

PUSH OR PULL: AN EXAMINATION OF BABY DELIVERY METHODS

**Push or Pull:
An Examination of Baby Delivery Methods**

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Abstract

Background: There are two ways to deliver a baby: c-section and vaginally. As procreation will always be a factor in life, it is important to examine the respective risks and benefits of each and consolidate the information into one, organized piece.

Objective: The aim of this research is to gather information with the goal of learning whether or not it is possible to pick a definitively superior method of delivery.

Design and Method: The research method employed was a systematic literature view of medical journals, clinical reports and analysis as well as opinion pieces by experts in relevant fields. The results of these peer-reviewed works were reviewed and analyzed, before being summarized and reported in this paper. The research question is: Can a definitive, blanket statement be made in favor of one method of delivery over the other?

Results: The most significant outcome of this study is the understanding that it is not possible to state that one method of delivery is always beneficial over the other; each method has its' own pros and cons that need to be taken into account while also realizing the natural variation in health, medical history and other social factors between different patients.

Conclusions: The volume of comparative medical literature with regard to delivery models needs to be expanded significantly. Additionally, it is of vital importance to ensure that this research is made accessible and understandable to the general public.

Keywords: The key terms used in the research were as follows: “vaginal vs csection”, “risks of csection”, “bacterial exposure vaginal delivery”, “risks of vaginal delivery”, “benefits of csection”. Sources used include Google Scholar and Academic Search Premier. Additionally, the resources of the Purchase College Library were also utilized.

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Chapter 1: Introduction

Despite the contemporaneously changing nature of society, there are some things that will never change: money will always rule the world, generations will always disagree with each other, and women will always give birth. Childbirth is an integral part of the continuation of life because without it, humanity would die out. However, information about childbirth, a vital issue, has not been condensed into a single publication, and made available to the medical community or to the general public. There is a lack of comparative literature weighing hazards and perks of both methods of delivery.

The data used was gathered by way of a systematic literature review. The chosen sources were carefully reviewed and considered before being included. By condensing the data gathered from these sources into one, concise publication, it will have the potential to be beneficial to a broad demographic of people. The information could be useful for physicians who are making plans of care for patients. Having the facts presented clearly would allow them to factor in all risks and benefits, whereas without this data, some facets could be overlooked. Additionally, making a comparison of delivery methods available to expectant mothers of all ages would allow them to engage in more informed discussions with their doctors regarding their care and the delivery of their babies.

The application of this research is infinite if made widely available. While it is primarily intended for mothers and physicians, it could also benefit students in high school or in college. The comparative literature would be invaluable to guide research and to establish a robust, base-level understanding of the risks and benefits of the two methods of delivery to all who read it.

The frequency of planned, elective c-sections has been steadily increasing over the past several years (Ludwig et al., 2001). Many possible factors could explain this trend, including

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convenience and the perception of safety. However, as is true with all surgical procedures, there are inherent risks associated with cesarean delivery. Vaginal delivery still makes up a majority of births (Liu et al., 2007). While vaginal delivery does not have the same risks carried by cesarean delivery, there are dangers secondary to a vaginal delivery that are often disregarded.

There is supporting evidence on both sides of this argument, from the perspective of the mother and baby. For example, women who are giving birth to their second baby vaginally after having their first child via c-section result in higher instances of negative perinatal outcomes, in addition to increased rates of adverse maternal outcomes (Landon, et al., 2004). However, another study shows that low-risk women giving birth by planned, elective c-section show more instances of negative outcomes when compared to low risk women who had a planned vaginal delivery (Liu, et al., 2007).

In specific circumstances, vaginal delivery can put the baby at greater risk of contracting a virus or illness that the mother has been diagnosed with (“Elective caesarean-section...,” n.d.). In these situations, c-sections become the safer option for the health of the baby. Nevertheless, there are other works that point out potential risks for the baby down the line if delivered by c-section. Babies born vaginally are exposed to more bacteria at birth, ultimately resulting in a more dense and diverse gastrointestinal flora when compared to babies’ born via Cesarean-section (Nagpal, et al., 2016). Limited bacterial intestinal microbiota has been linked to increased instances of allergies later in childhood (Renz-Polster, et al., 2005).

By evaluating this important data from an unbiased and objective perspective, the result is a clear comparison between the two methods of delivery. The outcomes will be assessed from multiple perspectives and under multiple lenses, resulting in a comprehensive source of information for people to read and form their own opinions on. There will be no judgements or

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opinions and all conclusions will be drawn from clinical data and well-researched sources. Going forward, the most beneficial outcome would be a declarative statement championing one method while condemning the other. However, is that a realistic goal with respect to this specific topic?

Research Question: Can a definitive, blanket statement be made, favoring one method of delivery over the other?

Chapter 2: Literature Review

Both vaginal and Cesarean section have risks and benefits. There are sources reporting on both sides of this issue from many different perspectives. However, can a definitive, blanket statement be made in favor of one method of delivery or the other? In examining this question, it is of the utmost important to evaluate the issue from different angles and through different lenses.

Despite notions suggesting that any surgical procedure is more risky than a non-invasive counterpart, an article titled “Some Risks Lower in Planned C-Section vs. Vaginal Delivery,” written by D. McNamara provides evidence to the contrary. The article focuses on risks as they relate to c-section and vaginal delivery in a specified population: low-risk women. It outlines the main associated risks of significance to this study, followed by a list of the statistics found from the collected data. It explicitly states parameters of the selection process including the number of planned c-sections, planned vaginal deliveries, and that the populations were also broken down by ethnicity. One of the most beneficial parts of this piece was that it includes several limitations of the study as well as recommending improved practices going forward. However, the size of each of the sample groups for examining some of the specific risks (i.e. chorioamnionitis, postpartum hemorrhage, and transfusion) was a little uneven as the number of studied planned vaginal deliveries was 3868 as compared to 180 planned cesarean deliveries studied. Despite any short comings, the unbiased nature of the study and straightforward presentation of the results make it apparent that in some cases, planned C-sections present fewer risks than vaginal deliveries in low-risk populations.

Arguments supporting the belief that C-sections are intrinsically safer than vaginal deliveries can also point to sources outlining some possible risks and downsides associated with

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vaginal delivery. Taking a look through a more specific lens, it is demonstrated that certain situations call for c-sections as the risks accompanying vaginal delivery can be much more dire.

“Elective Caesarean-section versus Vaginal Delivery in Prevention of Vertical HIV-1

Transmission: A Randomized Clinical Trial,” a study published by The Lancet, brings one of these specific instances to light. The clinical trial which is the focus of this piece seek to determine whether or not mode of delivery impacted the transmission rates of HIV-1 from mother to baby. Based on the reported findings, babies delivered to HIV-1 infected mothers via c-section presented with significantly lower infection rates than their vaginally delivered counterparts. Per the article, of the 370 infants studied, 3.4% of babies delivered via c-section were found to be infected, as compared to the 10.2% of babies delivered vaginally. This is an easily understandable example of a situation wherein a c-section is the more desirable method of delivery. While it is not a study of the general population, it is an important addition to the narrative that despite being an invasive, surgical procedure, there are instances wherein Cesarean section is the safer choice of the two methods.

Despite some authorities contending that c-section is the safer route, other sources argue that they can pose maternal threats. Referring a specific demographic composed of women who underwent a primary cesarean delivery for breech presentation (which researchers defined as constituting a surrogate “planned cesarean group”), experts point out that the women who delivered via c-section exhibited more instances of cardiac arrest, wound hematoma, hysterectomy, major puerperal infection, major wound infection, anesthetic complications, venous thromboembolism and hemorrhage resulting in hysterectomy when compared to the women who delivered vaginally. This trend was found in the study, “Maternal mortality and severe morbidity associated with low-risk planned cesarean delivery versus planned vaginal

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delivery at term,” wherein a large survey was done, using data from April 1991 through March 2005. The sample sizes were large, implying that the outcome of the study is a fairly accurate representation of the population as a whole. In offering a differing opinion from the aforementioned works, this study introduces instances wherein vaginal delivery is the safer method of delivery for women considered low-risk candidates. The study also notes how significant research surrounding the safety of c-section as the rates of planned, elective c-sections have been steadily increasing over the past several years.

In conducting this research, it is of the utmost importance to examine the relative safety of the different methods of delivery from a multitude of perspectives. With that in mind, evaluating safety in terms of maternal and perinatal outcomes would constitute a different point of view than those discussed thus far. “Maternal and Perinatal Outcome Associated with a Trial of Labor After Prior Cesarean Delivery,” is a journal article exploring the risks associated with delivery methods in women who have had a c-section in the past. Using a fairly large pool of candidates and it was ultimately determined that a trial of labor by a woman with a past c-section is associated with higher instances of adverse perinatal outcomes as well as an increased rate of adverse maternal outcomes, when compared against women with a planned, elective, repeated cesarean delivery. This source is a representation of a very controlled and well-executed study, examining delivery methods from a unique point of view, highlighting some increased future risks of undergoing a c-section during first pregnancies.

In addition to pointing out risks associated with c-sections, it is important to also emphasize some of the benefits of a vaginal delivery; specifically, this can be examined through the lens of future health benefits for the child. When a baby is born vaginally, he/she is exposed to a lot of different bacteria. “Sensitive quantitative analysis of the meconium bacterial

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microbiota in healthy term infants born vaginally or by cesarean section,” is a study which investigates the bacterial flora in the gastrointestinal systems of babies born vaginally and by c-section. The results assert that babies born vaginally are found to have a more diverse and dense bacterial population when compared with c-section babies. This is a significant finding, especially when looked at in conjunction with “Caesarean section delivery and the risk of allergic disorders in childhood.” This study looks at correlation of allergies in childhood based on bacterial composition of the gastrointestinal flora. The GI system and the immune system are innately linked. By comparing the microbiota of babies born vaginally versus by c-section and later comparing instances of childhood allergies to GI microbiota, it paints the picture of a correlation between delivery method and childhood allergies. The allergy study shows that children born via c-section are more likely to develop/exhibit allergies later in childhood. This suggests that the more diverse bacterial populations exhibited by vaginally delivered babies are correlated to children with fewer allergies in childhood. It should be noted that this is not a causal relationship but rather a correlative one.

Looking at these issues from a more clinical, scientific perspective is helpful in analyzing risks; however, this is not a one-dimensional issue. It is also a medical decision and the decision-making process is also worth investigating. For this additional search, examining the ethics factoring into this choice is a unique way to look at this issue. This source covers the ethical implications of elective C-section. “Caesarean section on demand - an ethical dilemma,” looks behind the scenes of a physician coming up with a birthing plan for his/her patients. It argues that convenience and time-efficiency could be clouding the mind of the provider, and ultimately influences the plan of care. What stands out in this article is the section titled *Personal Conclusion*; here, the author does not offer his opinion in favor of one delivery method over the

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other but, rather, he asserts the importance of the inclusion of expectant mothers in making decisions about their care and doing so in conjunction with her provider. The idea of a collaborative method in designing a plan of care is very rarely discussed due to the fact that in many instances, patients are not qualified/educated in the necessary fields to be able to contribute appropriately to these plans. However, in terms of delivery methods, this is a situation wherein mothers are able to offer their opinions and have them be valid.

This research is significant because as was mentioned previously, women giving birth will always be a part of life. Given this fact, its surprising that more literature has not been reviewed, examined and compiled into one work for medical professionals to refer to and for regular people to establish a baseline understanding of potential outcomes of a vaginal or c-section delivery.

Chapter 3: Methods

The rates of planned, elective c-sections have been steadily increasing over the past few decades. Part of this increase is attributed to the perceived safety and minimal associated risks of a cesarean section delivery. Despite the obvious convenience factor that accompanies a planned delivery, there are not many other benefits. The other option, vaginal delivery, still accounts for the majority of births. While there is no invasive surgical procedure accompanying a vaginal delivery, it is important to clarify that there are still inherent risks. It becomes increasingly clear that a comparison of the risks and benefits of each method of delivery is necessary. Can a blanket statement be made, definitively backing one method of delivery over the other? This research can serve to inform expectant mothers who are unsure whether they want to deliver vaginally or via c-section. This is necessary as most people do not have the requisite medical education needed to evaluate the risks without additional information. There is a dearth of comprehensive, comparative information evaluating risks and benefits of vaginal delivery and cesarean section. Being able to access a concise and thorough collection of risks and benefits associated with cesarean or vaginal delivery would allow physicians to quickly review this information when making decisions. Additionally, it would allow expectant mothers to play a more active role when making a plan of care with their provider.

The instrument of this research is myself. The primary data was sourced using Google Scholar and Academic Search Premier. The key terms used in the search were as follows: “vaginal vs csection”, “risks of csection”, “bacterial exposure vaginal delivery”, “risks of vaginal delivery”, “benefits of csection”. Additionally, the resources of the Purchase College library were utilized. A substantial majority of the cited references are peer-reviewed as it was imperative that the scientific data was retrieved from peer-reviewed sources, to ensure the

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accuracy of the findings. Using a systematic and targeted literature search, sources were meticulously examined and selected with prejudice. Each reference represents a specific and unique piece of data either in favor of or against one of the methods of delivery.

In writing this paper, I am without bias. All conclusions were drawn using peer-reviewed sources, specifically, clinical studies. I had no preconceived notions in entering into this research and did not seek to prove one method better than the other. My goal is to present both methods of delivery as objectively as possible, allowing mothers and doctors to draw their own conclusions.

There were limitations in conducting the research. The number of sources which covered delivery methods in an objective way was fairly limited. Additionally, the time allotted to research was limited as well as the funding which was nonexistent. A more thorough overview of the topics would have been produced had these limiting factors not been present.

In the following sections, the results and findings of the study will be shown. This will be followed by the discussions section which will provide an in-depth overview of the research and findings.

Chapter 4: Results and Discussion

The data, obtained via systematic literature review, shows that a definitive statement cannot be made with regard to the better method of delivery. As was hypothesized, optimal delivery method is situational and there are too many independent factors in each, individual case to make an umbrella statement. With each included source, a benefit or risk of vaginal or caesarean section is explored and each peer-reviewed paper examines the issue from a different perspective; be it ethical, medical or fiscal, there are many aspects that need to be taken into account when making this very important decision. For example, vaginal delivery is shown to have immunological benefits due to bacterial exposure. This idea is further supported in the study showing a correlation between caesarean section babies and increased incidence of asthma and allergies. On the contrary, vaginal delivery can be much riskier than caesarean in instances where the mother has a condition that can be passed on via natural delivery. It should be noted that further investigation in the form of healthcare provider interviews was planned. However, due to the COVID-19 pandemic, it was not possible to set up meetings with providers. The proposed interviews would serve to offer additional opinions with regard to delivery method and the process making a plan of care for expectant mothers.

As was discussed in a review of the results, it is not possible to make a definitive statement asserting that one method of delivery reigns supreme over the other. Each pregnancy is unique in the challenges and risk factors present and therefore, each case needs to be assessed on its own merit. In some cases, it is more beneficial to perform a c-section; but for some expectant mothers, c-sections can pose much higher risks than a vaginal delivery. The same argument can be made in favor of or against vaginal delivery.

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Going forward, it is apparent that more comparative research needs to be done. There is ample information about c-section deliveries and vaginal deliveries, respectively. However, there is a substantial dearth of consolidation of the findings. Additionally, the findings should also be written using accessible language. This is of the utmost importance as it will ensure that those without medical training will be able to better inform and advocate for themselves; pregnant women will also be able to participate in discourse with their providers about planning for the births of their babies.

I chose to research this specific topic for one reason: my past and my future. For the past four or so years, I have worked in a variety of positions within the healthcare field. This has given me first-hand experience about how anxious patients can be without a solid understanding of what is happening to them in a medical setting. Additionally, I am applying to physician assistant school after completing my undergraduate education. Working as a physician assistant is unique from other medical fields because of the opportunity to work in a wide variety of fields. As such, my research has also been relevant with regard to my future career. As women will always get pregnant, as a provider it is important to have an understanding of risks and benefits of vaginal delivery or c-sections.

On a more personal note, as a woman of reproductive age, it has always been important to me to thoroughly understand my options with regard to my health. This research has helped me reach the conclusion that it would not be appropriate for me to decide on a c-section or vaginal delivery at this time. For the past few years, I was always under the impression that I would get a c-section. My justifications ranged from convenience to potential epidural risks and beyond. I now know that when/if I become pregnant, it is important to have an open discussion with my obstetrician about which option is right for me. Even after receiving my physician

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assistant's education, I still will not know as much as a seasoned obstetrician. The scenario of open discourse between a patient and doctor is not only what I want for myself, but also what I want for all other women. Making necessary medical information available to women in a way they can understand will lead to better outcomes and more peace of mind for both provider and mother-to-be.

References:

- Keeler, E. B., & Brodie, M. (1993). Economic incentives in the choice between vaginal delivery and cesarean section. *The Milbank Quarterly*, 73(3), 364-404. <https://doi.org/10.2307/3350407>
- Landon, M. B., Hauth, J. C., Leveno, K. J., Spong, C. Y., Leindecker, S., Varner, M. W., . . . Gabbe, S. G. (2004). Maternal and perinatal outcomes associated with a trial of labor after prior cesarean delivery. *New England Journal of Medicine*, 351(25), 2581-2589. <https://doi.org/10.1056/NEJMoa040405>
- Liu, S., Liston, R. M., Joseph, K.S., Heaman, M., Sauve, R., & Kramer, M. S. (2007, February). *Maternal mortality and severe morbidity associated with low-risk planned cesarean delivery versus planned vaginal delivery at term*. Retrieved from <http://www.cmaj.ca/content/176/4/455.full>
- Ludwig, H., & Loeffler, F. E. (2001). Caesarean section on demand - an ethical dilemma. *Archive of Gynecology and Obstetrics*, 264(4), 169-190.
- McNamara, D. (2008). Some risks lower in planned c-section vs. vaginal delivery [PDF]. *OB GYN News*, 43(2).
- Nagpal, R., Tsuji, H., Takahashi, T., Kawashima, K., Nagata, S., Nomoto, K., & Yamashiro, Y. (2016). Sensitive quantitative analysis of the meconium bacterial microbiota in healthy term infants born vaginally or by cesarean section. *Frontiers in Microbiology*, 7, 1-9. <https://doi.org/10.3389/fmicb.2016.01997>
- Renz-Polster, H., David, M. R., Buist, A. S., Vollmer, W. M., O'Connor, E. A., Frazier, E. A., & Wall, M. A. (2005). Caesarean section delivery and the risk of allergic disorders in childhood. *Experimental Allergy*, 35(11). <https://doi.org/10.1111/j.1365-2222.2005.02356.x>