

Abstract Title:

Less Invasive Surfactant Administration (LISA) vs. surfactant delivery via intubation: a comparison of short-term outcomes in preterm infants less than or equal to 34 weeks GA

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Abstract Description:

Background: As surfactant administration has demonstrated to be effective in decreasing morbidity and mortality in preterm neonates, efforts to minimize the need for intubation and mechanical ventilation (MV) for surfactant dosing have lagged behind. While less invasive surfactant administration (LISA) has been demonstrated to improve respiratory outcomes and decrease exposure to MV, the feasibility in adopting this technique compared to methods requiring intubation is unclear.

Objective: We seek to determine whether the administration of surfactant via LISA technique is feasible in a tertiary level 3 NICU lacking a standard approach to respiratory care.

Design & Intervention: Infants meeting inclusion criteria were separated into two groups. Those receiving surfactant via ETT/intubation from 1/2016-4/2017 were included in the historical cohort for comparison. Following a brief instructional training module, dosing by LISA was performed on infants delivered after 4/2017.

Patients: Infants 34 weeks gestation, without congenital anomalies that would impact respiration, and spontaneously breathing on BCPAP with evidence of RDS.

Measurements: The GA, birth weight, FiO₂, and hours of life were noted prior to surfactant. After dosing, FiO₂ requirements and level of respiratory support 12 hours post-surfactant, need for intubation and/or additional surfactant doses, and incidence of pneumothorax and BPD were noted.

Results: Of the 131 infants in this study, 58 were in the control group (average GA 27 6/7 weeks, BW 1.1kg), and 73 were in the LISA group (average GA 28 4/7 weeks, BW 1.3kg).

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Those receiving LISA had lower FiO₂ needs (0.29, 0.27, and 0.24 at 1, 2, and 12 hours post-surfactant) compared to the control group (0.36, 0.36, and 0.28, respectively). 14 (19%) infants remained intubated 72 hours after LISA, compared to 30 (52%) in the control group. Incidence of BPD, pneumothorax, and need for additional surfactant were noted to be less in infants receiving LISA. The average time (hours) in administering surfactant was comparable between groups.

Conclusion: LISA appears to reduce the need for MV in infants compared to surfactant administration via ETT. The procedure was well tolerated, with decreased incidence of adverse outcomes such as BPD. LISA appears to be the preferred method for surfactant delivery in spontaneously breathing infants with RDS on CPAP given ease of application and clear short-term benefits.