



Bacterial Bath to Boost Baby's Microbiome: Helpful or Harmful?

Katherine McCauley, PA-S

Master of Science in Physician Assistant Studies Program, University of Mount Union



Proposed question

- Are there health benefits to providing vaginal seeding for newborns delivered via Cesarean section (CS), and if so, do the benefits outweigh any risks?

Background

- CS newborns are not exposed to the normal flora of the vaginal canal and therefore establish different microbial environments than vaginally delivered newborns.¹⁻³
- Lifelong immunity is partially dependent on the gut harboring bacteria that inhabit as a newborn exits the womb.³
- Vaginal seeding is where CS newborns are inoculated with the microbes they are lacking from the vaginal canal in order to mimic the vaginally delivered newborn microbiome.⁴

Introduction

- This study unpacks the risks versus benefits of vaginal seeding for CS newborns in order to determine if the procedure should be recommended by clinicians.
- The health of CS newborns warrants consideration because per the CDC just over 1/3rd of US babies are born via CS.
- Previous studies concluded that CS is correlated to an increased risk for immune disorders⁵ and hypothesized that vaginal seeding could mitigate that risk.
- To evaluate the efficacy of vaginal seeding, the differences between the CS and vaginally delivered newborn microbiome were explored.

Methods

- A systematic review of literature was executed.
 - Inclusion criteria was consistent with publication within the last 8 years, peer review status, full text available, and newborn gastrointestinal system used for microbiome sequencing with fecal samples.
 - The databases searched were EBSCOhost and PubMed.
 - The key terms explored were as follows:
 - Cesarean-born infants or c-section or cesarean section or caesarean section or mode of delivery and microbiota or microbiome or gut microbiota.

Results

- The CS newborn microbiome differs from the vaginally delivered newborn microbiome.¹⁻³
- The CS newborn lacks beneficial bacteria such as *Bifidobacterium* and *Bacteroides* species and has an abundance of hospital environment pathogens such as *Clostridium*.^{1,3}
- The differences are most notable during the 1st week of life, but largely diminish after the 6th month of life without vaginal seeding.^{1,3}
 - The distinction between the CS and vaginally delivered newborn microbiome diminishes into infancy.¹
- Vaginal seeding has the ability to partially restore the CS newborn microbiome.²

Discussion/Conclusion

- Given the risks of disease transmission to the newborn such as Group B streptococcal infections, herpes simplex virus, gonorrhea and chlamydia⁴ vaginal seeding should not be recommended.
- There are no proven clinical benefits to vaginal seeding; additionally, microbial differences can occur due to factors other than mode of delivery.
- For vaginal seeding to prove implementable, the following would need to be executed alongside lack of pathogen transmission.
 1. More research on the beneficial bacteria that should be inoculated in the CS newborn as well as greater accuracy in mimicking the vaginally delivered newborn microbiome.
 2. Longitudinal study analysis on the long term health implications of altering the CS newborn microbiome through vaginal seeding; otherwise, the fact that the composition of the CS and vaginally delivered newborn microbiome largely equalizes into infancy challenges the usefulness of vaginal seeding.
- Given the following CS newborns should not be bathed in vaginal secretions to bacterially boost their baby microbiome.
 1. Lack of safety
 2. Absence of known benefit
 3. Undetermined efficacy of the procedure
- Therefore, other restorative measures should be explored.
- Providers should suggest alternative ways to prioritize the microbial health of a CS newborn that are devoid of the risks with vaginal seeding.



Image credit: Pixabay

References

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Images:

Pixabay. Person Carrying Baby. In: Pexels Web site. <https://www.pexels.com/photo/child-baby-newborn-arms-47219/>. February 15, 2016. Accessed April 19, 2020.

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