Neonatal and Pediatric Medicine

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A Prospective Cohort Study on Less Invasive Surfactant Administration

interest. e participants (neonates less than 34 weeks with RDS requiring surfactant therapy) were divided into the LISA group or InSurE group based on the technique used to deliver/administer the surfactant. Participants were followed up during their stay in NICU to assess the outcome of interest namely the short term respiratory and other outcomes as already described above. Data was collected and variables likely to a ect outcome were collected and evaluated including likely confounding factors like maternal co-morbidities, gestational age, weight mode of delivery etc. e data so collected was tabulated using Microso excel and analyzed for the outcome of interest in these study groups. Approval from the Institutional l ethical committee was obtained.

I C

Preterm neonate ≤34 weeks of gestational age with moderate to severe degree of RDS requiring surfactant administration followed by respiratory support in the form of CPAP or other forms of ventilator support.

E C

Preterm neonate ≤34 weeks of gestational age with mild RDS not requiring surfactant.

For LISA group (babies who required early intubation and continued ventilation).

Neonate with congenital anomalies.

e collected data were analyzed with SPSS statistics so ware version 20.0 (IBM SPSS Statistics). To describe about the data descriptive statistics frequency analysis, percentage analysis was used for categorical variables and the mean & SD were used for continuous variables. To nd the signi cance in categorical data Chi-Square test was used, similarly if the expected cell frequency is less than 5 in 2×2 tables then the Fisher's Exact was used. In both the above statistical

e mean duration of respiratory support in the LISA group was 87 hours (SD=43.04) while in the InSurE group the mean duration of respiratory support was 187 hours (SD=230.97). e duration of respiratory support between the LISA and InSurE groups was statistically signi cant (p = 0.009). Similar study done by Jena et al. **11 ,** observed a signi cant reduction in the need for MV in the MIST group (MIST: 19%, INSURE: 40%, p<0.01, risk ratio=0.49).

C , ,

e multiple variables of birth weight, POG and antenatal steroids were analysed together for their statistical signi cance on the duration of respiratory support in both the LISA and the InSurE groups. Where, in the LISA group the multiple variables of birth weight (p=0.34), POG (p=0.29)and Antenatal steroid therapy(p=0.31) were not found to have a statistically signi cant in uence on the duration of respiratory support required by the preterm neonate whereas, in the InSurE group, the variables of birth weight (p=0.002) and POG(p=0.003) were found

to have a statistically signi cant ($p<0.05$) correlation with the duration of respiratory support required, while antenatal steroid therapy($p=0.99$) was not found to have a statistically signi cant e ect on the duration of respiratory support($p>0.05$) in our study.

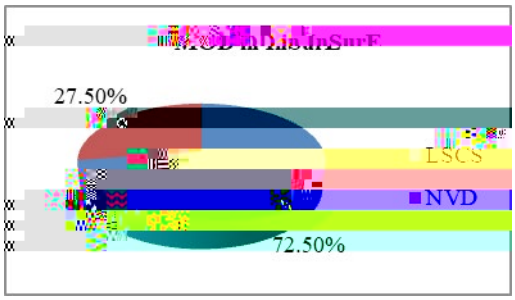
(Table 2) Number of doses of surfactant

Both the groups (LISA / InSurE) were also analyzed for the number of doses of Surfactant delivered for management of preterm with RDS. In the LISA group, the mean surfactant doses was 1.10 (SD=0.308) while, in the InSurE group the mean surfactant doses

significant (p = 0.020). Akhila et al. in their study, **12** did not nd any di erence in doses of surfactant needed when they compared LISA and InSurE techniques. In a study by Kanmaz et al. **13 ,** an almost equal percentage of both groups (about 20%) required the second dose of surfactant. In the study, by Aguar et al. **14** the infants in the MIST group received a 100 mg/kg dose of Curosurf and those in the InSurE group received a 200 mg/kg dose, and about 36% of the MIST (LISA) group and only 6.5% of the InSurE group needed the second dose of. From these, it was observed that initial dose of surfactant appears to dictate the need for a second administration of surfactant regardless of the technique used. In our study, preterms with severe respiratory distress that were intubated during delivery room resuscitation were excluded from the LISA group. is confounder could have resulted in statistically signi cant di erence in the number of surfactant doses given to the preterm in these groups.

Figure 4: Neonatal morbidities.

MOD	InSurE	%	LISA	%
NVD	11	27.50%	12	60.00%
LSCS	29	72.50%	08	40.00%
TOTAL	40	100.00%	20	100.0%
P = 0.002, Significant				



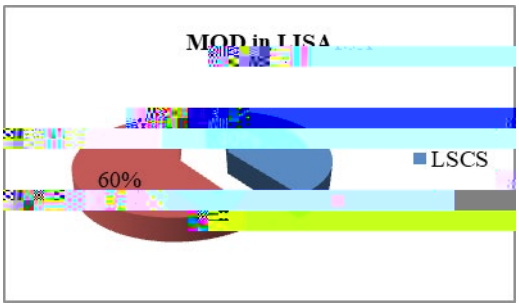


Figure 5.1 **Figure 5.2**

Figure 5: Distribution of mode of delivery.

Whereas, In InSurE group, NVD delivery mode was 11 (27.50%) and, LSCS mode of delivery 29 (72.50%).

(Figure 6) Nature of respiratory support

In LISA groups only 2 (10.00%) neonates needed the respiratory support in form of mechanical ventilation and CPAP while 18 (90.00%) neonates needed the respiratory support in form of CPAP only. In

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limiting factor in using LISA technique.

In the InSurE group 65 % mothers had received full course of steroids antenatal while 35% had received incomplete course of antenatal steroids while in the LISA group 60 % mothers had received full course of antenatal steroids while 40% had received incomplete doses of steroids

e underlying probable cause for prematurity such as PPROM, PIH, Multiple gestation and Chorioamnionitis in the two groups was analysed and not found to be statistically signi cant in our study.

e foetal growth status (AGA/SGA) was not statistically signi cant in the two groups.

Outcome variables were analysed in the two groups (LISA and InSurE) such as--

FiO2 required

Requirement of ventilation (PEEP/ NIV/ SIMV)

Duration of ventilator support

Number of surfactant doses

Neonatal co -morbidities

Duration of NICU stay

e LISA group was seen to require shorter duration of respiratory support. e mean duration of respiratory support in the LISA group was 87 hours (SD=43.04) while in the InSurE group the mean duration

10. Dargaville PA, Aiyappan A, Kuschel CA, Kamlin CO, De Paoli AG, et al. (2013) Minimally invasive therapy in preterm infants on continuous positive airway pressure. Arch Dis Child Fetal Neonatal Ed 98: 122-126.

11. Jena SR, Bains HS, Pandita A (2019) Surfactant therapy in premature babies: SurE or InSurE. Pediatric Pulmonology. 54(11): 1747-1752.

12. Akhila A, Ghoshal B, Mahapatra CN (2021) A study on the comparison of minimally invasive surfactant therapy with insures technique of surfactant therapy in preterm babies with respiratory distress in atertiary care hospital – A prospective cohort study. Indian J Child Health. 8(10): 362-366.

13. Kanmaz HG, Erdeve O, Canpolat FE, Mutlu B, Dilmen U (2013) Surfactant administration via thin catheter during spontaneous breathing: Randomized controlled trial. Pediatrics 131(2): 502-509.

14. Aguar M, Cernada M, Brugada M, Gimeno A, Gutierrez A, et al. (2014) Minimally invasive surfactant therapy with a gastric tube is as efective as the intubation, surfactant and extubation technique in preterm babies. Acta Paediatr 103: 229-233.