

Comparison of Vaginal Delivery vs. Cesarean Section on Postpartum Recovery

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Conflict of interest: Nil

Abstract:

Background: The mode of delivery significantly influences maternal postpartum recovery. Vaginal delivery is a physiological process, whereas cesarean section is a major surgical intervention associated with delayed recovery and higher complications. With increasing cesarean rates, evaluating their impact on postpartum outcomes is essential.

Objectives: To compare postpartum recovery outcomes between vaginal delivery and cesarean section in terms of pain, mobility, hospital stay, complications, breastfeeding, and return to routine activities.

Methods: A prospective comparative study was conducted on 120 postnatal women admitted to the Department of Obstetrics & Gynecology, Government Medical College, Churu, from July 2022 to July 2023. Participants were divided into vaginal delivery (n=60) and cesarean section (n=60) groups. Data on demographics, obstetric history, postpartum pain (VAS), and time to ambulation, hospital stay, complications, breastfeeding difficulties, and return to routine activities were collected and analyzed using SPSS. A p-value <0.05 was considered statistically significant.

Results: Women in the vaginal delivery group had significantly lower pain (VAS >4: 23.3% vs. 63.3%, p=0.0001), earlier ambulation (<24h: 80% vs. 36.7%, p=0.0001), shorter hospital stay (2.1 ± 0.5 vs. 4.6 ± 0.8 days, p=0.0001), and earlier return to routine activities (<7 days: 70% vs. 30%, p=0.0001) compared to the cesarean group. Difficulty in breastfeeding and postpartum complications were also higher in cesarean deliveries (33.3% vs. 13.3% and 46.7% vs. 15%, respectively, p<0.05). Demographic and obstetric characteristics were comparable between groups.

Conclusion: Vaginal delivery is associated with faster postpartum recovery and fewer complications. Cesarean sections should be performed based on medical indications to ensure optimal maternal health and recovery.

Keywords: Vaginal Delivery, Cesarean Section, Postpartum Recovery, Maternal Outcomes.

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Introduction

Childbirth is a significant physiological event that has lasting implications on maternal health.[1] The mode of delivery vaginal or cesarean has a direct influence on postpartum recovery, physical functioning, and psychological wellbeing.[2] Vaginal delivery is generally associated with quicker recovery and fewer postoperative complications, whereas cesarean section, being a major abdominal surgery, carries additional risks such as infection, delayed mobility, and longer hospital stay.[3]

In recent decades, cesarean section rates have increased worldwide, including in India.[4] While cesarean delivery is essential in certain obstetric situations to prevent maternal and fetal morbidity, its overuse has raised concerns regarding unnecessary surgical intervention and prolonged

postpartum recovery. [5,6]This study aims to compare vaginal delivery and cesarean section in terms of maternal recovery during the postpartum period.

Aim and Objectives

Aim: To compare postpartum recovery outcomes between vaginal delivery and cesarean section.

Objectives

1. To assess postoperative pain and mobility following vaginal delivery and cesarean section.
2. To compare hospital stay duration between the two modes of delivery.
3. To evaluate early postpartum complications in both groups.
4. To analyze overall maternal recovery during the postpartum period.

Materials and Methods

Study Design: Prospective comparative observational study.

Study Setting: Department of Obstetrics & Gynecology, Government Medical College, Churu.

Study Duration: July 2022 – July 2023.

Sample Size: 120 postnatal women.

Participants were divided into two groups:

- Group A: Vaginal Delivery (n = 60)
- Group B: Cesarean Section (n = 60)

Inclusion Criteria

- Women aged 18–40 years
- Singleton pregnancy
- Term gestation (≥ 37 weeks)
- Willing to give informed consent

Exclusion Criteria

- Severe medical disorders (cardiac disease, renal disease)
- Multiple pregnancy
- Postpartum hemorrhage
- Instrumental vaginal delivery

Data Collection: Data were collected using a predesigned proforma, including demographic details, obstetric history, postpartum pain, mobility status, complications, and hospital stay.

Ethical Clearance: Approval was obtained from the Institutional Ethics Committee prior to commencement of the study. Written informed consent was taken from all participants.

Statistical Analysis: Data were analyzed using SPSS software. Continuous variables were expressed as mean \pm SD, and categorical variables as percentages. A p-value < 0.05 was considered statistically significant.

Table 1: Sociodemographic and Obstetric Characteristics of Study Participants by Mode of Delivery

Variable	Category	Vaginal Delivery (n=60)	Cesarean Section (n=60)
Age (years)	18–24	21 (35.0%)	19 (31.7%)
	25–30	30 (50.0%)	32 (53.3%)
	>30	9 (15.0%)	9 (15.0%)
Residence	Rural	37 (61.7%)	35 (58.3%)
	Urban	23 (38.3%)	25 (41.7%)
Occupation	Housewife	49 (81.7%)	51 (85.0%)
	Employed	11 (18.3%)	9 (15.0%)
Gravida	G1	31 (51.7%)	34 (56.7%)
	G2	21 (35.0%)	18 (30.0%)
	$\geq G3$	8 (13.3%)	8 (13.3%)
Parity	Primiparous	33 (55.0%)	36 (60.0%)
	Multiparous	27 (45.0%)	24 (40.0%)
Antenatal Visits	<4 visits	14 (23.3%)	16 (26.7%)
	≥ 4 visits	46 (76.7%)	44 (73.3%)
Gestational Age (weeks)	37–38 weeks	22 (36.7%)	25 (41.7%)
	39–40 weeks	38 (63.3%)	35 (58.3%)

Table 2: Indications for Cesarean Section (n=60)

Indication	Number	Percentage
Previous cesarean section	18	30.0%
Fetal distress	15	25.0%
Breech presentation	11	18.3%
Failure to progress	10	16.7%
Oligohydramnios / Others	6	10.0%

Results

Out of 120 participants, the majority of women were aged 25–30 years in both the vaginal delivery (50.0%) and cesarean section groups (53.3%), followed by those aged 18–24 years (35.0% and 31.7%, respectively). Most women were housewives (81.7% vs. 85.0%) and resided in rural areas (61.7% vs. 58.3%). Primigravida women constituted 51.7% of the vaginal delivery group and

56.7% of the cesarean section group, while primiparous women accounted for 55.0% and 60.0%, respectively. The majority of women in both groups had ≥ 4 antenatal visits (76.7% vs. 73.3%) and delivered at 39–40 weeks of gestation (63.3% vs. 58.3%).

No significant differences were observed between the two groups with respect to sociodemographic or obstetric characteristics ($p > 0.05$). The most

common indication for cesarean section was previous cesarean delivery (30.0%), followed by fetal distress (25.0%), breech presentation (18.3%), and failure to progress (16.7%). Other indications, including oligohydramnios, accounted for 10.0% of cases.

Women who underwent vaginal delivery experienced significantly better postpartum

recovery outcomes compared to those who had cesarean section. Postpartum pain (VAS >4) was reported in 23.3% of the vaginal delivery group compared to 63.3% of the cesarean section group ($p < 0.05$). Early ambulation within 24 hours was observed in 80.0% of vaginal delivery cases, compared to 36.7% in the cesarean section group ($p < 0.05$).

Table 3: Postpartum Recovery Outcomes

Variable	Category	Vaginal Delivery (n=60)	Cesarean Section (n=60)	p-Value
Postpartum Pain	VAS >4	14 (23.3%)	38 (63.3%)	< 0.05
Early Ambulation	<24 hours	48 (80.0%)	22 (36.7%)	< 0.05
Hospital Stay (days)	Mean ± SD	2.1 ± 0.5	4.6 ± 0.8	< 0.05
Breastfeeding Difficulty	Present	8 (13.3%)	20 (33.3%)	< 0.05
Postpartum Complications	Present	9 (15.0%)	28 (46.7%)	< 0.05
Return to Routine Activity	<7 days	42 (70.0%)	18 (30.0%)	< 0.05
Postpartum Complications	Fever	4 (6.7%)	10 (16.7%)	> 0.05
	Wound infection	0	8 (13.3%)	< 0.05
	Urinary retention	2 (3.3%)	6 (10.0%)	> 0.05
	Postpartum hemorrhage	3 (5.0%)	4 (6.7%)	> 0.05
	No complications	51 (85.0%)	32 (53.3%)	< 0.05

The mean hospital stay was significantly shorter following vaginal delivery (2.1 ± 0.5 days) than cesarean section (4.6 ± 0.8 days, $p < 0.05$). Return to routine activity within 7 days was higher in the vaginal delivery group (70.0%) compared to the cesarean section group (30.0%, $p < 0.05$). Breastfeeding difficulties were also significantly lower in women who had vaginal delivery (13.3% vs. 33.3%, $p < 0.05$).

Overall postpartum complications were significantly more common following cesarean section (46.7%) compared to vaginal delivery (15.0%, $p < 0.05$). Wound infection was observed in 13.3% of cesarean section cases, while none were reported in the vaginal delivery group ($p < 0.05$). Fever (16.7% vs. 6.7%), urinary retention (10.0% vs. 3.3%), and postpartum hemorrhage (6.7% vs. 5.0%) were more frequent in the cesarean section group; however, these differences were not statistically significant ($p > 0.05$).

Discussion

This study finds that vaginal delivery is associated with faster postpartum recovery and fewer complications compared to cesarean section. Women in the vaginal delivery group experienced significantly lower postpartum pain (23.3% vs. 63.3%), earlier ambulation within 24 hours (80% vs. 36.7%), shorter hospital stays (2.1 ± 0.5 days vs. 4.6 ± 0.8 days), and quicker return to routine activities (70% vs. 30%). These findings are consistent with Kohler et al. (2018)[7], who reported higher postpartum quality of life among vaginal deliveries compared to cesarean, particularly during the first month postpartum, with

faster recovery of mobility, self-care, and usual activities. Similarly, Das et al. (2024)[8] found that recovery within five days was achieved by 75% of vaginal birth patients versus 30% of cesarean patients, with lower infection rates and less severe postpartum pain.

Cesarean section, as a major surgical procedure, is associated with increased postoperative pain, delayed mobility, higher risk of wound infection, and longer hospitalization. In our study, wound infection occurred in 13.3% of cesarean cases, while none were reported in vaginal deliveries. This aligns with Amin et al. (2023)[9] and Sharma et al. (2018)[10], who reported higher rates of wound infection, surgical injuries, and maternal morbidity following cesarean section [3,4]. Breastfeeding difficulties were also higher among cesarean deliveries (33.3% vs. 13.3%), supporting findings from Kohler et al. (2018)[7] and Das et al. (2024) [8] that postoperative pain and delayed mobility can impede early breastfeeding.

Overall postpartum complications were significantly higher following cesarean section reflecting trends observed in studies, where cesarean deliveries were associated with increased maternal morbidity, including wound infections, postpartum hemorrhage, and surgical complications. These results highlight that while cesarean section is vital for indicated cases such as previous cesarean, fetal distress, breech presentation, or failure to progress, unnecessary cesarean deliveries can lead to delayed maternal recovery, increased complications, and prolonged hospitalization. Emphasis should be placed on promoting vaginal delivery whenever medically feasible, combined

with appropriate patient counseling and antenatal care.

Strengths and Limitations

This prospective comparative study used well-matched groups and comprehensively assessed postpartum recovery outcomes; however, its single-center design, short-term follow-up, and exclusion of psychological factors can also make an impact which has not been ruled out and need further study to evaluate that.

Conclusion

Vaginal delivery offers faster postpartum recovery, reduced pain, earlier ambulation, shorter hospital stay, and fewer complications compared to cesarean section. Cesarean delivery should be reserved for clear obstetric indications to optimize maternal recovery and minimize postoperative morbidity. Efforts should focus on reducing unnecessary cesarean sections while ensuring maternal and fetal safety.

Reference:

1. Olza I, Leahy-Warren P, Benyamini Y, et al. Women's psychological experiences of physiological childbirth: a meta-synthesis. *BMJ Open*. 2018;8(10): e020347. doi:10.1136/bmjopen-2017-020347.
2. Katasani MR, Reddy S, Dondapati V. Evaluating the psychological and physical impacts of caesarean section versus vaginal delivery on mothers in postpartum recovery: a longitudinal study. *Int J Life Sci Biotechnol Pharma Res*. 2024;13(7):742. doi:10.69605/ijlbpr_13.7.2024.141.
3. Das B, Roy P, De R, Patra KK. Comparing vaginal birth vs cesarean section: short and long-term maternal health outcomes. *J Clin Clin Pract*. 2024;1091. doi:10.18683/jccp.2024.1091.
4. Pandey AK, Raushan MR, Gautam D, Neogi SB. Alarming trends of cesarean section—time to rethink evidence from a large-scale cross-sectional sample survey in India. *J Med Internet Res*. 2023;25: e41892. doi:10.2196/41892.
5. Lothian JA. Healthy birth practice #4: avoid interventions unless they are medically necessary. *J Perinat Educ*. 2014;23(4):198-206. doi:10.1891/1058-1243.23.4.198.
6. Frijmersum ZZ, van der Meij E, de Leeuw RA, Anema JR, Huirne JAF, Bakker PCAM. Assessment of recovery after childbirth: a cross-sectional study. *Eur J Obstet Gynecol Reprod Biol*. 2025; 314:114676. doi: 10.1016/j.ejogrb.2025.114676.
7. Kohler S, Annerstedt KS, Diwan V, et al. Postpartum quality of life in Indian women after vaginal birth and cesarean section: a pilot study using the EQ-5D-5L descriptive system. *BMC Pregnancy Childbirth*. 2018; 18:427. doi:10.1186/s12884-018-2038-0.
8. Das B, Roy P, De R, Patra KK. Comparing Vaginal Birth vs Cesarean Section: Short and Long-Term Maternal Health Outcomes. *J Clin Care Pharm*. 2024;10(2):57-65. doi:10.18683/jccp.2024.1091.
9. Amin F, Tali TA, Ara R, Amin H. Vaginal versus Caesarean Delivery: An Institutional Experience from North India. *Int J Community Med Public Health*. 2023; 10:2475. doi:10.18203/2394-6040.ijcmph20232475.
10. Sharma S, Dhakal I. Cesarean vs Vaginal Delivery: An Institutional Experience. *J Nepal Med Assoc*. 2018;56(209):535-539. PMID: 30058639.