

Impact of Buccal Dextrose Gel for the Treatment of Neonatal Hypoglycemia on Breastfeeding Outcomes

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Background

- Neonatal Hypoglycemia (NH) is commonly encountered.
- Traditional management with intravenous dextrose infusion (pIVFs) is invasive and results in separation of the mother-infant dyad.
- Use of buccal dextrose gel (BDG) to supplement feeding has become popular in order to mitigate this separation.
- In 2018, BDG was adopted as part of management of NH in The University of Cincinnati Medical Center (UCMC).
- The impact of BDG on breastfeeding outcomes in the literature has been variable.

Objectives

1. To assess the impact of BDG on NH requiring pIVFs infusion at UCMC
2. To evaluate the impact of BDG on breastfeeding outcomes

Methods

- Retrospective chart review of all infants born at UCMC from 1/1/2015-1/31/2022 with NH.
- Maternal and infant data and outcomes were compared between *pre-gel* (2015-2017) and *post-gel* (2018-2022) epochs.

Inclusion criteria:

- Gestational age ≥ 35 weeks
- Birthweight ≥ 2200 grams
- Serum glucose ≤ 45 mg/dL

Outcomes of interest:

- NICU Admission
 - NICU admission for hypoglycemia
 - pIVFs for hypoglycemia
- Breastfeeding Outcomes
 - Breastfeeding initiation
 - Exclusive breastfeeding
 - Any breastfeeding at discharge (24 hours)
 - Exclusive breastfeeding at discharge (24 hours)

Statistical analyses

- Continuous variables compared using t-test, categorical variables compared using chi-square analysis

Results

Characteristics	pre-gel n=815	post-gel n=1146	p-value
Maternal age in years (SD)	28.44 (6.1)	28.99 (6.19)	0.051
Birthweight in grams (SD)	3157.5 (646.6)	3156.7 (613.54)	0.98
Gestational age in weeks (SD)	37 (1.43)	37 (1.36)	1.0
Large for gestational age (n)	28.7% (234)	33.1% (379)	0.041
Small for gestational age (n)	27.2% (222)	24.6% (282)	0.189
Infants of diabetic mothers (n)	54.2% (442)	50.5% (579)	0.105
Vaginal delivery (n)	50.9% (415)	48% (550)	0.201
Receipt of BDG (n)	0 (0)	34.7% (398)	

Table 1. Characteristics in pre- and post-gel epochs

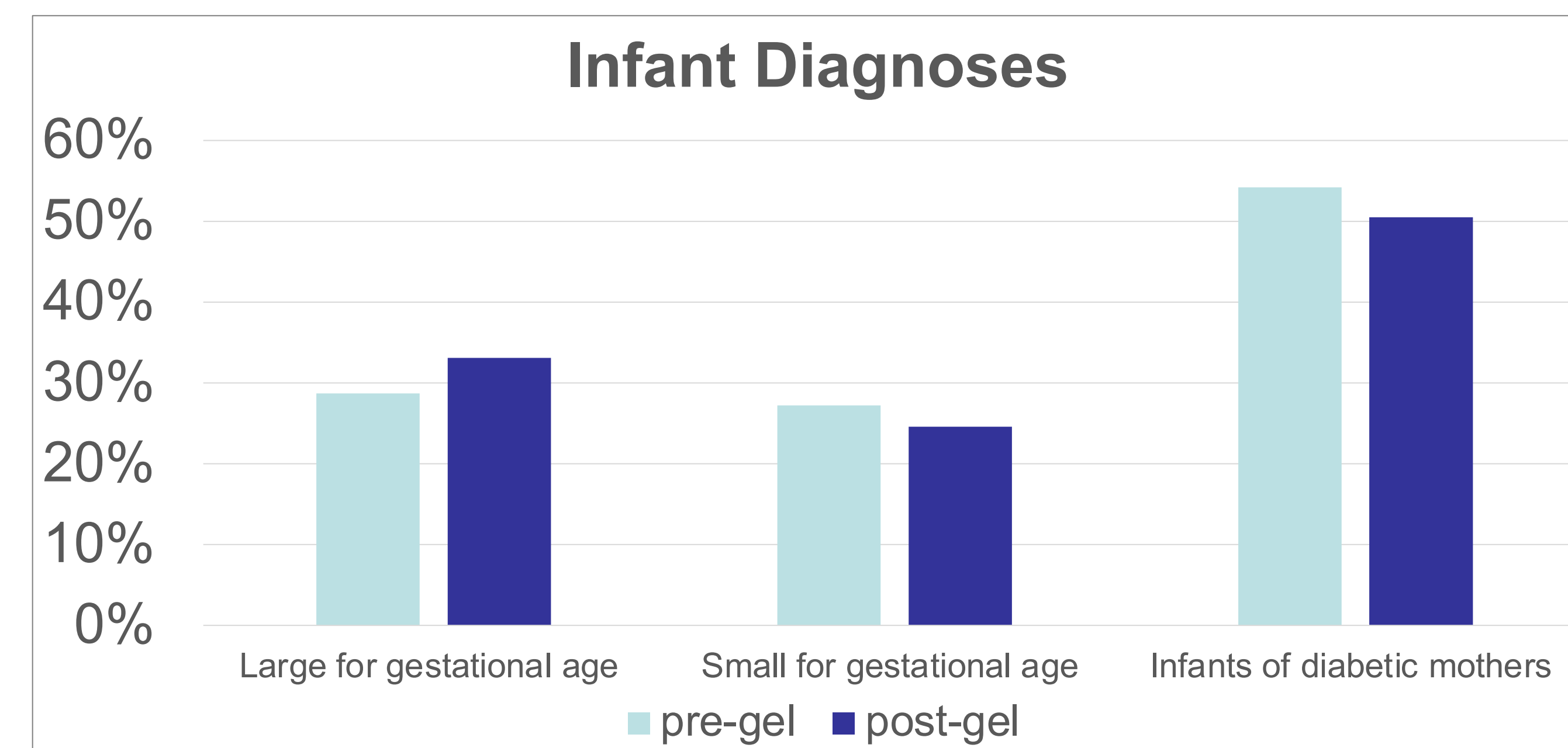


Figure 1. Proportion of infant medical diagnoses. Included infants may have more than one diagnosis.

Outcome	pre-gel	post-gel	p-value
NICU admission	22.3	21	0.49
NICU admission for hypoglycemia	8.3	7.8	0.642
pIVFs for hypoglycemia	6	4.9	0.275
Breastfeeding initiation	76	77.6	0.738
Exclusive breastfeeding	17.9	19.5	0.388
Any breastfeeding at discharge	64.8	67.5	0.203
Exclusive breastfeeding at discharge	26.7	27.7	0.655

Table 2. Outcomes in pre- and post-gel epochs

Conclusions

- In contrast to some reports, use of BDG did not enhance breastfeeding outcomes at our center.
- Possible explanations for apparent lack of benefit include:
 - Lower-than-anticipated utilization of BDG
 - More LGA infants in the post-BDG epoch
 - Implementation during COVID-19 pandemic which may have imposed logistic and other challenges
 - Confounding by factors we did not control for, given retrospective nature of study

Implications for Clinical Practice

- BDG remains a practical, non-invasive, and economical way to manage neonatal hypoglycemia.
- Based on the findings in our study, the role of BDG in impacting breastfeeding outcomes is unclear and warrants further investigation.
- It is possible that use of BDG confers tangible and intangible benefits we did not assess.
- Next steps include comparing characteristics and breastfeeding outcomes of the infants who received BDG with those in the *pre-gel* epoch.

References

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