Original Article

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Effect of 24 hours Hospital Discharge Versus 48 hours Discharge after a Planned Cesarean Delivery on Postpartum Outcomes; A Randomized Single-Blind Controlled Clinical Trial

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Author`s Contribution

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ABSTRACT

Objective: To determine the comparative effect of 24 hours discharge versus 48 hours discharge post cesarean section delivery on maternal satisfaction as well as post-partum complication.

Methodology: This randomized controlled trial study was conducted in the Department of Gynecology and Obstetrics at Recep Tayyip Erdogan Hospital, Muzaffargarh from December 2023 to May 2024. Women aged 18 to 35 years undergoing elective cesarean section with a singleton pregnancy, regardless of parity or gravidity, were included and were randomly assigned into two groups particularly as Group A included 106 women discharged 24 hours after cesarean section, while Group B included 106 women discharged 48 hours after cesarean section. Patients were assessed pain intensity, surgical site infection, puerperal sepsis, endometritis, readmission, delayed postpartum hemorrhage and satisfaction of the patients and at the 7th postoperative day. Relevant data were entered and analyzed using SPSS version 21.0.

Results: Mean age of patients was almost similar in both groups (27.16 ± 6.29 years in Group A and 26.63 ± 6.04 years in Group B). Patients in Group A showed significantly higher early mobility (92.5% vs. 77.4%, p = 0.002) and overall maternal satisfaction (86.8% very satisfied vs. 64.2% in Group B, p = 0.001). Moderate pain was more frequent in Group A (91.5%), whereas severe pain was higher in Group B (22.6%). Additionally, the postpartum complications were low and not statistically significant between the groups (p > 0.05).

Conclusion: Early discharge 24 hours proved to be safe and effective, resulting in higher early mobility, less severe pain and significantly greater maternal satisfaction compared to 48-hour discharge, without increasing postoperative complications; however, further multicenter studies are needed to validate these findings.

Keywords: C-section, Early discharge, Mobility, Complications, Satisfaction

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Introduction

Cesarean delivery is considered as one of the major surgeries in obstetrics and its related morbidities and complications are a key concern of health department. In 2021, the global cesarean section rate was 21.1% (8.2% in low-income and 24.2% in middle-income countries) and is projected to rise to 28.5% by 2030.[1,2] Cesarean delivery usually requires a hospital stay of 2–3 days, while women with an uncomplicated vaginal birth are often discharged within hours.[3] According to the American College of Obstetrics and Gynecology, the duration of hospital stay and timing of early discharge depend on several factors, including the baby's condition, initiation of breastfeeding, stable maternal vital signs, absence of infection, adequate pain control, return of bowel and bladder function, early mobilization, effective postoperative analgesia, and the mother's willingness to resume normal activities.[4,5]

Multiple studies have proven role of early discharge but some studies claim post-operative delivery time to be 72 hours comparative to vaginal birth for early detection of immediate post-partum complications. According to National Institute for Health and Care Excellence (NICE) guideline 2019, patients who are in recovery phase, are asymptomatic and who do not develop early postpartum complication must be discharge early.[6] However the enhanced recovery after Cesarean section is divided into three categories i.e. Pre-operative care, intrapartum care and immediate postoperative care. Factors affecting pre-operative care include decision time between surgeries and planning of procedure, pre-operative surgical site preparation with 4% chlorhexidine, introducing test dose of antibiotic and prophylactic dose 20-30mins before incision, spinal anesthesia as preferred mode of anesthesia for early mobilization with adequate preloading before incision. Methods to reduce intra and postoperative morbidity include proper antiseptic preparation, transverse abdominal incision, selective closure techniques, effective analgesia, thromboprophylaxis, early feeding, and mobilization, all of which minimize pain, speed recovery, and reduce complications.[7]

However as it is recommended that the women who are stable, afebrile, and free of complications may be discharged early (after 24 hours) with home follow-up, as this does not increase readmission for mother or baby. However, other studies warn that the shorter stays may limit the opportunity to detect or manage complications, potentially raising morbidity and mortality.[4,8,9] As a significant number of women are discharged before receiving adequate postnatal care, highlighting the need for skilled birth attendants, essential services, and sufficient hospital stay to ensure full benefit from care.[9] On the other hand according to a recent study the early discharge at 24–28 hours after cesarean delivery did not increase maternal readmission rates, but was associated with higher rates of neonatal readmission and jaundice compared to later discharge.[10]

Subsequently, strong evidence regarding the ideal duration of hospital stay after cesarean delivery is specifically limited at the local level. However the current international evidence suggests that early discharge does not increase adverse maternal or neonatal outcomes and may enhance maternal psychological well-being while reducing hospital costs.[10,11] Hence, this study is conducted to assess optimal discharge practices in Pakistan to ensure maternal and neonatal safety and improve resource utilization, which helps the clinicians and policymakers to develop the cost-effective strategies and improve the postnatal care services at local level.

Methodology

A randomized controlled trial study was conducted in the Department of Gynecology and Obstetrics at Recep Tayyip Erdogan Hospital, Muzaffargarh. Study was done during a period of six months from December 2023 to May 2024 after taking ethical approval Ref no: IHHN_IRB_2023_08_018. The sample size was calculated using the OpenEpi calculator for randomized controlled trials, based on mean and standard deviation, with a 95% confidence interval and 80% power of study. The required sample size was 106 participants in each group, with an additional 10% included to account for potential withdrawal or loss to follow-up, resulting in a final total of 212 participants. All women aged 18 to 35 years undergoing elective cesarean section with a singleton pregnancy, regardless of parity or gravidity, were included. All women with comorbidities such as diabetes, hypertension, heart disease, pulmonary or hematological disorders, or immune deficiency, as well as those with complications like intrapartum or postpartum hemorrhage, requiring postoperative blood transfusion, intolerance to diet, fever, use of intravenous medications for other medical conditions, women who were not followed up on the 7th postoperative or those unwilling to participate in the study, were excluded. All the women were randomly assigned into two groups using single-blinded simple randomization. Group A included 106 women discharged 24 hours after cesarean section, while Group B included 106 women discharged 48 hours after cesarean section. After obtaining informed consent, all women received a single preoperative intravenous dose of 2 g cefazolin, followed by ceftriaxone 2 g IV for 24 hours in both groups. Pain control was managed with pethidine during hospital stay.

At discharge, patients were prescribed oral iron and analgesics for seven days and provided with a leaflet on wound care. All women were assessed for primary outcomes pain intensity, surgical site infection, puerperal sepsis, endometritis, readmission in hospital, delayed postpartum hemorrhage and satisfaction of the patients and at the 7th postoperative day. Pain and satisfaction were assessed at discharge and one week post-discharge using the Wong-Baker Faces Scale (0, 2, 4, 6, 8, 10). Patient satisfaction was categorized into three levels: dissatisfied (0–3), satisfied (4–7), and highly satisfied (8–10). Postoperative complications were assessed on the

seventh day during stitch removal. Surgical site infection was identified by pus, discharge, erythema, fever, or wound dehiscence, while endometritis was diagnosed based on abdominal pain and abnormal vaginal discharge. All collected data were entered and analyzed using SPSS version 21.0.

Results

Overall 212 patients were included after equally divided into two groups with mean age of patients almost similar in both groups (27.16 ± 6.29 years in Group A and 26.63 ± 6.04 years in Group B, overall 26.9 ± 6.16 years, p = 0.527. Majority of patients were multiparous (75.9%), while 24.1% were primiparous p = 0.872. History of previous cesarean section was present in 64.6% of patients. However, the majority of women had normal BMI in both study groups p = 0.656, as shown in table I.

Table I: Demographic and clinical characteristics of the patients. (n=212)

Variable		STUDY GROUP			p-value
		Group A	Group B	Total	
Mean age (years)		27.16±6.29	26.63±6.04	26.9±6.16	0.527
Parity	Primary	25	26	51	0.872
		23.6%	24.5%	24.1%	
	Multipara	81	80	161	
		76.4%	75.5%	75.9%	
Previous C-section	Yes	69	68	137	0.886
		65.1%	64.2%	64.6%	
	No	37	38	75	
		34.9%	35.8%	35.4%	
BMI (kg/m^2)	Normal	65	70	135	0.656
		61.3%	66.0%	63.7%	
	Overweight	38	32	70	
		35.8%	30.2%	33.0%	
	Obese	3	4	7	
		2.8%	3.8%	3.3%	

Group: A = 24 hours, Group: B = 48 hours

The early mobility rate was significantly higher in the 24-hour group (92.5%) compared to the 48-hour group (77.4%) (p = 0.002). Regarding complications, moderate pain was more frequent in the 24-hour group (91.5% vs. 77.4%), whereas severe pain was more common in the 48-hour group (22.6% vs. 8.5%) (p = 0.004). Surgical site infection occurred in 1.9% of Group A and 3.8% of Group B (p = 0.407), while secondary PPH was observed in 2.8% of Group A and 3.8% of Group B (p = 0.701). Endometritis was slightly higher in the 24-hour group (5.7%) compared to the 48-hour group (0.9%) (p = 0.065), as presented in table II.

In the 24-hour group (Group A), the majority of patients were very satisfied (86.8%), while 8.5% were satisfied and only 4.7% were not satisfied. In contrast, in the 48-hour group (Group B), 64.2% were very satisfied, 30.2% were satisfied, and 5.7% were not satisfied. Overall, the difference in satisfaction levels between the groups was statistically significant (p = 0.001). Table III

Table II: Mobility and post-operative complications. (n=212)

Variable		Study group		Total	p-value
		Group A	Group B		
Mobility	Early	98	82	180	0.002
		92.5%	77.4%	84.9%	
	Late	8	24	32	
		7.5%	22.6%	15.1%	
Pain	Moderate	97	82	179	0.004
		91.5%	77.4%	84.4%	
	Severe	9	24	33	
		8.5%	22.6%	15.6%	
Surgical site infection	Yes	2	4	6	0.407
		1.9%	3.8%	2.8%	
	No	104	102	206	
		98.1%	96.2%	97.2%	
Endometritis	Yes	6	1	7	0.055
		5.7%	0.9%	3.3%	
	No	100	105	205	
		94.3%	99.1%	96.7%	
Secondary PPH	Yes	3	4	7	0.701
		2.8%	3.8%	3.3%	
	No	103	102	205	
		97.2%	96.2%	96.7%	

Group: A = 24 hours, Group: B = 48 hours

Table III: Satisfaction level among patients of both groups. (n=212)

Variables		Study group		Total	p-value
		A	B		
Satisfaction	**Not satisfied**	5	6	11	0.001
		4.7%	5.7%	5.2%	
	Satisfied	9	32	41	
		8.5%	30.2%	19.3%	
	very satisfied	92	68	160	
		86.8%	64.2%	75.5%	
Total		106	106	212	
		100.0%	100.0%	100.0%	

Group: A = 24 hours, Group: B = 48 hours

Discussion

C-section is one of the most frequently performed surgeries in women worldwide, carries potentially serious maternal and neonatal complications, along with ongoing controversy regarding early discharge. This study compared the effects of 24-hour versus 48-hour discharge after cesarean section on maternal satisfaction and postpartum complications in 212 women equally divided into two groups, with similar mean ages (26.9 ± 6.16 years, p=0.527), mostly multiparous (75.9%), 64.6% women with prior cesarean section, and the majority being normal BMI in both groups. Consistently, Ghaffari P et al[4] found comparable mean ages in both groups (29.49 ± 4.07 vs. 29.46 ± 3.82) and no significant difference in BMI between groups. In aligns to this study, Damtie et al[12] found that most patients were multiparous (71.1%) with a previous C-section, though their mean age

was higher (30.28 ± 0.43 years) and a greater proportion had normal BMI (81.6% vs. 18.2% overweight). On the other hand, Chaarani et al[10] concluded that patients with uncomplicated cesarean can be discharged early at 24–28 hours without increased readmission when appropriate follow-up is arranged. However, some differences in demographic variables may be due to variations in sample size and selection criteria across the studies.

In this study, moderate pain was more frequent in the 24-hour group (91.5% vs. 77.4%), whereas severe pain was more common in the 48-hour group (22.6% vs. 8.5%) (p = 0.004). In contrast, Ghaffari et al[4] reported insignificantly higher mean pain scores in the 24-hour group (1.43 ± 0.11) compared to the 48-hour group (1.23 ± 0.10, p = 0.17). Consistently, Kruse et al[13] found no significant difference in pain between early discharge at 28 hours and 48 hours when combined with planned follow-up and a meta-analysis by Chaarani et al[10] also showed small or non-significant differences. Few inconsistencies in findings may be explained by variations in study design, patient selection, and follow-up strategies.

In the present study, Group A (24-hour discharge) showed comparatively better outcomes, with lower rates of surgical site infection (1.9% versus 3.8%, p=0.407) and secondary PPH (2.8% versus. 3.8%, p=0.701), while endometritis was slightly higher (5.7% vs. 0.9%, p=0.065), though the findings were statistically insignificant. The findings were supported by the study of Ghaffari et al[4] where women discharged after 24 hours had a slightly higher rate of surgical site infection at the 1st week (0.7% vs. 0.0%), while at the 6th week, group B (48-hour discharge) showed a slightly higher rate (2.0% vs. 1.4%), with no cases of endometritis reported in either group at both follow-ups; however, these differences were statistically insignificant (p>0.05). Elmaraghy AM et al[14] also observed that the discharging women 24 hours after a cesarean section is equally safe and effective compared to the conventional 48-hour discharge.

Inconsistently Kumar P et al[15] concluded that the early discharge is negatively associated with maternal health outcomes, highlighting the need to ensure an adequate length of stay (LOS) after childbirth to improve care and program effectiveness. However, in aligns to this study Tan et al[14] reported no statistically significant differences in maternal outcomes between day 1 and day 2 discharge following planned C-section. Almost consistent findings, including those of this study, suggest that early discharge after C-section does not increase maternal or fetal complications.

Additionally, in this study, patient satisfaction was significantly higher in the 24-hour group (86.8% very satisfied) compared to the 48-hour group (64.2% very satisfied) (p = 0.001). the consistent findings were reported by Onu et al[17] who observed significantly greater maternal satisfaction in women discharged on day 2 compared to those discharged on day 5–7 after uncomplicated elective C-sections (p < 0.01). In contrast, Ghaffari et al[4] found no statistically significant difference in maternal satisfaction between 24-hour and 48-hour discharge groups, both on the 1st day and at the 6th week post-discharge (p > 0.05). Consistent with our results, Umbeli et al[18] reported significantly higher satisfaction in women discharged earlier (85.6%) compared to those with longer hospital stays (37.2%) after elective C-sections (p < 0.01). Though some variations across studies may be explained by differences in patient populations, healthcare settings, and management policies, but overall evidence favors early discharge as a safe practice associated with improved maternal satisfaction.

Overall studies including this support the safety and higher maternal satisfaction associated with 24-hour discharge after cesarean delivery. However, based on the limited local evidence and the few limitations of this study, including a small sample size, single-center design, relatively short follow-up, and potential selection bias, along with the resource and access challenges of our country's health system, the safety of early discharge may be affected. Hence, it is recommended that early discharge be implemented only under strict protocol criteria, including a stable mother and newborn, reliable home support, clear warning signs, and scheduled follow-up, supported by trained birth attendants, timely home visits, telephonic communication, and standardized hospital policies with discharge checklists. Additionally, further multicenter, adequately powered trials and implementation research in Pakistan are recommended to generate robust, generalizable evidence to inform national guidelines.

Conclusion

The early discharge at 24 hours following a planned cesarean delivery was associated with favorable outcomes compared to discharge at 48 hours, including higher rates of early mobility, less severe pain, lower incidence of surgical site infection and significantly

higher patient satisfaction. Overall, these findings suggest that discharge at 24 hours after cesarean section is a safe and effective practice that promotes earlier recovery, reduces severe pain, and enhances maternal satisfaction without increasing postoperative complications. Based on few limitations of the study and health infrastructure of our country further multicenter, adequately powered trials and implementation research in Pakistan are recommended.

References

1. Ssennuni E, Bongomin F, Akuma E, Lukujja K, Kule H, Opiro K, Awor S, Arwinyo B, Ojara S, Opee J, Jackline A. Caesarean section rates in a tertiary teaching hospital in northern Uganda: a retrospective analysis using the Robson ten group classification system. BMC Pregnancy Childbirth. 2024 Jul 20;24(1):489. https://doi.org/10.1186/s12884-024-06689-4
2. Ana Pilar B, Jiangfeng Y, Ann-Beth M, João Paulo S, Jun Z. Trends and projections of caesarean section rates: global and regional estimates. BMJ Glob Health. 2021;6(6):e005671. https://doi.org/10.1136/bmjgh-2021-005671
3. Ghaffari P, Vanda R, Aramesh S, Jamali L, Bazarganipour F, Ghatee MA. Hospital discharge on the first compared with the second day after a planned cesarean delivery had equivalent maternal postpartum outcomes: a randomized single-blind controlled clinical trial. BMC Pregnancy Childbirth. 2021 Jun 30;21(1):466. https://doi.org/10.1186/s12884-021-03873-8
4. World Health Organization. WHO recommendations on postnatal care of the mother and newborn. Geneva: World Health Organization; 2013.
5. Rini PN, Tan CW. Post-C-section pain management with the enhanced recovery after surgery and multimodal analgesia methods: a case series. J Anesthesiol Clin Res. 2023;4(1):381-7. https://doi.org/10.37275/jacr.v4i2.266
6. Kintu A, Abdulla S, Lubikire A, Nabukenya MT, Igaga E, Bulamba F, et al. Postoperative pain after cesarean section: assessment and management in a tertiary hospital in a low-income country. BMC Health Serv Res. 2019 Dec;19(1):3911. https://doi.org/10.1186/s12913-019-3911-x
7. Malkin JD, Garber S, Broder MS, Keeler E. Infant mortality and early postpartum discharge. Obstet Gynecol. 2000 Aug;96(2):183-8. https://doi.org/10.1097/00006250-200008000-00006
8. Campbell OM, Cegolon L, Macleod D, Benova L. Length of stay after childbirth in 92 countries and associated factors in 30 low- and middle-income countries: compilation of reported data and a cross-sectional analysis from nationally representative surveys. PLoS Med. 2016 Mar 8;13(3):e1001972. https://doi.org/10.1371/journal.pmed.1001972
9. Chaarani N, Sorrenti S, Sasanelli A, Di Mascio D, Berghella V. Early hospital discharge after cesarean delivery: a systematic review and meta-analysis of randomized controlled trials. Am J Obstet Gynecol MFM. 2024 Dec;6(12):101524. https://doi.org/10.1016/j.ajogmf.2024.101524
10. Zewdie S, Kefale B, Yalew M, Adane B, Kassa AA. Length of hospital stays after caesarean section delivery and associated factors in Northeast Ethiopia: a cross-sectional study. BMJ Open. 2025 Feb;15(2):e083357. https://doi.org/10.1136/bmjopen-2023-083357
11. Damtie DG, Workie MM, Zeleke ME, Chekol WB. Health related quality of life and associated factors after cesarean delivery among postpartum mothers in Gondar, Ethiopia: a cross-sectional study. BMC Pregnancy Childbirth. 2025 Mar 27;25(1):355. https://doi.org/10.1186/s12884-025-07478-3
12. Kruse AR, Lauszus FF, Forman A, Kesmodel US, Rugaard MB, Knudsen RK, et al. Effect of early discharge after planned cesarean section on recovery and parental sense of security: a randomized clinical trial. Acta Obstet Gynecol Scand. 2021 May;100(5):955-63. https://doi.org/10.1111/aogs.14041
13. Elmaraghy AM, Yehia RE, Naguib AH. The effect of early versus traditional hospital discharge on activities of daily living for women undergoing elective cesarean section: an observational cohort study. Open J Obstet Gynecol. 2023 Mar 2;13(3):642-53. https://doi.org/10.4236/ojog.2023.133054
14. Kumar P, Dhillon P. Length of stay after childbirth in India: a comparative study of public and private health institutions. BMC Pregnancy Childbirth. 2020 Mar 23;20(1):181. https://doi.org/10.1186/s12884-020-2839-9
15. Tan PC, Norazilah MJ, Omar SZ. Hospital discharge on the first compared with the second day after a planned cesarean delivery: a randomized controlled trial. Obstet Gynecol. 2012 Dec;120(6):1273-82. https://doi.org/10.1097/AOG.0b013e3182723a95
16. Onu FA, Anikwe CC, Mamah JE, Anozie OB, Umeononihu OS, Okorochukwu BC, et al. Maternal and neonatal outcome following day two versus day five or seven discharge after an uncomplicated elective caesarean section: a randomized control study. Biomed Res Int. 2021;2021:9008772. https://doi.org/10.1155/2021/9008772
17. Umbeli T, Elwahab RA, Ismail S, Khadeja S, Basher NF. Assessment of discharge after 24 hours following elective caesarean section in Omdurman Maternity Hospital, Sudan, 2010. Sudan J Med Sci. 2012;7(4):215-8.