

DO SIGH BREATHS AUGMENT PRESSURE SUPPORT VENTILATION (PSV) IN PRETERM INFANTS?

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Background: PSV is a patient triggered, pressure limited, flow cycled mode of ventilation. Synchrony during inspiration and expiration, and flow dynamics of PSV might facilitate weaning from ventilator. In preterm infants PSV usage has been limited because of unreliable respiratory drive.

Objective: To compare respiratory parameters between Full PSV (PS_{max}) alone and PS_{max} with sigh breaths of SIMV (SIMV+PSV_{max}) during weaning from mechanical ventilation.

Methods: Breath by breath pulmonary mechanics data was collected from each infant during two epochs of ventilation using a standardised protocol and random crossover scheme. A total of 10,913 breaths were analysed from 10 ventilated preterm infants < 32 weeks gestation, recovering from RDS. Both forms of ventilation provided 5-8mls/kg expired tidal volume (VT_e). Two tailed t-test was used for analyses. Ethics approval and parental consent was sought.

Results:

	SIMV/PSmax (n=5603)	PSmax (n=5310)
Expired tidal volume (ml/kg)+/-	6.73+/-0.02	6.64+/-0.04
Inspired tidal volume (ml/kg)+/-	6.66+/-0.02	6.65+/-0.04
Total minute ventilation (ml/kg/min)+/-	391.6+/-1.1	403.8+/-1.5 p<0.05
Total Respiratory rate (bpm)	58.7	60.8 p<0.05
Peak Inspiratory Pressure (cms H ₂ O)	15.74+/-0.04	15.61+/-0.04
Mean airway pressure (cms H ₂ O)	7.85+/-0.02	7.79+/-0.02
End expiratory pressure (cms H ₂ O)	4.94+/-0.01	4.97+/-0.01
Fraction of inspired oxygen (%)	21.47+/-0.02	22.36+/-0.03 p<0.05

[Respiratory parameters on SIMV/PSmax vs. PSmax]

Conclusions: Minute ventilation is preserved during PSV irrespective of SIMV sigh breaths during weaning. Addition of sigh breaths to PSV stabilizes breathing at comparable respiratory parameters.