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Cesarean Section Versus Vaginal Delivery: Analysis of Risks and Benefits - A Brief Review

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ABSTRACT

The choice of delivery route remains one of the most debated topics in contemporary obstetrics. In Brazil, cesarean sections account for over 55% of births, exceeding the World Health Organization's recommended rate of 10–15%. Although indispensable in situations of maternal–fetal risk, elective cesarean without clinical indication is associated with higher rates of puerperal infection, hemorrhage, anesthetic complications, and prolonged hospitalization, as well as adverse outcomes in subsequent pregnancies—such as placenta accreta and uterine rupture. In contrast, vaginal delivery, by respecting the physiology of birth, promotes faster maternal recovery, less blood loss, effective neonatal respiratory adaptation, and earlier establishment of bonding and breastfeeding. However, sociocultural factors, fear of pain, hospital convenience, and professional influence contribute to the prevalence of elective cesareans. It is concluded that balancing surgical technology with obstetric physiology requires public policies focused on humanization, multidisciplinary training, and female empowerment to ensure safe and positive birth experiences. Systematic implementation of obstetric quality indicators such as the Robson classification and incorporation of continuing-education courses that reinforce evidence based practice are recommended. Strengthening primary care, expanding normal birth centers, and providing psychological support during pregnancy are additional key components.

Keywords:

Vaginal delivery, Cesarean section, Obstetric risks, Maternal health, Birth humanization.

Introduction

The birth of a child is simultaneously a biological, psychological, and sociocultural event, involving complex physiological processes that mediate the transition from intrauterine to extrauterine life, as well as historically constructed rites and meanings within each society. For millennia, vaginal delivery has been the predominant route, conducted at home by traditional midwives or with the participation of community women. With the advent of scientific obstetrics in the late nineteenth century, and the subsequent incorporation of anesthetics, antibiotics, and aseptic techniques, the cesarean gradually shifted from a last resort procedure to a safe alternative in life threatening maternal or fetal scenarios. Over the past five decades, however, the rate of cesareans has grown exponentially, especially in Latin American and middle income countries, where rates often exceed 50% [1]. In Brazil, data from the Live Birth Information System reported a cesarean rate of 57.7% in 2023, contrasting sharply with the 15% threshold recommended by the World Health Organization as the maximum compatible with population level benefits. This phenomenon raises questions about the appropriateness of surgical indications and the clinical, economic, and social repercussions of indiscriminate use [2].

Physiologically, vaginal delivery triggers the release of endogenous oxytocin and catecholamines, which enhance uterine contractility, reinforce postpartum hemostasis, and stimulate maternal caregiving behaviors. Population based studies demonstrate a lower incidence of postpartum hemorrhage, uterine infection, and thromboembolism among women who deliver vaginally, as well as faster functional recovery and shorter hospital stays [3].

For the neonate, passage through the birth canal promotes thoracic compression, expulsion of pulmonary fluid, and surfactant release, facilitating respiratory adaptation and reducing the need for ventilatory support [4]. Moreover, exposure to the maternal vaginal microbiota contributes to initial gut colonization, a factor implicated in immune maturation and modulation of chronic diseases later in life [5].

Cesarean section, by contrast, is a moderate sized surgical intervention that can prevent morbidity and mortality in clearly defined high risk scenarios—such as placenta previa, placental abruption, non converted breech presentation, proven cephalopelvic disproportion, failed induction, or

acute fetal distress [6]. In these cases, performing the surgery with adequate anesthesia and a prepared team is decisive for preserving maternal and fetal health. However, when undertaken without technical criteria, the abdominal route confers greater likelihood of complications such as surgical site infection, hemorrhage, bladder injury, pelvic adhesions, and thromboembolism and elevates the incidence of placental accreta and uterine rupture in future pregnancies [7].

Sociocultural, economic, and institutional factors strongly drive the rise in cesareans. Qualitative research indicates that fear of pain, belief in scheduling convenience, medico legal pressures, and productivity based payment policies influence preference for elective cesarean without clinical indication [8]. Concurrently, inadequate hospital infrastructure, lack of accessible labor analgesia, and gaps in professional training regarding humanized care limit effective support for vaginal birth. Overvaluation of technology and medicalization of the reproductive process reinforce social representations that equate surgical intervention with modernity and safety, even when evidence indicates otherwise [9].

Objectives

This narrative review aims to synthesize the scientific literature published between 2010 and 2024 on maternal and neonatal outcomes associated with vaginal delivery and cesarean section, and to identify the determinants influencing the choice of delivery route.

A literature review was conducted using the PubMed, SciELO, Google Scholar, and ScienceDirect databases.

Discussion

The synthesis of analyzed studies confirms that spontaneous vaginal delivery, when conducted in a safe environment, yields better immediate morbidity indicators and lower systemic impact than elective cesarean. A meta analysis by Kayem, et al [7], encompassing over 2 000 000 deliveries, showed that the incidence of puerperal infection is three times higher after cesarean. Additionally, Carvalho, et al. and Santos, et al. observed significantly increased hemorrhage and peripartum hysterectomy rates following cesarean. From the neonatal perspective, equally relevant differences emerge [2,10]. Labor promotes pulmonary fluid absorption and surfactant expression, reducing the incidence of transient tachypnea and respiratory distress syndrome [4]. Conversely, elective cesareans performed before 39 weeks increase the likelihood of neonatal intensive care unit admission, burdening health services and prolonging maternal–infant separation [1].

Continuous doula support has been shown to reduce labor duration and pharmacological analgesia needs, as well as to decrease cesarean rates by up to 22% [11]. These data support recommendations to integrate non pharmacological methods into labor care. However, cesarean remains indispensable in specific contexts. Placenta previa, placental abruption, and labor arrest due to cephalopelvic disproportion still rank among the leading causes of maternal mortality when not promptly addressed [6]. In such situations, the benefits of surgery outweigh its potential risks, underscoring the principle of proportional, individualized intervention. Strategies to reduce unnecessary cesareans include implementing active partograph protocols, periodic audit of surgical indications, and adoption of obstetric analgesia protocols combining non pharmacological methods with low dose neuroaxial blocks [12].

The WHO recommends that laboring women remain upright in a supportive environment, a measure that reduces pain and accelerates labor [1]. Institutionally, quality indicators—such as the cesarean rate—must be monitored. In Brazil, initiatives like the “Rede Cegonha” and normal birth centers have demonstrated effectiveness in promoting vaginal delivery and reducing perinatal morbidity and mortality; preliminary results indicate a 15% reduction in cesareans in units that implemented humanization protocols alongside multidisciplinary training [5].

Economically, cost effectiveness analyses consistently show that vaginal delivery is significantly less burdensome on the health system, requiring fewer hospitalization resources, medications, and postoperative monitoring [13].

Cesarean not only increases immediate costs by up to 80% but also entails indirect expenses related to reoperations for complications and extended maternity leave. These findings reinforce the need for financing policies that incentivize best obstetric practices and discourage unnecessary surgeries. Ethical legal debates are intensifying as courts balance a onse’s right to choose her delivery onse onsent the professional obligation to recommend the safest procedure. International guidelines agree that autonomy must be respected, but conditional upon clear, evidence based information [14]. Malpractice claims related to perinatal harm often cite communication failures and inadequate documentation as key factors, highlighting the importance of detailed informed onsente and standardized record keeping.

Conclusion

Consolidated evidence indicates that vaginal delivery should be the first choice when no clinical contraindications exist, as it offers lower maternal morbidity, better neonatal adaptation, and lower health system costs. Cesarean remains an essential intervention for reducing mortality in high risk scenarios, yet must be employed with strict criteria to avoid complications from its indiscriminate use. The disproportionate rise in cesareans does not correspond to equivalent perinatal outcome benefits and exposes mothers and newborns to avoidable risks. The contemporary challenge lies in balancing surgical technology availability with respect for physiological processes, ensuring decisions grounded in evidence and shared dialogue.

Public policies aimed at birth humanization, primary care strengthening, and continuous professional training emerge as pillars to reverse the current trend. Inclusion of doulas, expansion of birthing centers, and promotion of non pharmacological analgesia demonstrate positive impacts on maternal satisfaction and cesarean reduction. Multifactorial strategies are required: prenatal education emphasizing birth physiology, pain management, and potential complications; decision aids such as brochures and interactive apps to reduce elective cesarean requests by up to 18% [8]; evidence based clinical protocols with periodic surgical indication audits; and institutional incentives such as quality indicator–linked remuneration and best practice certification to sustain long term results.

Critical infrastructure elements labor analgesia access, supportive birthing spaces, freedom of maternal position, equipment like birthing balls and immersion tubs, and continuous companionship have proven effects on pain perception and cesarean avoidance [14]. Concurrently, ongoing training in instrumental delivery and intrapartum fetal monitoring equips professionals to manage complications without precipitous surgery. Regarding mental health, evidence points to higher rates of postpartum depression and delayed bonding among women undergoing non indicated cesareans. Psychological support programs and postpartum groups mitigate these effects, but primary prevention through vaginal delivery promotion remains paramount [10].

Finally, there is a pressing need for high quality research assessing multicomponent interventions across socioeconomic contexts, including pragmatic clinical trials and qualitative studies capturing women's experiences. Incorporating long term indicators such as metabolic health, neuropsychomotor development, and quality of life will broaden understanding of each delivery route's impacts. In sum, improving maternal and infant outcomes demands convergence of evidence based policy making, effective clinical governance, multidisciplinary training, and valorization of women's autonomy. The ideal mode of delivery must be chosen based on each woman's individual circumstances integrating physiological, emotional, and social dimensions and guided by transparent communication and best available evidence. A transformation of obstetric care models toward education, humanization, and professional empowerment is essential to deliver comprehensive, safe care throughout pregnancy and birth.

Conflict of Interest

None.

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