

1 **Online Supplement**

2 **Detection and diagnosis of large airway collapse: A systematic review**

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12 **e-Table 1. Search strategy**

<p>Pubmed</p> <ol style="list-style-type: none"> 1. "airway collapse"[TIAB] OR "airway collapsibility"[TIAB] OR "bronchial collapse"[TIAB] OR "bronchial collapsibility"[TIAB] OR "tracheal collapse"[TIAB] OR "tracheal collapsibility"[TIAB] OR "expiratory collapse"[TIAB] OR "expiratory tracheal narrowing"[TIAB] OR TM[TIAB] OR tracheobronchomalacia[TIAB] OR bronchomalacia[TIAB] 2. (("Tracheobronchomalacia"[Mesh]) OR "Bronchomalacia"[Mesh]) OR "TM"[Mesh] 3. 1 OR 2 4. 3 Filters: Publication date from 1989/01/01 to 2019/12/31; English
<p>Embase</p> <ol style="list-style-type: none"> 1. 'airway collapse':ab,ti OR 'airway collapsibility':ab,ti OR 'bronchial collapse':ab,ti OR 'bronchial collapsibility':ab,ti OR 'tracheal collapse':ab,ti OR 'tracheal collapsibility':ab,ti OR 'expiratory collapse':ab,ti OR 'expiratory tracheal narrowing':ab,ti OR TM:ab,ti OR tracheobronchomalacia:ab,ti OR bronchomalacia:ab,ti 2. 'airway collapse'/exp OR 'tracheal collapse'/exp OR 'TM'/exp OR 'TM'/exp OR 'tracheobronchomalacia'/exp 3. 1 OR 2 4. 3 AND [1989-2019]/py AND [english]/lim 5. 4 NOT 'nonhuman'/de

e-Table 2. Quality assessment

Study	Prospective recruitment (0: no; 1: yes)	Sample size justification (0: no; 1: yes)	Sample representativeness (0: recruited at a single centre; 1: recruited at multiple centres; 2: recruited from general populations)	Risk of selection bias (0: recruited for suspected large airway collapse; 1: recruited for respiratory symptoms; 2: unselected recruitment; 9: unclear)	Description of exclusion criteria (0: no; 1: yes)	Outcome definition (large airway collapse) (0: no specific criteria presented; 1: specific criteria)
LAC studies with healthy volunteers						
Leong et al. 2017 ¹	1	0	2	9	1	1
Dal Negro et al. 2013 ²	0	0	0	2	0	1
O'Donnell et al. 2012 ³	1	1	2	2	1	0
McDermott et al. 2009 ⁴	1	0	0	2	1	1
Heussel et al. 2004 ⁵	1	0	0	2	0	1
LAC studies with COPD patients						
Leong et al. 2017 ¹	1	0	0	1	1	1
Sindhvani et al. 2016 ⁶	1	0	0	0	1	1
El Sorougi et al. 2016 ⁷	1	0	0	0	0	1
Represas-Represas et al. 2015 ⁸	1	0	0	0	1	1
O' Donnell et al. 2014 ⁹	1	0	0	0	1	0
Boiselle et al. 2012 ¹⁰	1	0	1	0	1	1
Heussel et al. 2004 ⁵	1	0	0	1	0	1

e-Table 3. Summary of 5 studies reporting the prevalence of large airway collapse in healthy subjects

Study	Study design	Study subjects	Diagnostic modality	Diagnostic threshold for large airway collapse	Prevalence of large airway collapse
Dal Negro et al. 2013 ²	Prospective, single centre	n=62, non-smokers without any obstructive disease	Bronchoscopy	>75%	1.6%
Leong et al. 2017 ¹	Prospective, single centre	n=53, subjects with no respiratory symptoms, no prior diagnosis of chest disease, and not taking any respiratory medications	CT	>50%	0%
O'Donnell et al. 2012 ³	Prospective, single centre	n=81, lifetime non-smokers, no respiratory symptoms or known respiratory disease	CT	>50%	56%
McDermott et al. 2009 ⁴	Prospective, single centre	n=10, subjects with no smoking history and no respiratory disease	CT	>50%	0%
Heussel et al. 2004 ⁵	Prospective, single centre	n=15, Life-long non-smokers, FEV1 >70% predicted	MRI	>50%	33.3%

e-Table 4. Summary of 8 studies reporting the prevalence of large airway collapse in patients with chronic obstructive airway diseases (COPD or asthma)

Study	Study design	Study subjects	Diagnostic modality	Diagnostic threshold for large airway collapse	Prevalence of large airway collapse
Leong et al. 2017a ¹	Prospective, single centre	n=40, stable outpatients with COPD	CT	>50%	35%
Leong et al. 2017b ¹	Prospective, single centre	n=64, hospitalized in patients with acute exacerbation of COPD	CT	>50%	39%
Bhatt et al. 2016 ¹¹	Retrospective multi centre	n=8820, ex or active smokers with COPD (43.7%) and asthma (16.6%).	CT	>50%	5%
Sindhvani et al. 2016 ⁶	Prospective, single centre	n=25, patients with COPD or asthma (stable on medical management but having persistent wheezing)	CT	>50%	40%
El Sorougi et al. 2016 ⁷	Prospective, single centre	n=30, patients with COPD	CT	>50%	20%
Represas-Represas et al. 2015 ⁸	Prospective, single centre	n=53, patients with COPD	CT	>50%	9.4%
Dal Negro et al. 2013 ²	Prospective, single centre	n=202, patients with asthma	Bronchoscopy	>50%	41.1%
Boiselle et al. 2012 ¹⁰	Prospective, single centre	n=100, patients with COPD	CT	>80%	20%
Heussel et al. 2004 ⁵	Prospective, single centre	n=38, patients with COPD	MRI	>50%	69.6%

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