Head injuries related to birth trauma among low birthweight neonates during vacuum extraction: a retrospective cohort study

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Abstract

Objective: Prematurity [gestational age (GA)<34w] is a relative contraindication to vacuum extraction (VE). Current data do not discriminate clearly between prematurity and low-birthweight (LBW). We aimed to evaluate the impact of non-metal vacuum cup extraction on neonatal head injuries related to birth-trauma (HI), among newborns with LBW (<2,500g). **Design:** A retrospective cohort. **Population:** 3,335 singleton pregnancies, delivered by VE from 2014 to 2019. All were >34w GA. **Methods:** We compared 207 (6.2%) neonates with LBW <2,500g to 3,128 (93.8%) neonates with higher BW, divided into 3 subgroups (2,500-2,999g, 3,000-3,499g, and >3,500g). **Main outcome measures:** HI and other neonatal complications. **Results:** The lowest rates of subgaleal hematoma occurred in neonates <2,500g (0.5%) and increased with every additional 500g of neonatal birthweight (3.2%, 4.4% and 7.6% in 2,500-2,999g, 3,000-3,499g, and >3,500g groups, respectively; p=0.001). Fewer cephalohematomas occurred among LBW neonates (0.5% in <2,500g) and increased with every additional 500g of birthweight (2.6%, 3.3% and 3.8% in 2,500-2,999g, 3,000-3,499g, and >3,500g groups, respectively, p=0.026). Logistic regression found increasing birthweight as a significant risk-factor for head injuries during VE, with adjusted odds ratios of 8.874, 10.624, 13.980 for 2,500-2,999g, 3,000-3,499g, and >3,500g, respectively (p=0.015). NICU hospitalization rates were highest among neonates weighing <2,500g (10.1%) compared to the other groups (2.7%, 1.7% and 3.3% in 2,500-2,999g, 3,000-3,499g, >3,500g respectively, p=0.000). **Conclusions:** VE of neonates weighing <2500g at 34w and beyond seems as a safe mode of delivery when indicated, with lower rates of HI, compared to neonates with higher BW. **Funding:** none.

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