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The iso-volume pressure support range: stable tidal volume conceals major physiological changes during pressure support ventilation

Submission date 26/06/2026	**Recruitment status** No longer recruiting	[_] Prospectively registered [_] Protocol [_] Statistical analysis plan [_] Results [_] Individual participant data [X] Record updated in last year
Registration date 30/06/2026	**Overall study status** Completed	
Last Edited 30/06/2026	**Condition category** Other	

Plain English summary of protocol
Not provided at time of registration

Contact information

Type(s)
Principal investigator, Public, Scientific

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Additional identifiers

Study information

Scientific Title
The iso-volume pressure support range: stable tidal volume conceals major physiological changes during pressure support ventilation

Study objectives

To characterize the iso-volume pressure support range and evaluate the physiological consequences of pressure support modifications within its boundaries

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 09/07/2018, South West 3 Research Ethics Committee (Comité de protection des personnes Sud Ouest 3) (Groupe hospitalier Pellegrin Place Amélie Raba Léon, Bordeaux, 33076, France; +33557817607; cpp.soom3@u-bordeaux.fr), ref: 2018-A00867-48

Primary study design
Interventional

Allocation
N/A: single arm study

Masking
Open (masking not used)

Control
Uncontrolled

Assignment
Single

Purpose
Diagnostic

Study type(s)

Health condition(s) or problem(s) studied
Patients invasively ventilated in pressure-support mode

Interventions
A decremental pressure support titration is performed with steps of 2 cmH_2O, each lasting five minutes, from 20 to 4 cmH_2O. Sedation and analgesia levels are not modified during the titration. PEEP, FiO_2, trigger, pressurization slope, and the expiratory cycling criterion are kept constant as set by the clinician. Titration has to be interrupted in case of arterial hypotension, poor respiratory tolerance (SpO_2 below 88% despite a 20% increase in FiO_2, or respiratory rate above 40 breaths/min for one minute), or at the request of the patient or the physician in charge of the patient. Airway flow is recorded using an AC137A-1 pneumotachograph (Biopac Systems, Goleta, CA, USA) placed between the Y-piece and the endotracheal tube. Airway and esophageal pressures are measured using TSD160D transducers (Biopac Systems). All signals are acquired using AcqKnowledge® software (Biopac Systems, Goleta, CA, USA). EIT monitoring (Enlight 1800, Timpel, São Paulo, Brazil) is performed using a belt positioned around the chest at the fourth to fifth intercostal space. Total duration of the intervention was then 45 minutes for each patient.

Intervention Type

Procedure/Surgery

Primary outcome(s)
1. Tidal Volume measured using data collected from the ventilator screen at the decremental pressure support titration

Key secondary outcome(s)

Completion date
31/12/2021

Eligibility

Key inclusion criteria
1. Adult (age at least 18 years)
2. Invasively ventilated in pressure support mode

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
18 Years

Upper age limit
100 Years

Sex
All

Total final enrolment
17

Key exclusion criteria
1. Contra-indication to electrical impedance tomography
2. Pregnancy
3. Legal protection status
4. Refusal of the patient or next of kin

Date of first enrolment
01/09/2018

Date of final enrolment
31/12/2021

Locations

Countries of recruitment

France

Sponsor information

Organisation
Le Groupe de Recherche Clinique CARMAS

Funder(s)

Funder type

Funder Name
Investigator initiated and funded

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not expected to be made available