Gravitational distribution of regional opening and closing pressures, hysteresis and atelectrauma in ARDS evaluated by Electrical impedance tomography

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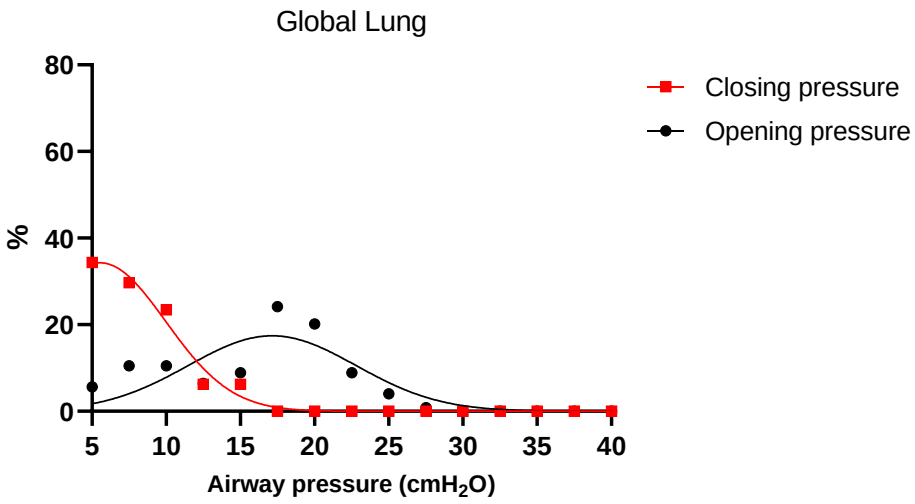
Online data supplement

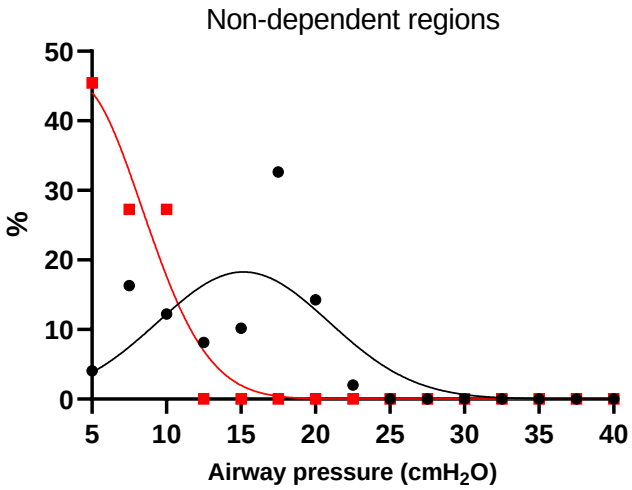
Table S1: Goodness of fit (Gaussian distribution) in each patient.

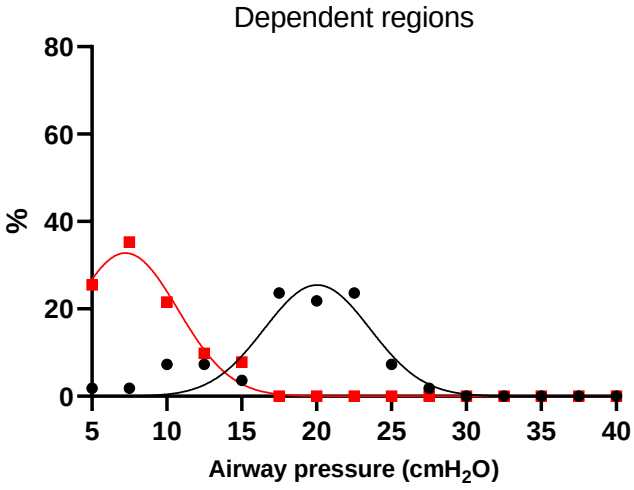
	Global		**Dependent**		**Non-dependent**	
ID	*Opening pressure*	*Closing pressure*	*Opening pressure*	*Closing pressure*	*Opening pressure*	*Closing pressure*
1	0,68	0,97	0,81	0,98	0,57	0,90
2	0,89	0,83	0,85	0,83	0,92	-
3	0,90	0,96	0,80	0,92	0,87	1,00
4	0,90	0,91	0,89	0,90	0,91	0,92
5	0,85	0,97	0,79	0,95	0,85	0,99
6	0,82	0,98	0,88	0,96	0,92	0,91
7	0,86	0,97	0,90	0,95	0,83	1,00
8	0,83	0,71	0,79	0,46	0,80	0,63

Goodness (R^2) of inflection points gaussian distribution fitting for each patient. Inspiratory and expiratory regional PV curves.

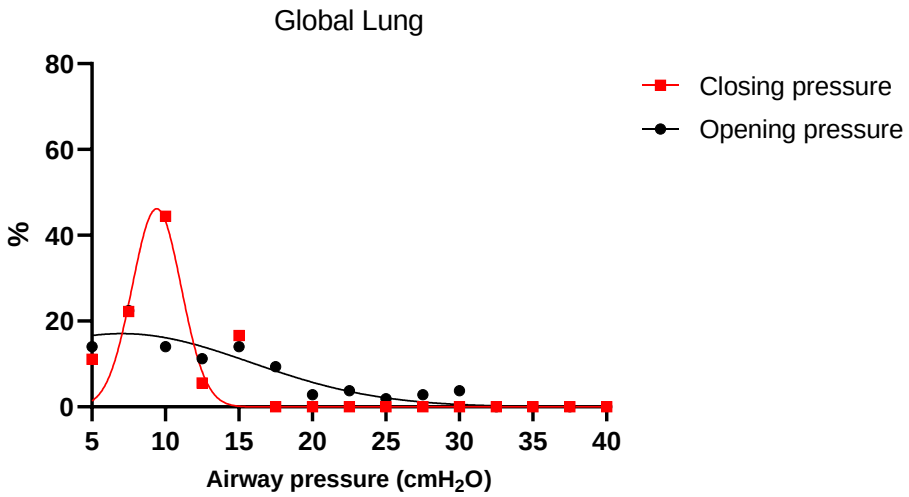
S2: Individual distribution of opening/closing pressures.

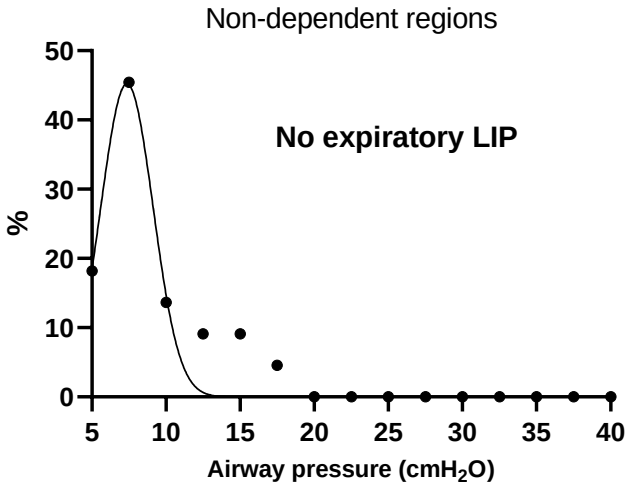


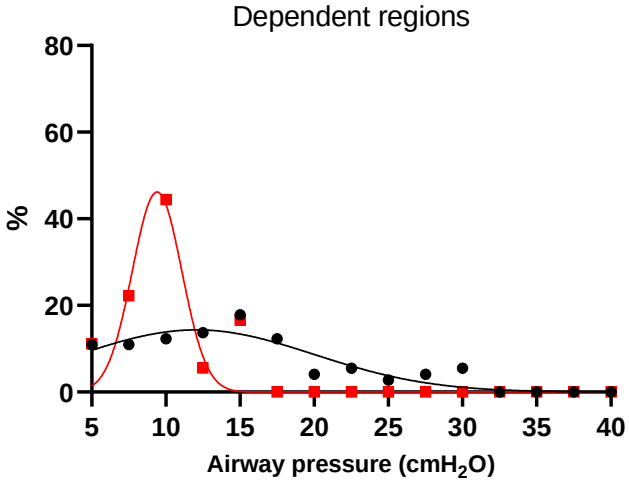




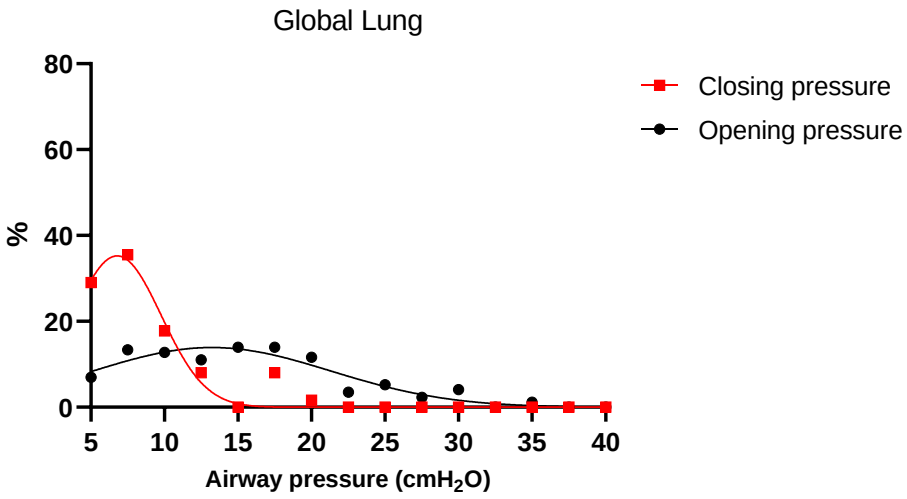
Patient 1

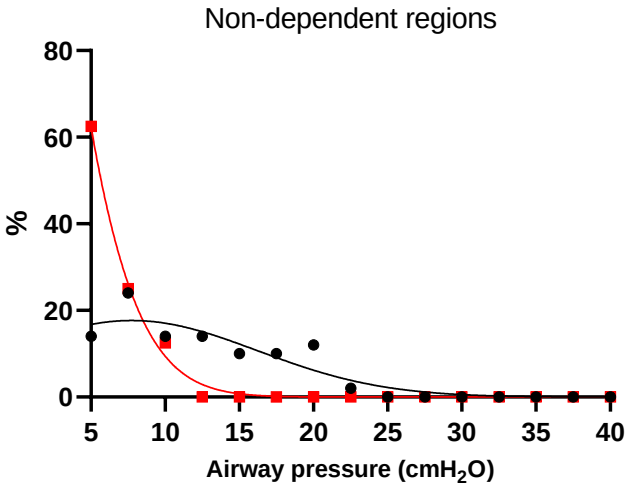

Global Lung
Closing pressure
Opening pressure
%
Airway pressure (cmH2O)

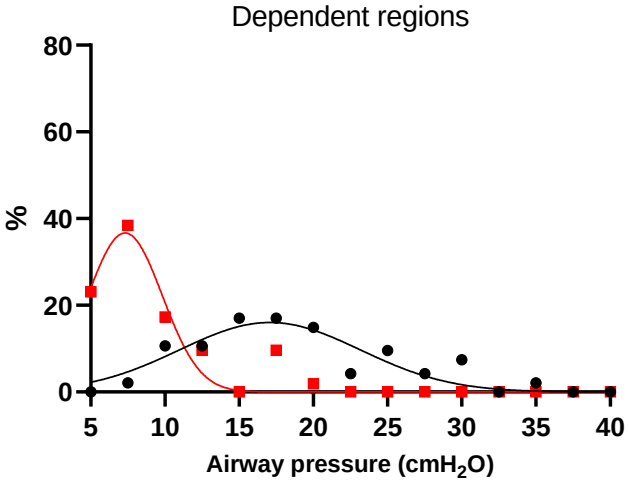

Non-dependent regions
No expiratory LIP
%
Airway pressure (cmH2O)


Dependent regions
%
Airway pressure (cmH2O)

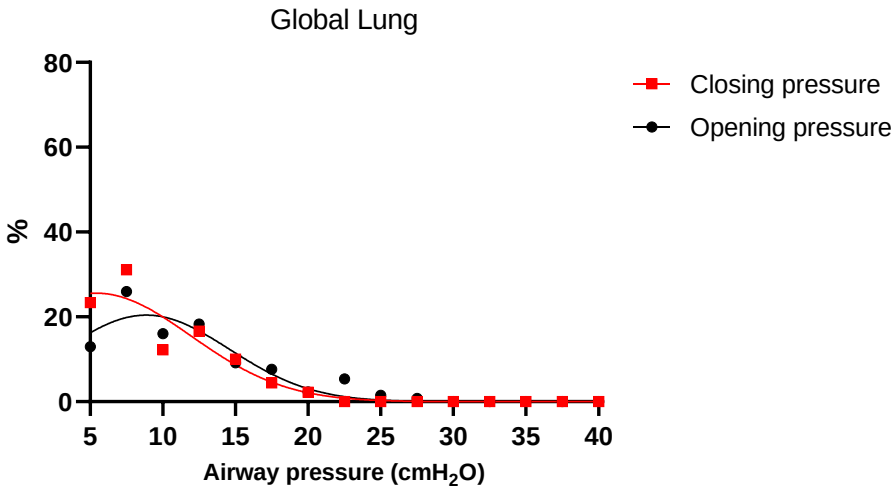
Patient 2

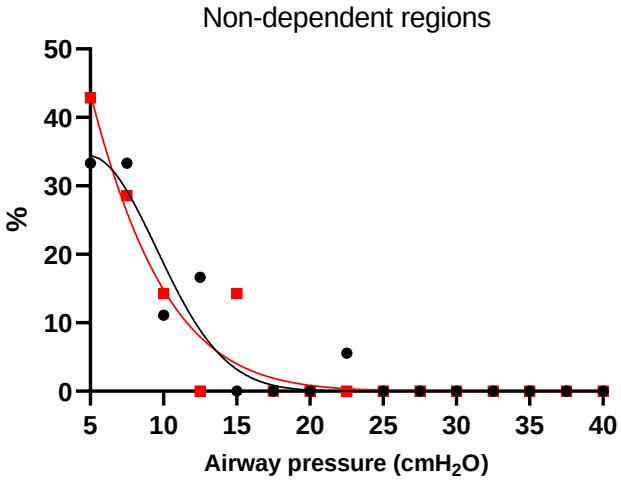

Global Lung
Closing pressure
Opening pressure
%
80
60
40
20
0
5
10
15
20
25
30
35
40
Airway pressure (cmH2O)

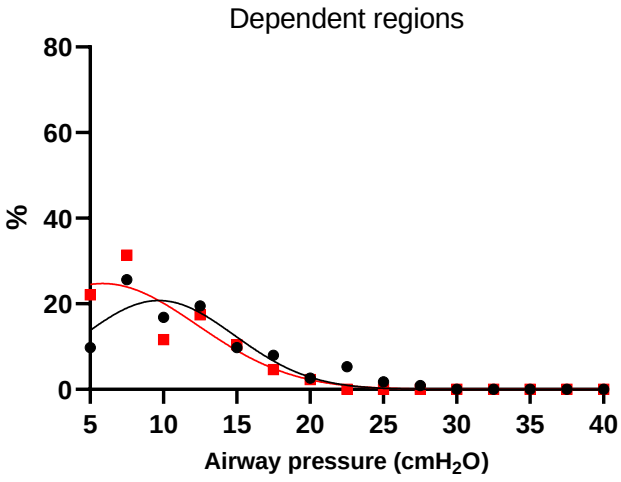

Non-dependent regions
%
80
60
40
20
0
5
10
15
20
25
30
35
40
Airway pressure (cmH2O)


Dependent regions
%
80
60
40
20
0
5
10
15
20
25
30
35
40
Airway pressure (cmH2O)

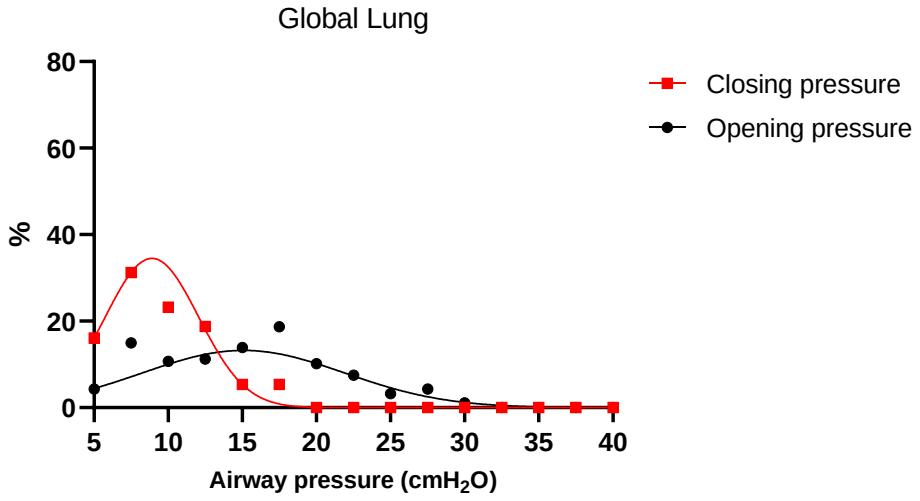
Patient 3

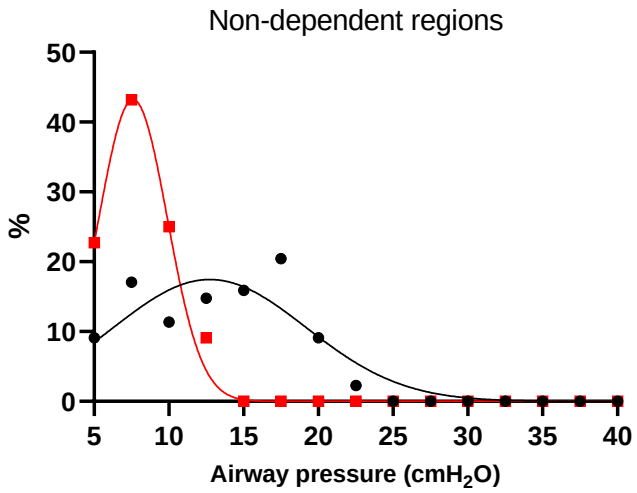

Global Lung
Closing pressure
Opening pressure
%
Airway pressure (cmH2O)

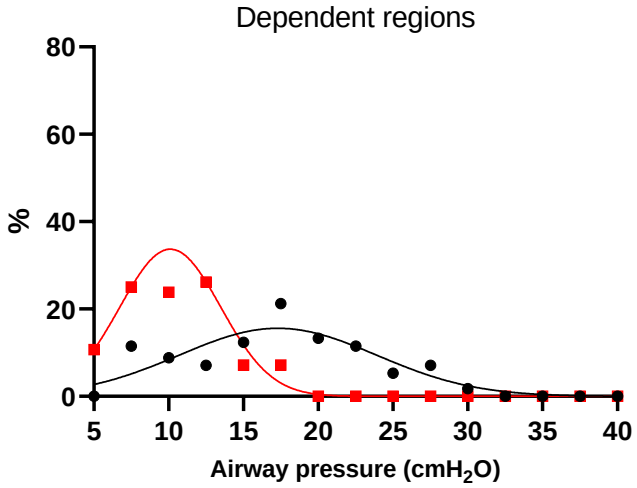

Non-dependent regions
%
Airway pressure (cmH2O)

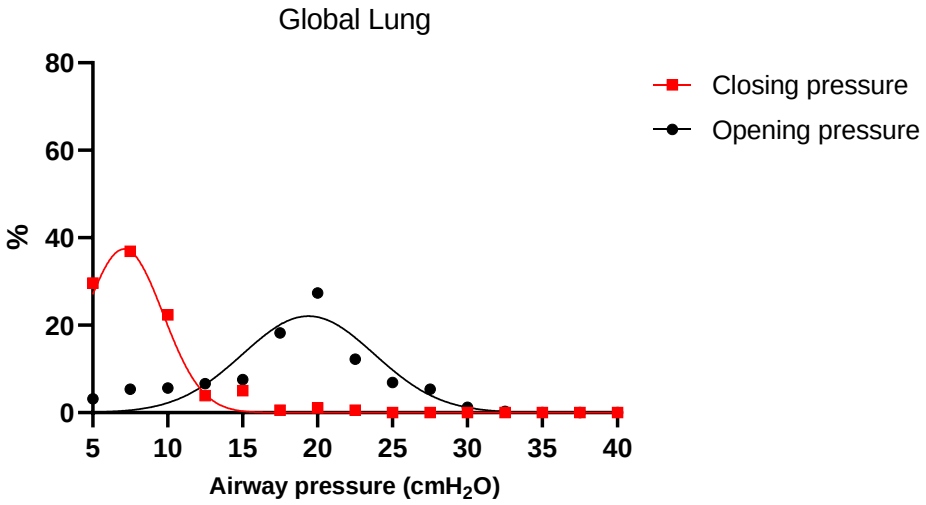

Dependent regions
%
Airway pressure (cmH2O)

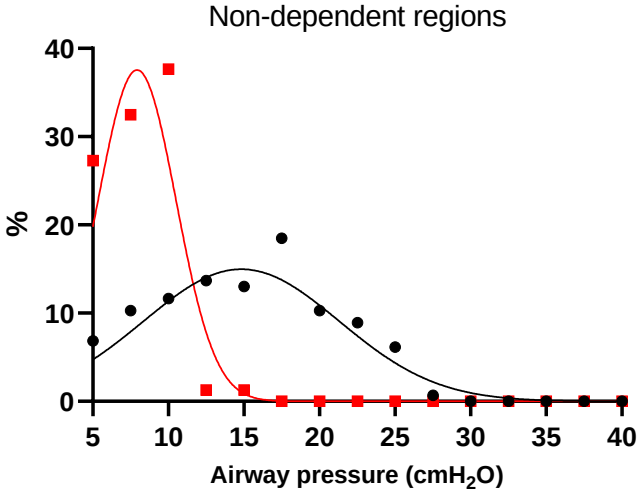
Patient 4

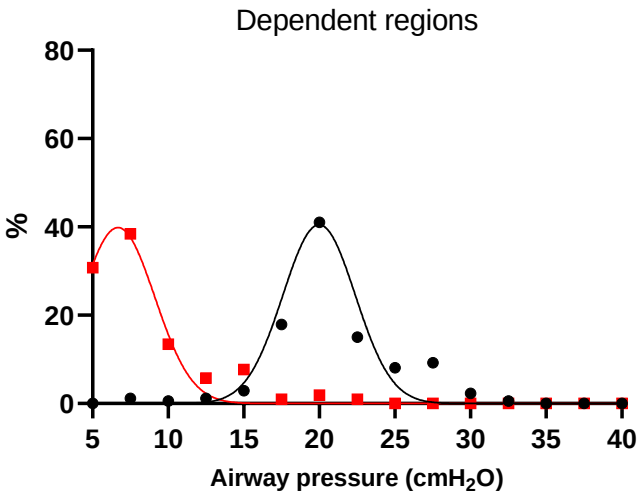

Global Lung
Closing pressure
Opening pressure
%
80
60
40
20
0
5
10
15
20
25
30
35
40
Airway pressure (cmH2O)

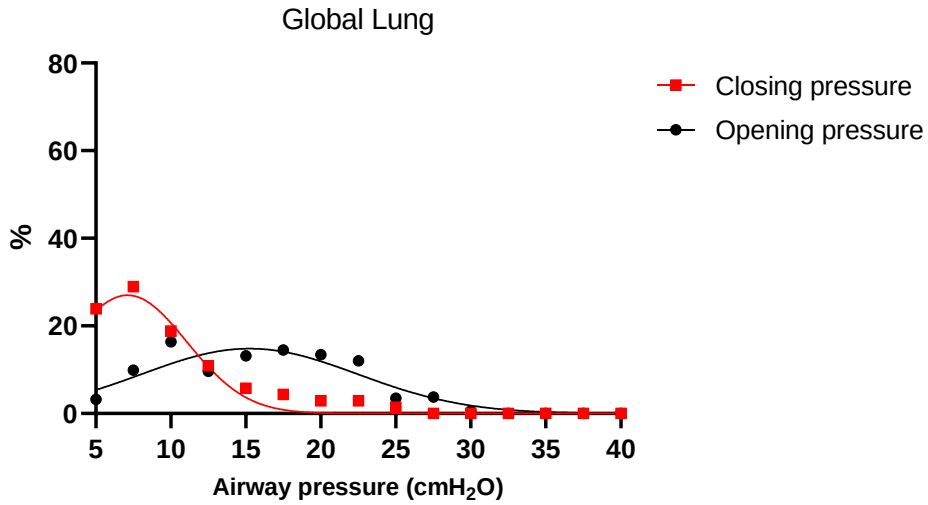

Non-dependent regions
%
50
40
30
20
10
0
5
10
15
20
25
30
35
40
Airway pressure (cmH2O)

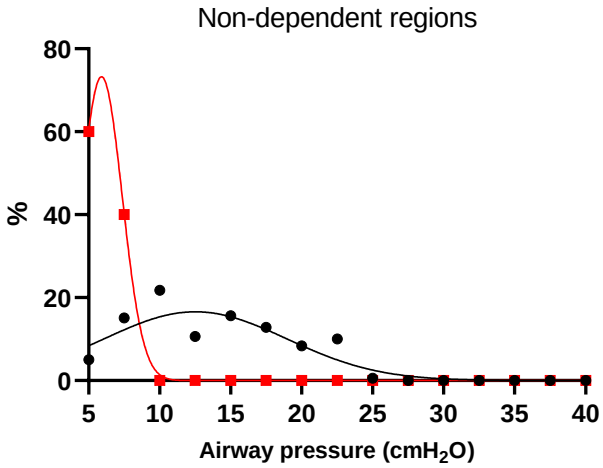

Dependent regions
%
80
60
40
20
0
5
10
15
20
25
30
35
40
Airway pressure (cmH2O)

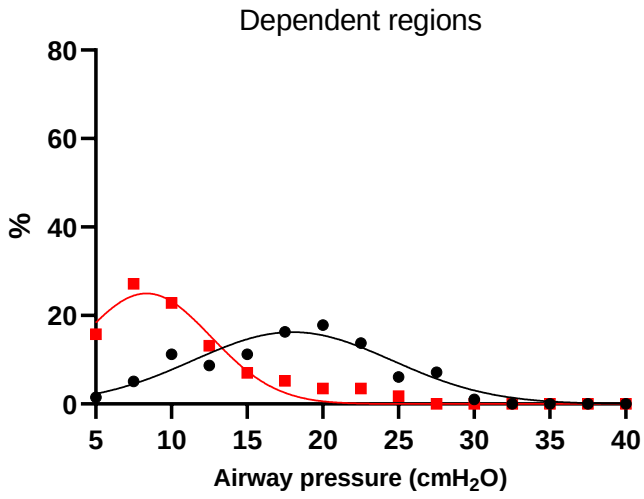

Global Lung
Closing pressure
Opening pressure
%
80
60
40
20
0
5
10
15
20
25
30
35
40
Airway pressure (cmH2O)

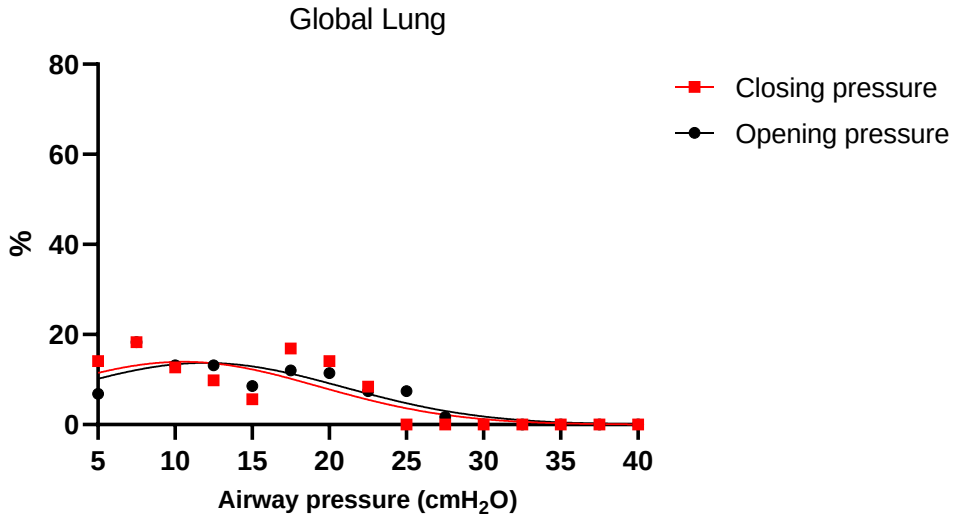

Non-dependent regions
%
40
30
20
10
0
5
10
15
20
25
30
35
40
Airway pressure (cmH2O)

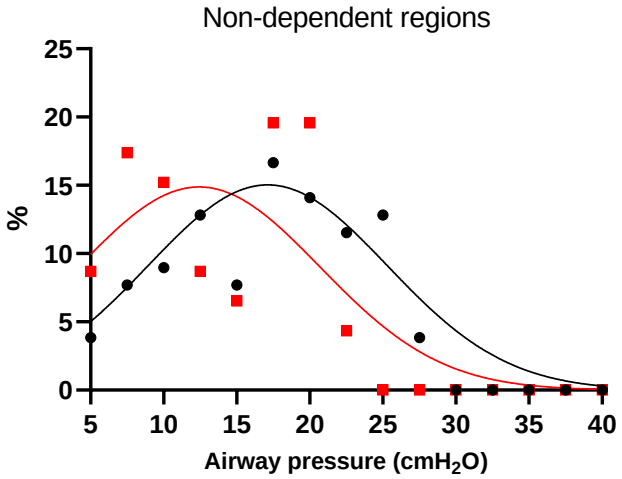

Dependent regions
%
80
60
40
20
0
5
10
15
20
25
30
35
40
Airway pressure (cmH2O)

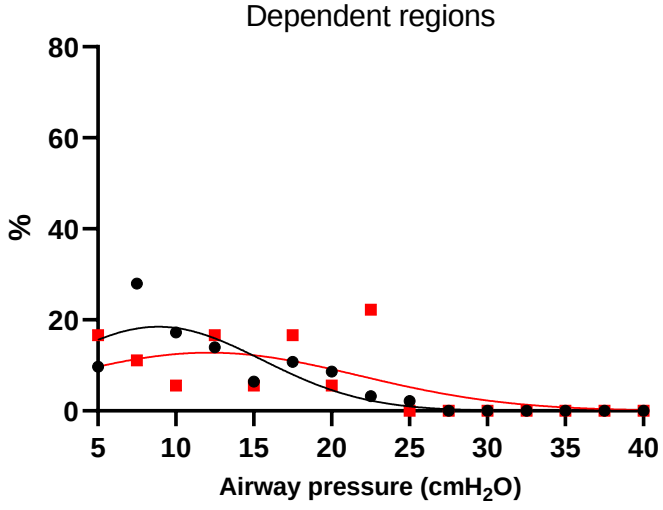

Global Lung
Closing pressure
Opening pressure
%
80
60
40
20
0
5
10
15
20
25
30
35
40
Airway pressure (cmH2O)


Non-dependent regions
%
80
60
40
20
0
5
10
15
20
25
30
35
40
Airway pressure (cmH2O)


Dependent regions
%
80
60
40
20
0
5
10
15
20
25
30
35
40
Airway pressure (cmH2O)


Global Lung
Closing pressure
Opening pressure
%
80
60
40
20
0
5
10
15
20
25
30
35
40
Airway pressure (cmH2O)


Non-dependent regions
%
25
20
15
10
5
0
5
10
15
20
25
30
35
40
Airway pressure (cmH2O)

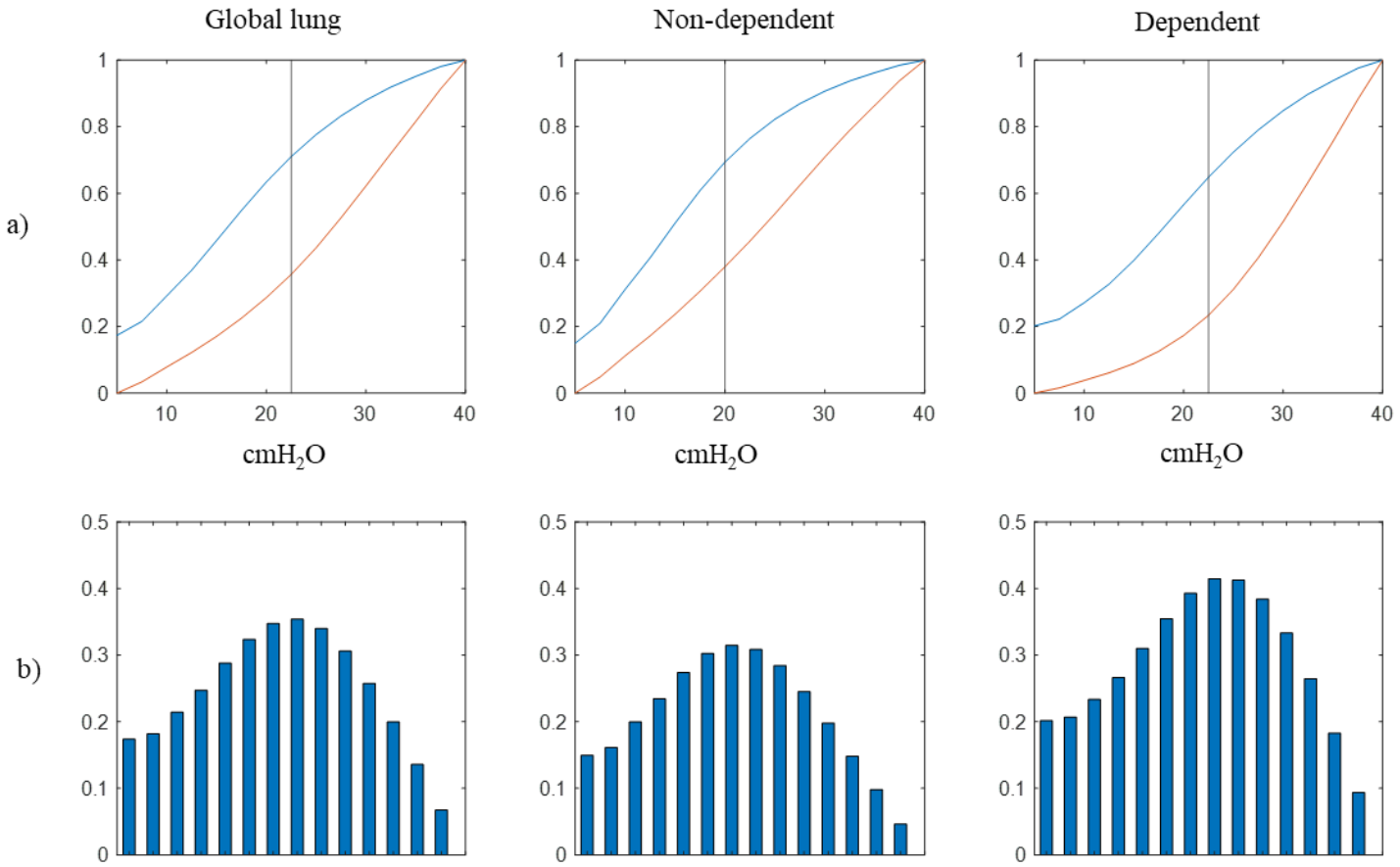

Dependent regions
%
80
60
40
20
0
5
10
15
20
25
30
35
40
Airway pressure (cmH2O)

Patient 8

S3: Number of ventilated pixels, LIP and bad fitting in the inspiratory and expiratory regional PV curves. Individual and global results.

	Inspiratory PV			**Expiratory PV**		
Patient	*Ventilated pixels*	*Number of LIP*	*Bad fitting*	*Ventilated pixels*	*Number of LIP*	*Bad fitting*
1	339	142	0	346	145	2
2	522	220	0	529	44	0
3	391	206	0	393	147	0
4	542	241	0	543	217	0
5	439	248	2	465	160	3
6	489	352	0	498	310	0
7	507	418	3	485	288	0
8	400	222	6	398	107	2
Total	3629	2049 (56.5%)	11 (0.3%)	3657	1418 (38.8%)	7 (0.2%)

S4: HysMAX and PaoHysMAX calculation in a representative patient.



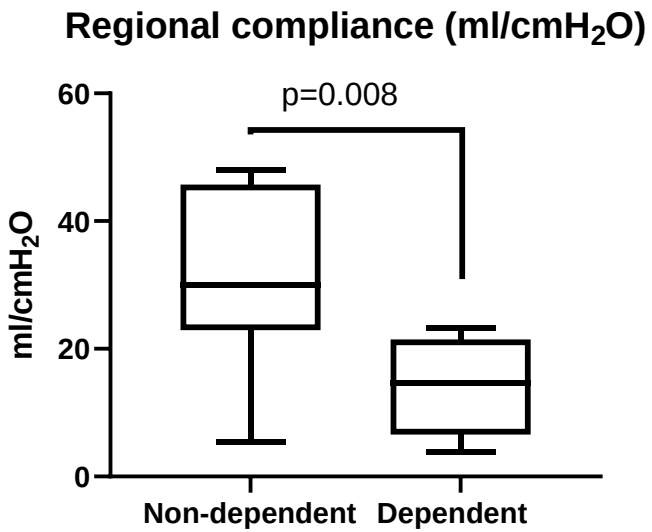
a) Inspiratory (red) and expiratory (blue) pressure-volume curves for the global, dependent and non-dependent lung. Each curve was normalized between 0 and 1. b) difference, at each pressure interval of 2.5 cmH_2O, between the expiratory and inspiratory limb of the PV curve of the corresponding curves. The vertical line in a) represents the level of HysMAX and PaoHysMAX.

Table S5: Opening/closing pressure distribution comparison

	Opening pressure			*Closing pressure*				
	AREA	*SD*	*Mean*	*AREA*	*SD*	*Mean*	*p**	*F(DFn, DFd)*
Global	293	8	13.5	332.5	5.1	6.8	<0.0001	24.75 (3, 24)
Dependent	268,5	7.6	16.1	300.4	4.8	7.6	<0.0001	44.66 (3, 24)
Non-dep	352,9	9	9.1	321.4	3.8	5.1	<0.0001	34.19 (3, 24)
	Dependent			*Non-dependent*			*p**	*F(DFn, DFd)*
Opening	268.5	7.6	16.1	352.9	9	9.1	0.0008	7.930 (3, 24)
Closing	300.4	4.8	7.6	321.4	3.8	5.1	<0.0001	20.13 (3, 24)

Comparison of gaussian distributions between opening/closing pressures and between dependent/non-dependent lung regions. Extra sum of squares, F test.

Figure S6: Comparison of regional compliance between the non-dependent and the dependent lung region



Regional compliances were calculated using the relative variation of volume in each ROI during the PV maneuver on the variation of pressure (35 cmH_2O) used to perform the maneuver.