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T-piece or self inflating bag for positive pressure ventilation during delivery room resuscitation: An RCT☆

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Abstract

Objective
To compare the duration of positive pressure ventilation (PPV) during delivery room resuscitation in neonates resuscitated with self-inflating bag (SIB) and T-piece resuscitator (TPR).

Design
Randomized control trial.

Setting
Delivery room and neonatal intensive care unit of a tertiary care center in northern India.

Patients
Consecutively born neonates more than 26 weeks of gestation requiring PPV at birth.

Intervention
Eligible neonates were randomized to two groups, SIB and TPR.

Outcome measures
Duration of PPV, intubation rates in delivery room, incidence of respiratory distress, need for mechanical ventilation during first 48 h and its duration, need for surfactant replacement therapy and mortality during NICU stay.

Results
Fifty neonates received PPV with a SIB and 40 received PPV with a TPR. The mean (SD) birth weight and gestational age of neonates in SIB and TPR groups were 2264 (872) and 2065 (814) g; 35.1 (3.6) and 34.3 (3.7) weeks, respectively. The median (IQR) duration of PPV in delivery room was significantly less in TPR

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group as compared to SIB; 30 (30–60) s vs. 60 (30–90) s, respectively; ($p < 0.001$). A higher proportion of neonates required delivery room intubation in SIB group as compared to TPR group (34% vs. 15%, $p = 0.04$). In the TPR group, a higher proportion of neonates could be resuscitated with room air only (72.5% vs. 38%, $p = 0.001$). Other outcomes were comparable in the two groups. Similar findings were observed in neonates <34 weeks, except that fewer neonates resuscitated with TPR required invasive ventilation (31.6% vs. 77.8%, $p = 0.008$).

Conclusion

Use of TPR during delivery room resuscitation resulted in shorter duration of PPV and lesser rates of intubation as compared to SIB. More infants in this group could be resuscitated with room air only (CTRI/2010/091/002946).

Abbreviations:
CPAP (continuous positive airway pressure), MAP (mean airway pressure), PEEP (positive end expiratory pressure), PPV (positive pressure ventilation), SIB (self inflating bag), TPR (T piece resuscitator)

Keywords:
Positive end expiratory pressure, Positive pressure ventilation, Self inflating bag, T piece resuscitator

☆A Spanish translated version of the abstract of this article appears as Appendix in the final online version at http://dx.doi.org/10.1016/j.resuscitation.2015.01.021.

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