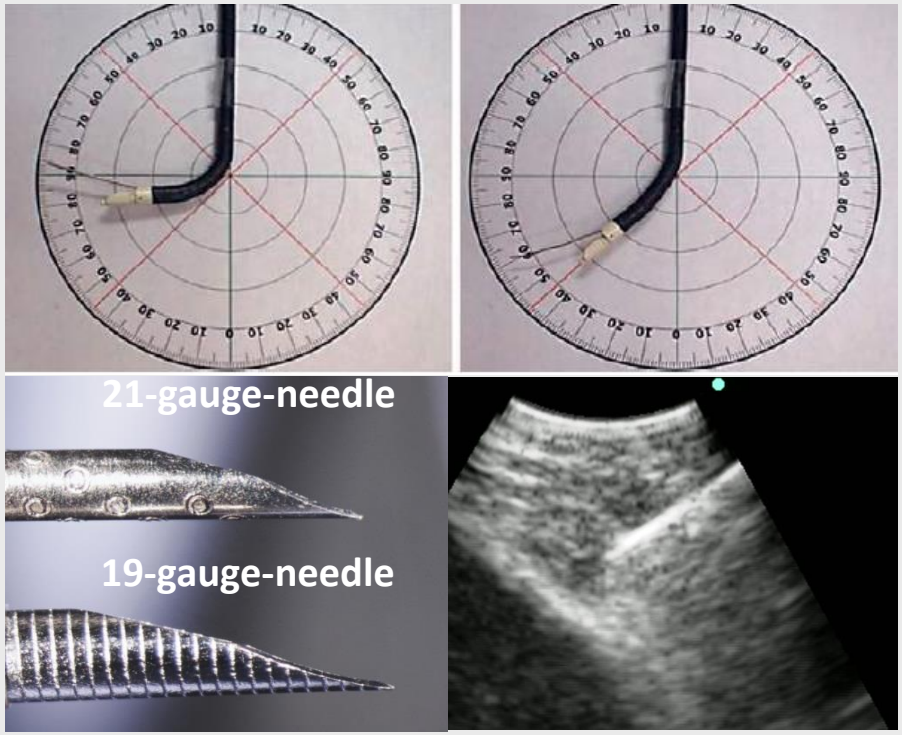
No complications

Tyan et al., Flexible 19-Gauge Endobronchial Ultrasound-Guided Transbronchial Needle Aspiration Needle Respiration 2017;94:52–57

47 patients enlarged mediastinal LN

EBUS TBNA 19 g needle

yield complications



Tyan et al., Flexible 19-Gauge Endobronchial Ultrasound-Guided Transbronchial Needle Aspiration Needle Respiration 2017;94:52–57

Diagnosis	Diagnostic by Flex 19G needle, *n*/*N* (%)
Malignant	24/27 (89)
Pulmonary adenocarcinoma	14/14 (100)
Pulmonary squamous cell carcinoma	3/3 (100)
Small-cell lung cancer	3/3 (75)
Lymphoma	4/4 (100)
Others (mesothelioma and nuclear protein in testis midline carcinoma)	0/2 (0)
Benign	18/20 (90)
Sarcoidosis	13/14 (93)
Reactive lymphocytosis	5/7 (83)
Complication	1/47 (2)
Molecular testing for adenocarcinoma	14/14 (100)

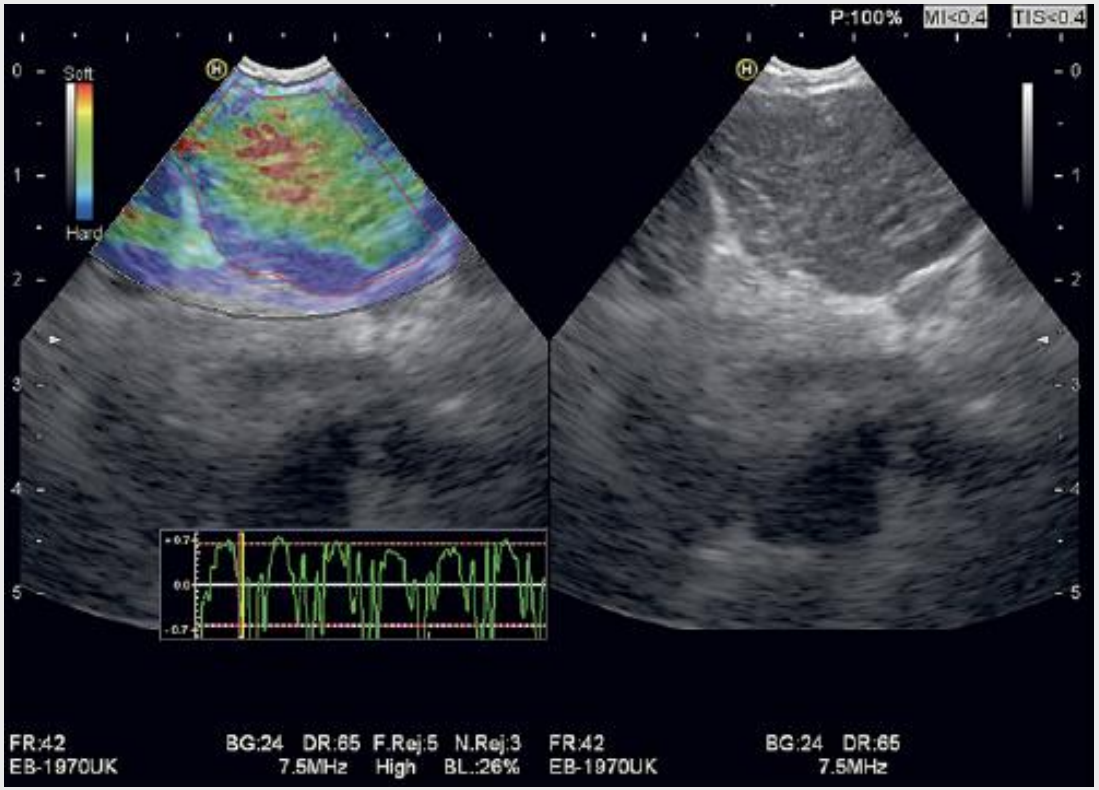
No complications

Sun et al., Endobronchial Ultrasound Elastography for Evaluation of Intrathoracic Lymph Nodes Respiration 2017;93:327–338

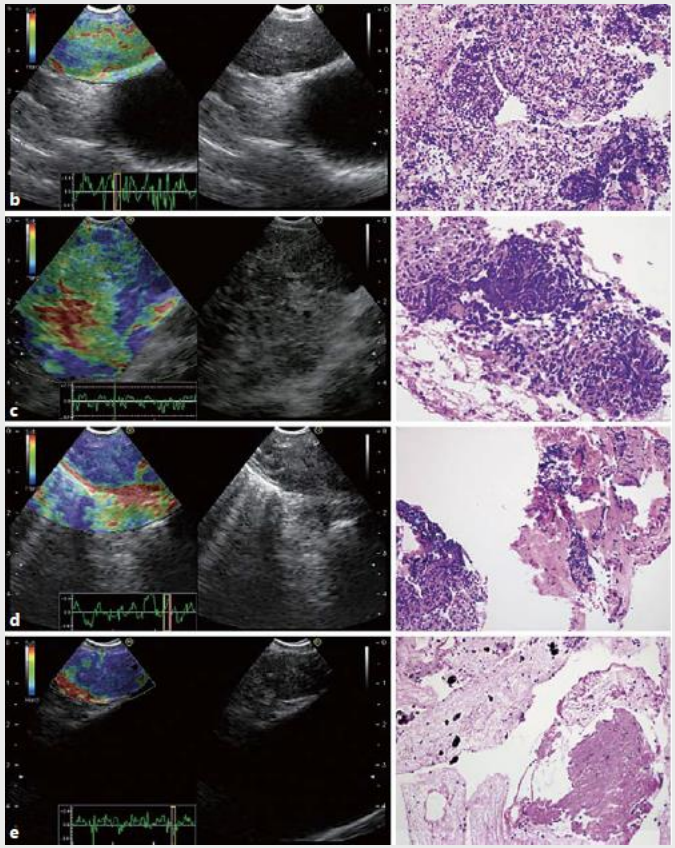
56 patients
68 LN
Enlarged or PET +

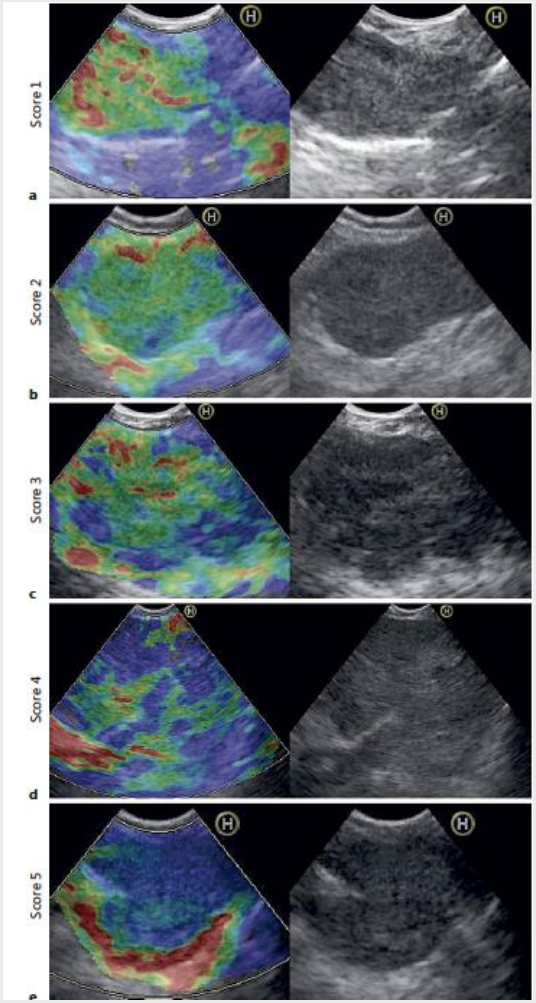
EBUS
Elastography
TBNA

yield
complications



Sun et al., Endobronchial Ultrasound Elastography for Evaluation of Intrathoracic Lymph Nodes Respiration 2017;93:327–338





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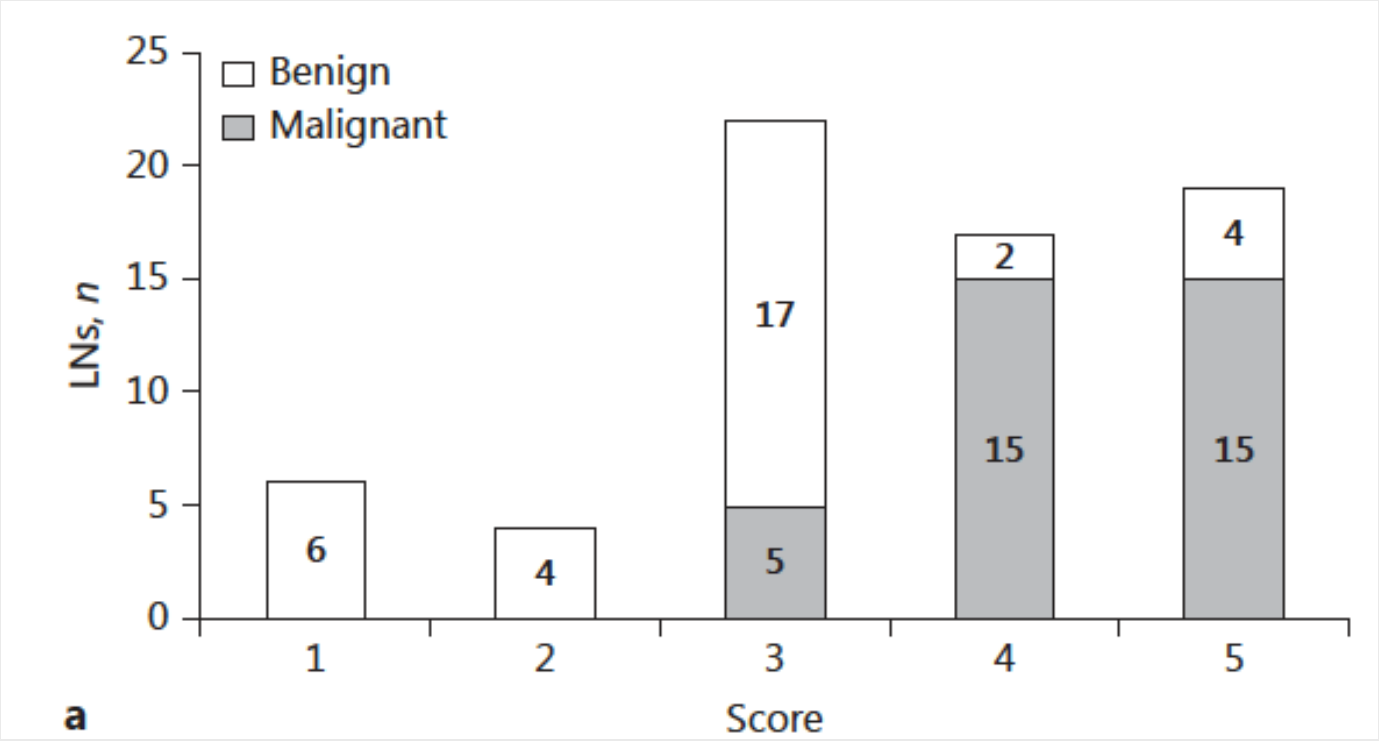

Additional EBUS paper

- **Thin EBUS scope allows more peripheral use**

  Patel et al., Ann Thorac Surg 2017;103:1158–64

- **Simulator training increases learning curve**

  Naur et al, Respiration 2017;93:355–362

- **PD-L1 evaluation via EBUS-TBNA possible**

  van de Ven et al, ERJ Open Res 2017; 3: 00110-2016

Take home message

- **Endosonographie Staging technology No.1**
- **New needles**
- **New Sono features: Elastographie improves NPV**

Interventions in obstructive lung diseases

Criner et al., Lung Function Improvement After Bronchoscopic Lung Volume Reduction With Pulmonx Endobronchial Valves Used in Treatment of Emphysema AJRCCM 2018

HOT TOPIC ATS 2018

190 Pat
COPD III/IV
best medical treatment

Valve placement vs SoC

Primary (12 mo)
% subjects FEV1 > 15%
Secondary
&-MWT, SGRQ, FEV1

LIBERATE: Baseline Demographics and Clinical Characteristics		
Variable	EBV (n=128)	SoC (n=62)
Gender	72 Females (56.3%)	29 Females (46.8%)
Age (years)	64.0 ± 6.85	62.5 ± 7.12
BMI (kg/m²)	24.67 ± 3.90	24.32 ± 4.38
Smoking history (pack years)	50.78 ± 26.88	48.59 ± 28.48
GOLD Stage	Stage III: 54 (42.2%) Stage IV: 74 (57.8%)	Stage III: 16 (25.8%) Stage IV: 46 (74.2%)
Emphysema score of the target lobe at -910 HU*	70.9 ± 8.52	70.9 ± 8.77
Heterogeneity Index between target and ipsilateral lobes	25.5 ± 9.85	26.1 ± 9.81
Post-BD (FEV_1) (L)	0.76 ± 0.25	0.75 ± 0.22
Post-BD (FEV_1) (% predicted)	28.0 ± 7.45	26.2 ± 6.28
DLCO (% predicted)	34.6 ± 11.34	33.1 ± 9.84
Residual Volume (% predicted)	224.5 ± 42.45	224.6 ± 38.86
6 Minute Walk Distance (m)	311 ± 81	302 ± 79
SGRQ Total Score ‡	55.15 ± 14.08	53.10 ± 14.14
mMRC Score §	2.4 ± 0.97	2.2 ± 0.83
BODE Index **	5.34 ± 1.52	5.32 ± 1.56
Patients on Continuous Oxygen Usage	46 (35.9%)	17 (27.4%)

Criner et al., Lung Function Improvement After Bronchoscopic Lung Volume Reduction With Pulmonx Endobronchial Valves Used in Treatment of Emphysema AJRCCM 2018

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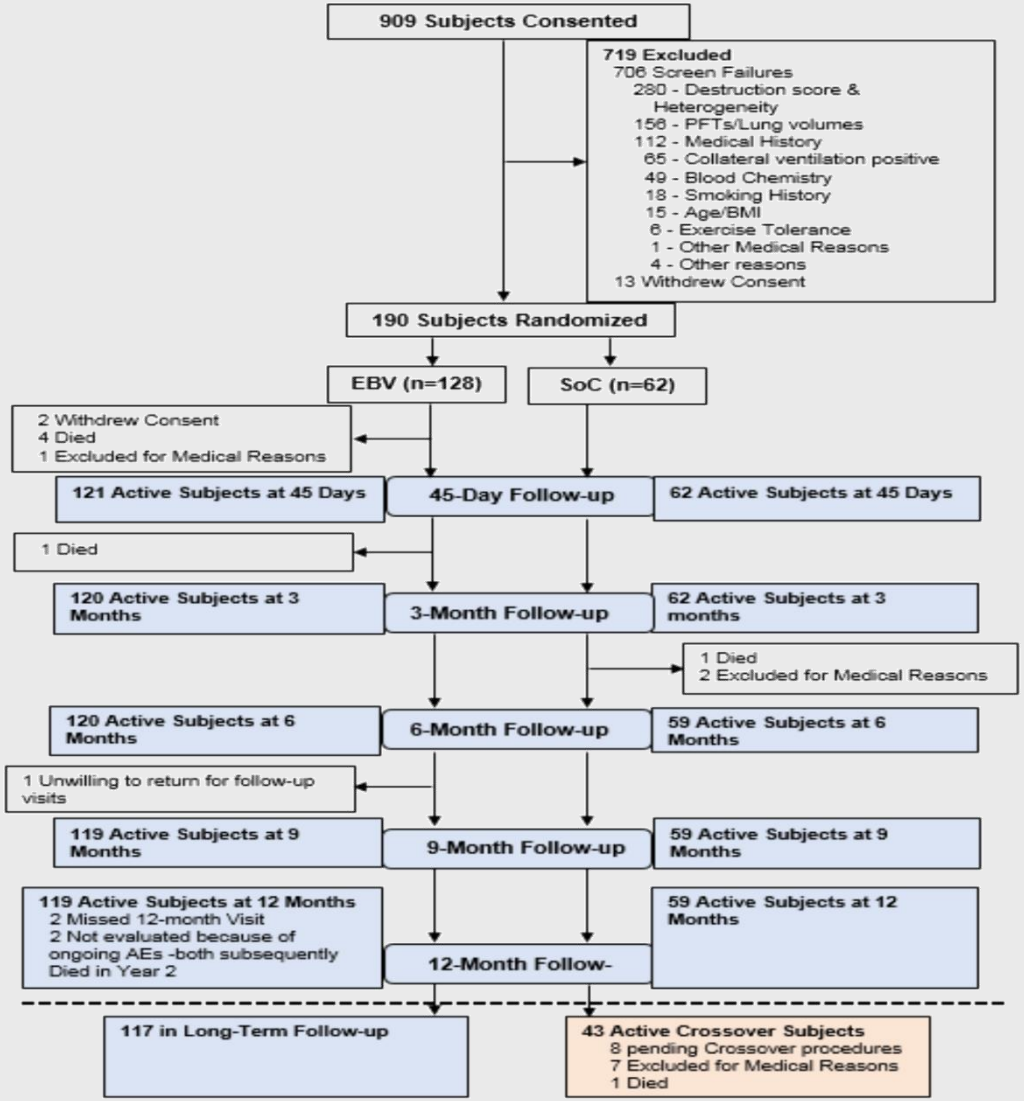

Criner et al., Lung Function Improvement After Bronchoscopic Lung Volume Reduction With Pulmonx Endobronchial Valves Used in Treatment of Emphysema AJRCCM 2018

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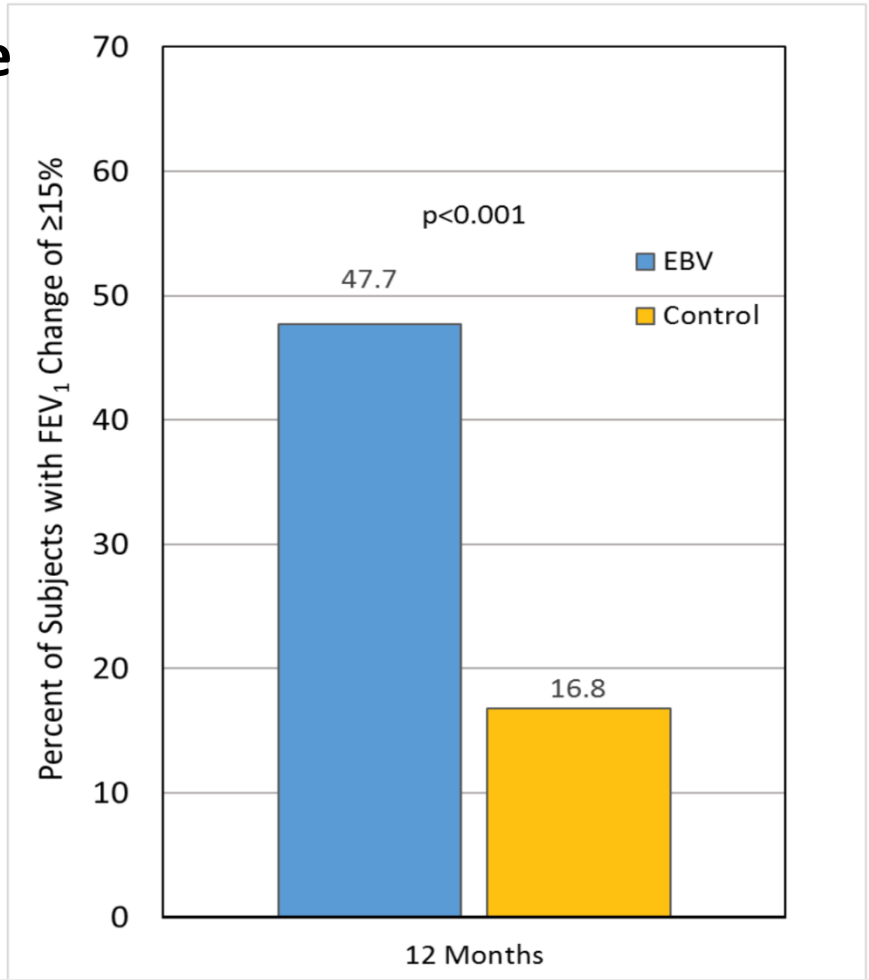
Primary Outcome



Percent of subjects with FEV1 Change > 15% after 12 months

Criner et al., Lung Function Improvement After Bronchoscopic Lung Volume Reduction With Pulmonx Endobronchial Valves Used in Treatment of Emphysema AJRCCM 2018

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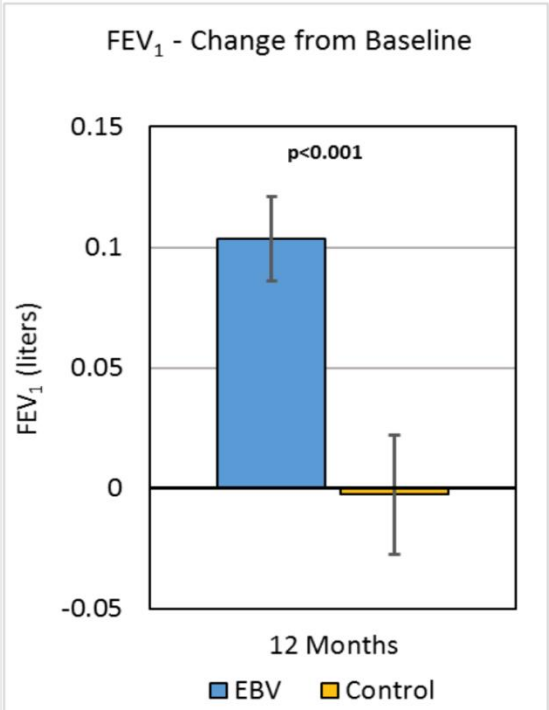
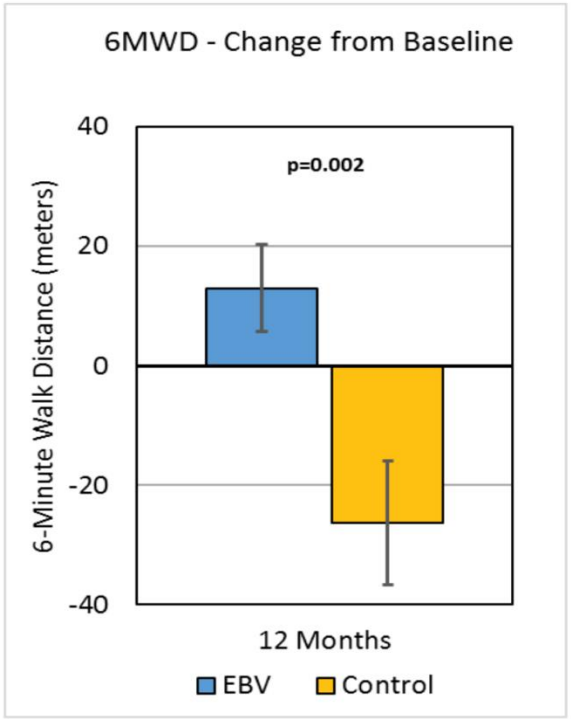
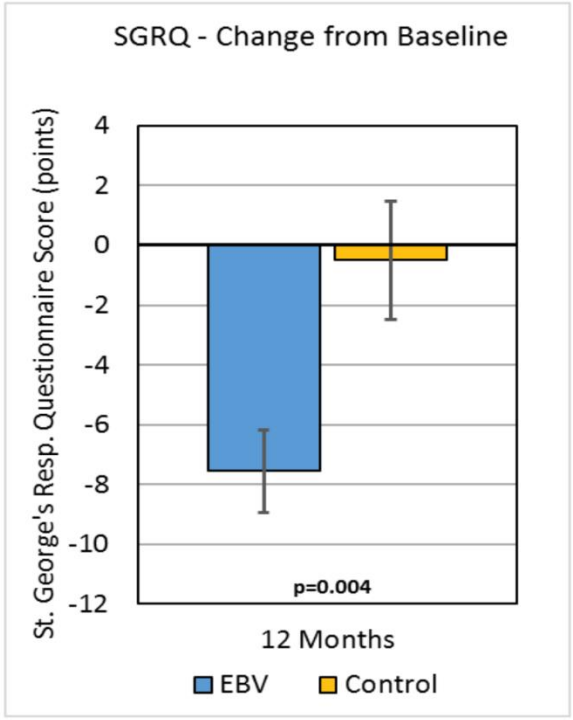
Secondary Endpoints 12 months







Criner et al., Lung Function Improvement After Bronchoscopic Lung Volume Reduction With Pulmonx Endobronchial Valves Used in Treatment of Emphysema AJRCCM 2018

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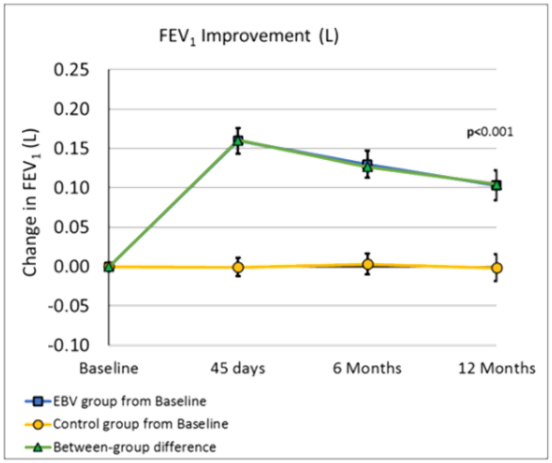
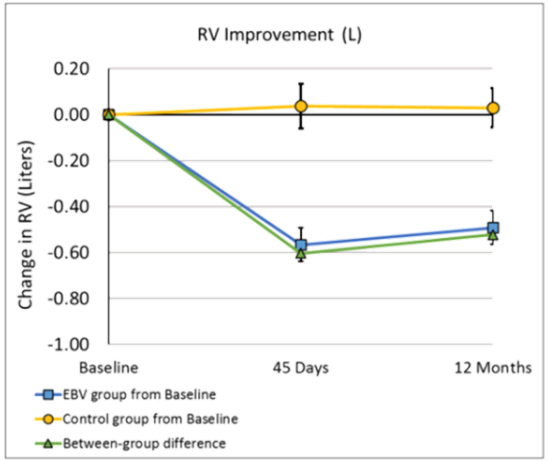
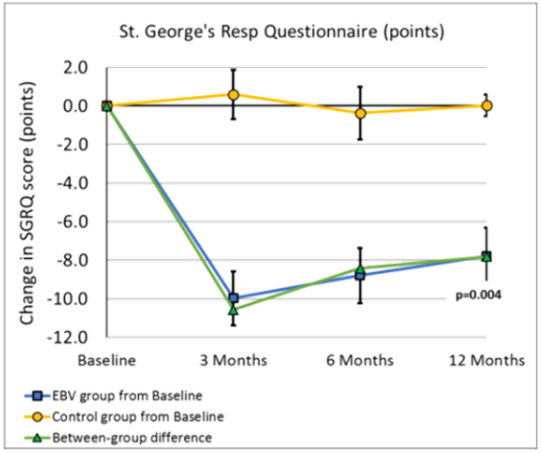
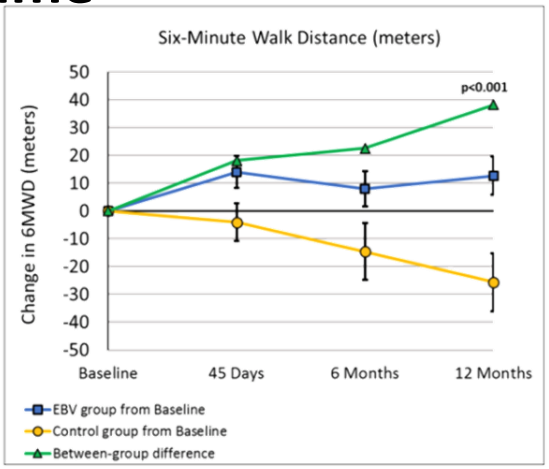




Change over time





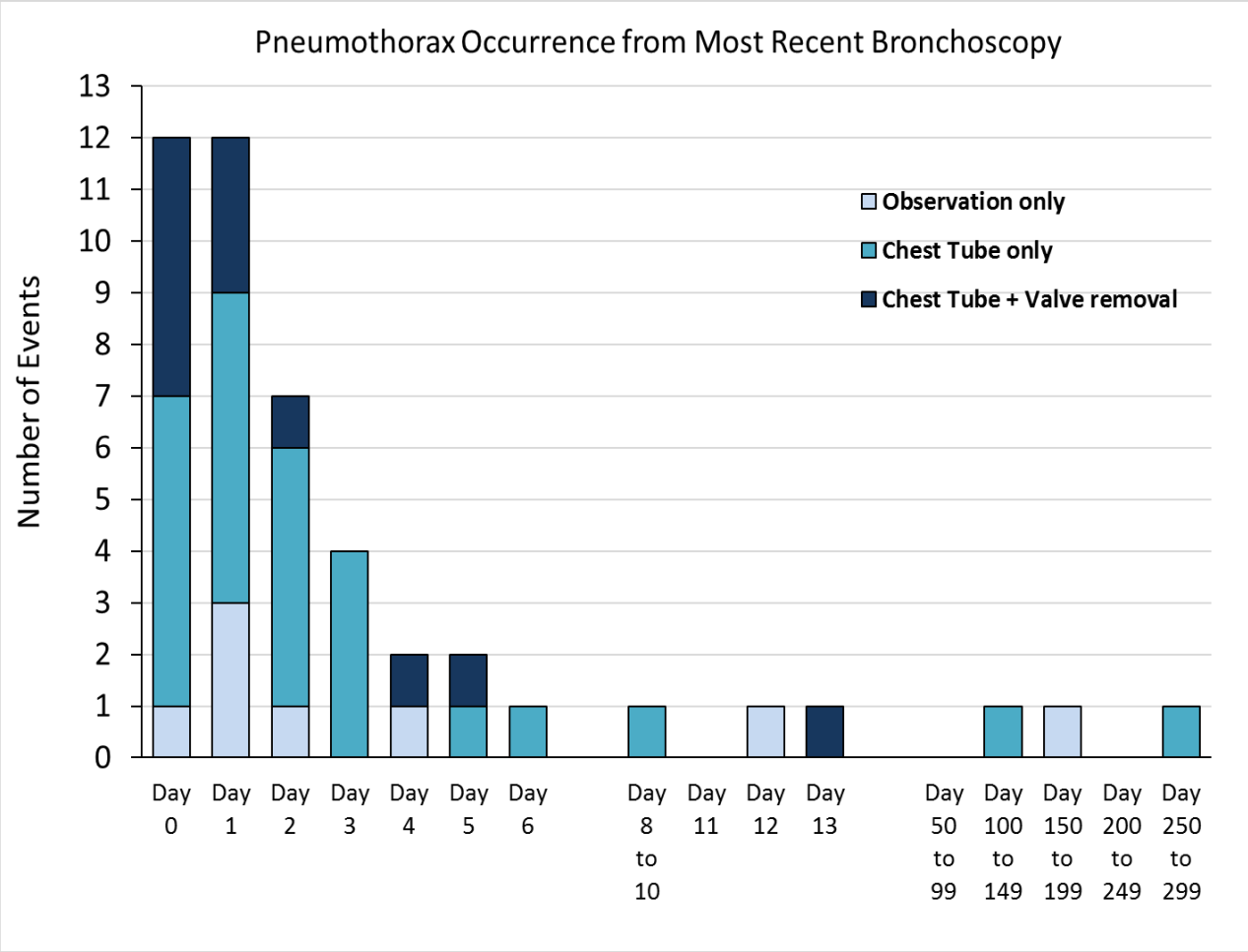
Criner et al., Lung Function Improvement After Bronchoscopic Lung Volume Reduction With Pulmonx Endobronchial Valves Used in Treatment of Emphysema AJRCCM 2018, epub ahead

HOT TOPIC ATS 2018

	Treatment Period Day of Procedure/Randomization to 45 Days		Longer-Term Period 45 Days from the Study Procedure/Randomization until 12-month Visit Date	
	EBV (N=128)	SoC (N=62)	EBV (N=122)	SoC (N=62)
Death	4 (3.1%)[a]	0 (0.0%)	1 (0.8%)	1 (1.6%)
Pneumothorax	34 (26.6%)*	0	8 (6.6%)	0
COPD exacerbation	10 (7.8%)	3 (4.8%%)	28 (23.0%)	19 (30.6%)
Pneumonia	1 (0.8%)	0	7 (5.7%)	5 (8.1%)
Respiratory failure	2 (1.6%)	0	1 (0.8%)	2 (3.2%)
Arrhythmia	0	0	1 (0.8%)	2 (3.2%)
Diverticulitis	0	0	1 (0.8%)	2 (3.2%)

Criner et al., Lung Function Improvement After Bronchoscopic Lung Volume Reduction With Pulmonx Endobronchial Valves Used in Treatment of Emphysema AJRCCM 2018

HOT TOPIC ATS 2018



Criner et al., Evaluation of the Spiration® Valve System for Emphysema to Improve Lung Function (EMPROVE) AJRCCM 2018

HOT TOPIC ATS 2018

172 Pat
COPD III/IV
best medical treatment
QCT fissure analysis

Valve placement vs SoC

Primary

difference between FEV1 from baseline at 6 months
Secondary
6-MWT, SGRQ, FEV1

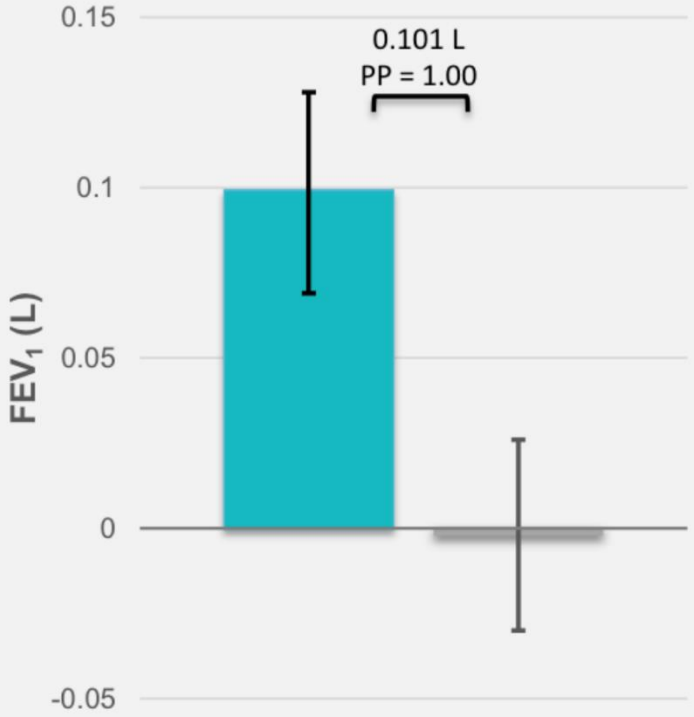
	TREATMENT GROUP (N = 113) Mean ± S.D. or N (%)	CONTROL GROUP (N = 59) Mean ± S.D. or N (%)
SEX (MALE)	54 (47.8%)	38 (64.4%)
AGE (YEARS)	66.7 ± 6.6	68.1 ± 6.4
FEV_1 (L)	0.825 ± 0.264	0.792 ± 0.260
FEV_1 (% PRED, L)	30.8 ± 8.1	28.5 ± 8.5
RV (L)	4.573 ± 1.253	4.848 ± 1.199
RV (% PRED, L)	207.5 ± 45.0	213.4 ± 49.3
RV/TLC RATIO	0.632 ± 0.080	0.632 ± 0.086
DYSPNEA (mMRC)	2.7 ± 0.7	2.7 ± 0.6
COPD ASSESSMENT TEST	21.8 ± 6.8	20.0 ± 6.3
SGRQ TOTAL	57.2 ± 14.8	54.6 ± 13.6

Criner et al., Evaluation of the Spiration® Valve System for Emphysema to Improve Lung Function (EMPROVE) AJRCCM 2018

HOT TOPIC ATS 2018

CHANGE IN FEV_1

@ 6 MONTHS



FEV_1 RESPONDER RATE

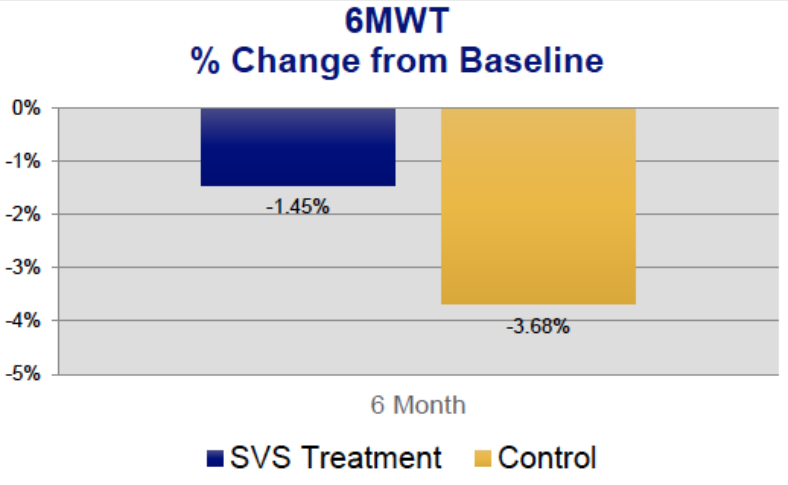
FEV_1 Responders ≥ 15% Improvement	TREATMENT GROUP n/N (%)	CONTROL GROUP n/N (%)
6 Months	39/106 (36.8%)	5/50 (10.0%)
Difference (T–C)	25.7%	
Posterior Probability	0.9998	

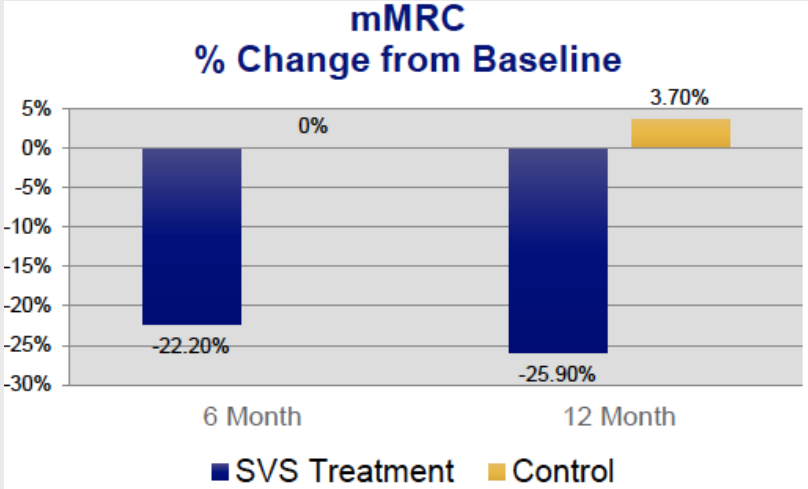
SVS (N = 106) Control (n = 50)

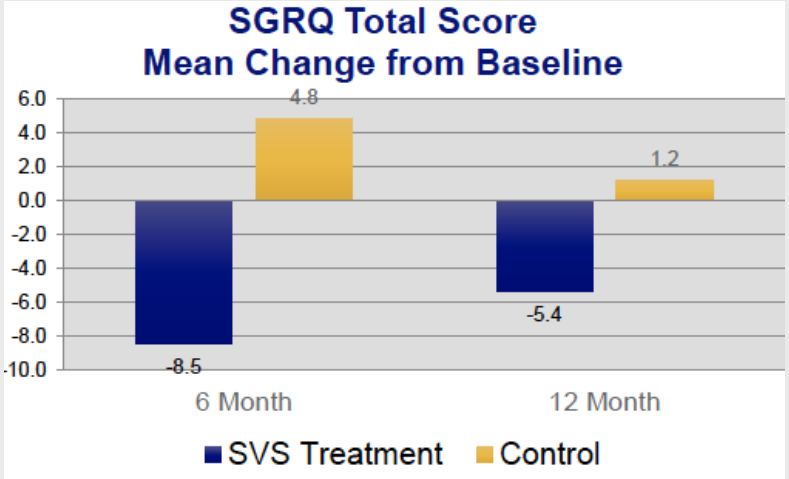
Mean ± 95% Bayesian Credible Interval; PP = Posterior Probability

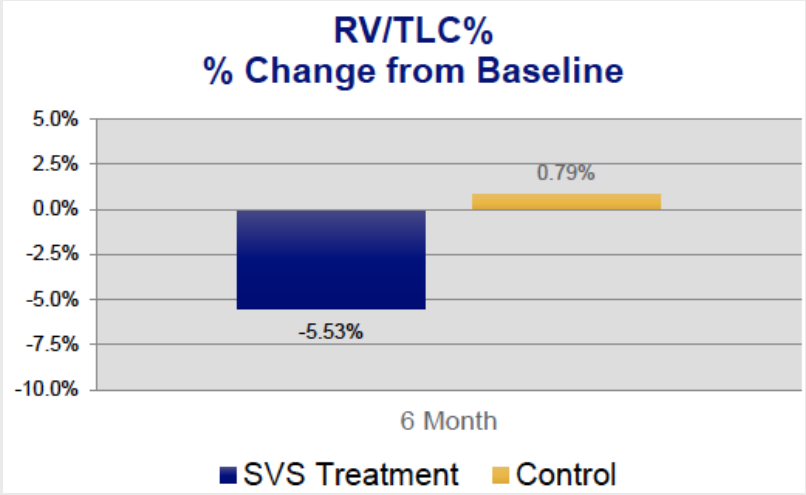
Criner et al., Evaluation of the Spiration® Valve System for Emphysema to Improve Lung Function (EMPROVE) AJRCCM 2018

HOT TOPIC ATS 2018









secondary outcome

Criner et al., Evaluation of the Spiration® Valve System for Emphysema to Improve Lung Function (EMPROVE) AJRCCM 2018

HOT TOPIC ATS 2018

	TREATMENT GROUP (N = 113)	CONTROL GROUP (N = 59)	DIFFERENCE (T–C)	
	%	%	Est	(95% BCI)
Acute exacerbation of COPD requiring hospitalization	15.9	10.2	5.8	(-5.9, 15.1)
Death from procedure or device	0.0	0.0	0.0	(-5.3, 2.3)
Pneumonia in the valve-treated lobe requiring hospitalization	1.8	—	1.8	(-3.9, 5.2)
Pneumonia not in the valve-treated lobe requiring hospitalization	7.1	1.7	5.4	(-2.4, 11.1)
Pneumothorax requiring surgical intervention or prolonged air leak > 7 days	12.4	0.0	12.4	(4.6, 18.6) *
Tension pneumothorax requiring hospitalization	1.8	0.0	1.8	(-3.9, 5.2)
Respiratory failure requiring mechanical ventilatory support	2.7	0.0	2.7	(-3.2, 6.4)
TOTAL	30.1	11.9	18.2	(5.0, 28.8) *

HOT TOPIC ATS 2018

Hogarth et al., Evaluation of the Spiration® Valve System for Emphysema to Improve Lung Function (EMPROVE) in AATD patients AJRCCM 2018

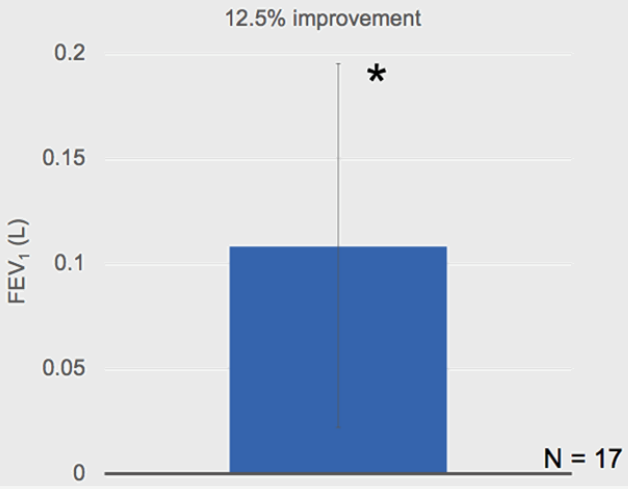
20 Pat
COPD III/IV
AAT

IBV

Primary
difference between FEV1 from baseline at 6 months
Secondary
6-MWT, SGRQ, FEV1

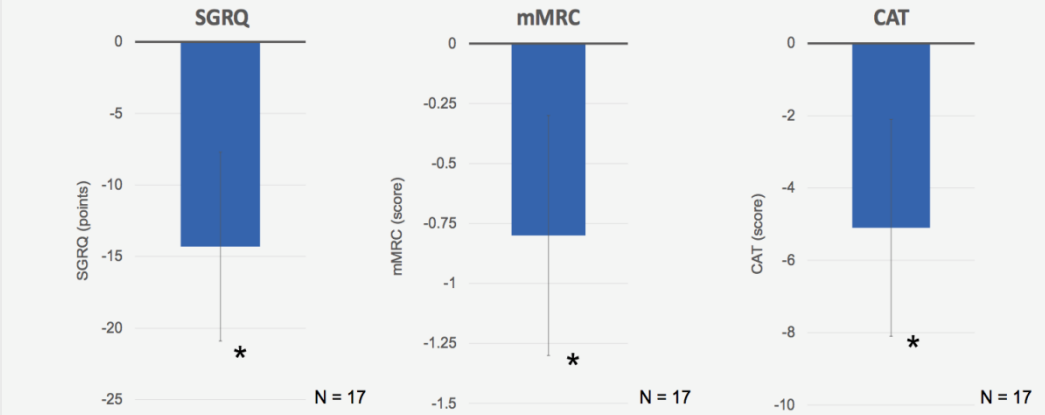
IMPROVED LUNG FUNCTION

CHANGE IN FEV_1 @ 6 months



IMPROVEMENTS IN HEALTH STATUS, DYSPNEA AND COPD ASSESSMENT

CHANGE @ 6 MONTHS



Mean ± 95% Bayesian Credible Interval; *95% BCI < 0 = Statistically Significant

Scriuba et al., RCT Coils vs SoC in Patients With Severe Emphysema (RENEW) JAMA, 2016. 315(20):2178-89

End Point	Coil (N=158)	Usual Care (N=157)	Between-Group Difference	p-value
Δ 6-MWT(m)	10.3 (-33.0, 45.0)	-7.6 (-40.0, 26.0)	14.6* (0.4, ∞)	0.015**
6-MWT Responder Rate	**40.0% [31.0, 49.0]**	**26.9% [18.9,35.0]**	**11.8% (1.0, ∞) OR 1.8 (1.1, ∞)**	**0.01**
Percent Δ in FEV1 (%)	3.8 (-6.3, 16.1)	-2.5 (-8.9, 4.4)	7.0* (3.4, ∞)	<0.001**
Δ SGRQ	-8.1 (-10.2, -6.0)	0.8 (-1.2, 2.9)	-8.9 (-∞, -6.3)	<0.001
SGRQ Responder Rate%	61.2% [50.9, 71.4]	27.7% [18.6, 36.8]	31.6% (20.5, ∞) OR 4.1 (2.4, ∞)	<0.001
Δ Residual Volume (L)	-0.41 (0.57, -0.25)	-0.10 (-0.26, 0.06)	-0.31 (-∞, -0.11)	0.001
Δ RV/TLC (%)	-4.0 (-5.1, -2.9)	-0.5 (-1.6, 0.6)	-3.5 (-∞, -2.1)	<0.001

Herth et al., Responder analysiss of the RENEW trial
Eur Respir J, 2017; OA1678

HOT TOPIC ERS 2017

Primary Analysis

RENEW ITT Cohort

Coil Treatment group

N=158 (out of 315)

Sciurba et al., JAMA 2016

RENEW QCT cohort

12-mo follow up + Evaluable baseline CT

N=131

Subgroup Analysis QCT

Bilateral Tx in most destroyed lobes (QVM+),

12-mo follow up + Evaluable CT 12 mo

N=72

Responder Analysis

Herth et al., Responder analysiss of the RENEW trial
Eur Respir J, 2017; OA1678

HOT TOPIC ERS 2017

- ✓RV ≥ 200% pred.
- ✓Emphysema Score ≥20%
- ✓No Airways Disease on CT Evaluation

12-Month Outcomes	(N=45)
	Mean Δ
RV, L	-0.56 L
VC, L	0.31 L
FEV1, ml	112 ml
LoVRexp, mL	-501 mL

RENEW patients with completed 12 month follow-up visit and baseline inspiratory scans with densitometry analysis. Subgroup criteria: QVM(+), %Emphysema ≥ 20% and RV ≥ 200% pred, No Visual CT Presence of Airways Disease

ELEVATE - Studie

Patient Selection Learnings:

- RV≥200% pred.
- No unstable/severe cardiac disease

HRCT Learnings:

- Emphysema≥20%
- Visual review to exclude airways disease

Treatment Planning:

- Lobe Targeting per QCT (critical for homogenous lungs)

ELEVATE RCT

Prospectively confirm response profile as defined based on post hoc RENEW data analysis

Herth FJF, Slebos DJ, Criner GJ, Shah PL. Endoscopic Lung Volume Reduction: An Expert Panel Recommendation - Update 2017. Respiration. 2017:94(4):380-388

LVRS	Valves	Valves	Coils (RV >225%) trial steam/coils (RV 175–225%)	Coils (RV >225%) LVRS steam (registry)	Trial steam (LL)/ foam/coils (RV 175–225%)	Coils (RV >225%)	Trial steam/foam/ LVRS/coils (RV 175–225%)	Consider lung transplant
Heterogeneous		Homogeneous		Heterogeneous		Homogenous		
FI complete/Chartis negative				FI incomplete/Chartis positive				
Fissure integrity/Chartis								
Emphysema optimal medical treatment FEV_1 <50% and RV >175%, RV/TLC >0.58, 6-MWD 150– 440m								
Optimal pharmacological and nonpharmacological treatments – Smoking cessation, optimal diet, vaccination – Pulmonary rehabilitation – Consider oxygen therapy								

LVRS, lung volume reduction surgery; FI, fissure integrity; TLC, total lung capacity.

Chupp et al., Long-term outcomes of bronchial thermoplasty in subjects with severe asthma: a comparison of 3-year follow-up results from two prospective multicentre studies
Eur Respir J 2017; 50: 1700017

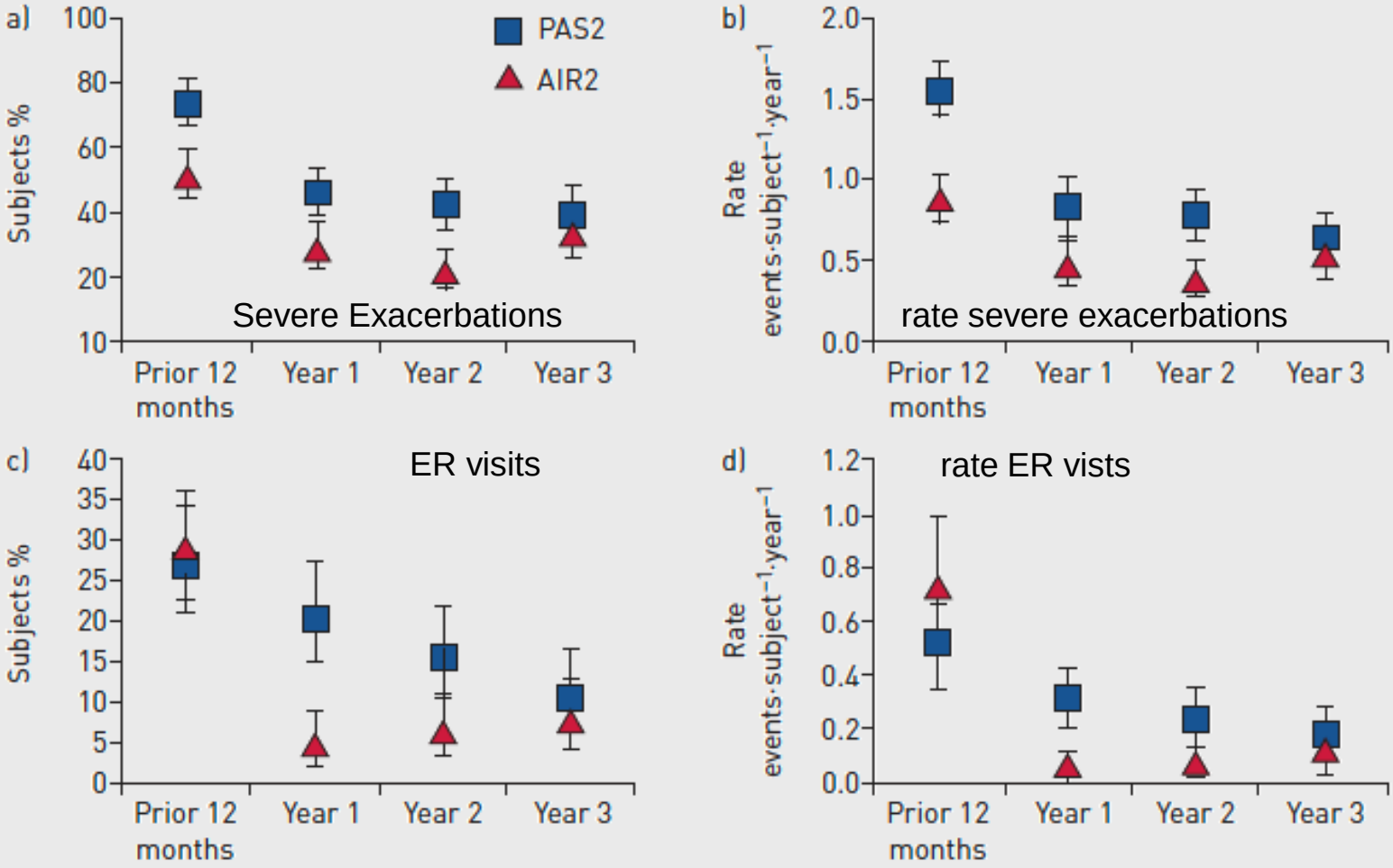
190 patients
PAS2 (Post-FDA Approval Clinical Trial)

Thermoplasty FU

Comparison with AIR 2 trial

	PAS2	AIR2, bronchial thermoplasty	p-value
Subjects	190	190	
Demographics			
Age years	45.87±11.39 (190) (18.00–66.00)	40.69±11.89 (190) (18.00–63.00)	<0.0001
Female	61.6 (117/190)	57.4 (109/190)	0.4032
BMI kg·m^{-2}	32.50±7.72 (190) (18.48–61.27)	29.29±6.16 (190) (17.63–52.77)	<0.0001
ICS dose µg·day^{-1}	2301.04±807.46 (189) (750.00–6480.00)	1960.74±745.19 (190) (880.00–6000.00)	<0.0001
OCS	18.9 (36/190)	4.2 (8/190)	<0.0001
Dose mg·day^{-1}	9.13±2.66 (35) (5.00–17.00)	11.88±15.51 (8) (5.00–50.00)	0.3125
Severe exacerbations	1.57±1.15 (190) (0.00–3.00)	0.88±1.03 (190) (0.00–3.00)	<0.0001
Hospitalisations for asthma	0.21±0.53 (190) (0.00–2.00)	0.05±0.27 (190) (0.00–2.00)	0.0003

Chupp et al., Long-term outcomes of bronchial thermoplasty in subjects with severe asthma: a comparison of 3-year follow-up results from two prospective multicentre studies
Eur Respir J 2017; 50: 1700017



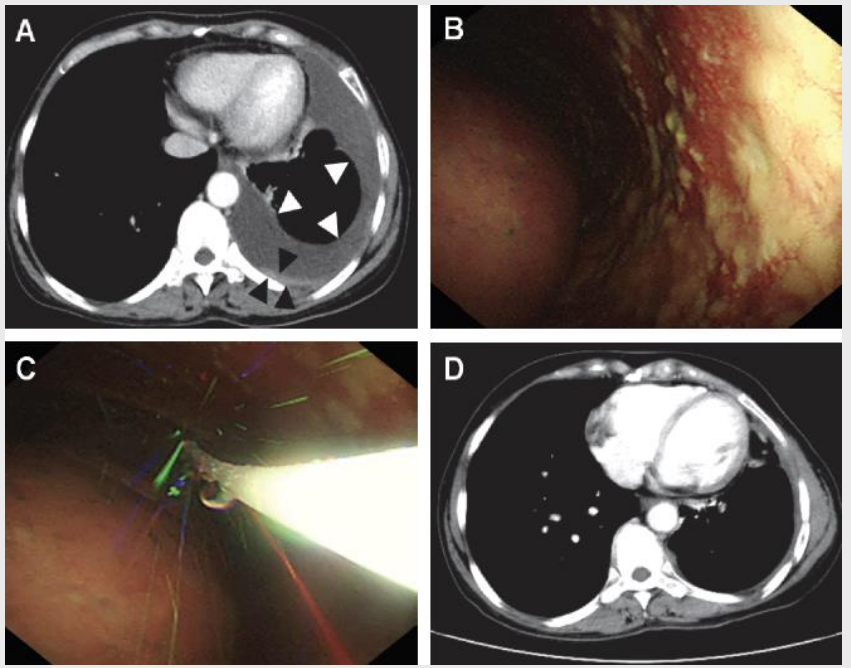
The best of the rest

Eom JS et al. Chemical pleurodesis using mistletoe extracts via spray catheter during medical thoracoscopy for management of malignant pleural effusion.
Respirol Case Rep 2017:5(3):e00227

3 patients
malignant pleural effusion
Refusal class. pleurodesis

med.THSK Pleurodesis with Mistel extracts

effectiveness



100 % effectiveness, no complications

Take home message

- **Valve evidence confirmed**
- **Coils: Patient selection seems clearer. Next RCT started**
- **Thermoplasty works outside of clinical trials as good in RCT´s**
- **Treated patients are sicker than in RCT**

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