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Original Article

Comparison Between 12 hours and 24 hours Hospital Stay Regarding Post-Operative Complications Following Elective Cesarean Section

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ABSTRACT

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Background: Cesarean section [CS] delivery is the commonest surgical procedure in obstetric practice. Its incidence witnessed steady increase over the past decade and this is expected to continued. Early discharge after elective non-complicated CS gained acceptance but without consensus.

Aim of the work: This study aimed to compare between 12 and 24 hours' hospital stay after elective CS regarding post-operative complications.

Patients and methods: This study included 200 women scheduled for elective CS and randomized to early [after 12 hours] and delayed [after 24 hours] hospital discharge. They preoperative assessment was performed systematically in the form of clinical, laboratory and imaging evaluation. Then, intraoperative and postoperative data were collected and compared.

Results: The women age ranged between 19 and 34 years. All had normal body mass index and both groups are comparable regarding personal and obstetrics data. No significant differences were recorded regarding operative time, postoperative complications and pain. However, the satisfaction rate was significantly higher among group A [early discharge] than the group B [late discharge] [89.0% vs 75.0%, respectively].

Conclusion: Early discharge [12 hours] after elective CS is comparable to the delayed discharge [24 hours] except for higher patient satisfaction [89.0% vs 75.0%]. Thus, we recommended early discharge after elective CS.

Keywords: Elective Cesarean Section; Postoperative Complications; Hospital Stay; Satisfaction.



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INTRODUCTION

Caesarean section [CS] is the commonest surgery in obstetrical practice. Its rates continue to increase worldwide. About 21.1% of women give birth by CS. The average incidence was 42.8% in Latin America and the Caribbean. It is expected that; the incidence will be increased to 28.5% by 2030 worldwide [1].

The economic burden of hospitalization led to gradual decrease of in the duration of hospitalization in many countries, with early discharge [2].

Recently, early discharge after uncomplicated CS become a common practice. This attributed to the desire to reduce cost and use the healthcare resources in an efficient way [3].

Early discharge following CS has been assessed in a number of studies. Accordingly, hospital stays after CS typically last 3-5 days longer than after vaginal deliveries [typically last 1-2 days]. However, the National Institute for Health and Care Excellence [NICE] suggested that in women recovering well with no need for further intervention for the women or her baby, early discharge [after 24 hours] is recommended with continued observation at home. However, short duration of hospital stay does not permit adequate time for diagnosis or treatment of emerged problems. This could be associated with an increased risk of mortality and morbidity [4,5].

Fasubaa *et al.* [6] noticed that early discharge might be associated with significant reduction of some psychological and financial issues related to surgery, and highly recommended early discharge after CS.

In addition, Umbeli *et al.* and other researchers assessed patient satisfaction and mortality after elective CS with early discharge [within 24 hours]. They reported that the shorter stay is associated with higher patient satisfaction with no significant rise in maternal complications or mortality than the control group [7,8]. However, the topic of early discharge is not yet accepted by all practitioners and further research is recommended

THE AIM OF THE WORK

This study aimed to compare between 12 hrs. and 24 hrs. hospital stay regarding post-operative complications following elective cesarean section.

PATIENTS AND METHODS

This study included 200 women with single live pregnancy who were submitted to elective CS. All were selected from the Department of Obstetrics and Gynecology, Faculty of Medicine, Al-Azhar University Hospital [New Damietta]. The study was complicated between the first of April 2023 and continued to the end of September 2024 [where the sample size was completed].

The inclusion criteria were patient consent, patient under 35 years of age, planned CS, single fetus, full term [37 weeks of gestations or more] and normal maternal body mass index before pregnancy.

The exclusion criteria included the presence of any chronic maternal comorbid conditions [e.g., diabetes mellitus, cardio-vascular disease, immune-deficiency, hypertension, or respiratory diseases]. In addition, patients who had intraoperative or direct postoperative complications [e.g., need for blood transfusion, fetal anomaly, or postpartum fever] were excluded.

Ethical aspects: the study protocol was submitted for assessment and approved by Institutional Review Board [Faculty of Medicine Al-Azhar University, Damietta]. The approval code was DMF-IRB 00012367-23-03-007. Each woman and her husband signed an informed consent for participation in the study. Their privacy was guaranteed and data used only for the purpose of this study.

Sample size calculation: The EpiInfo online calculator was used to estimate the sample size, taking into consideration the following: two sided significant level [1-alpha] equal 95; Power [1-beta, % chance of detecting] of 90%, and prevalence of CS of 21.0%. Accordingly, each group must be formed of 91 subjects and with 10% drop out rate, we included 100 subject in each group.

Data collection: Patients were distributed into two groups using simple random method according to their entry ticket number. Odd ticket numbers were included in group A and even ticket numbers were included in group B.

Women in Group A were discharged twelve-hours after CS. But, women in Group B discharged after twenty-four-hours after CS, provided that, their condition permitted their discharge, with instructions to comeback when any complication was developed.

All women were evaluated by full history taking, clinical general and local examinations and laboratory investigations in a standard manner. Investigations included routine laboratory work-up according to the policy of the hospital [e.g., CBC, urine analysis, blood glucose test, INR] and a pelvi-abdominal ultrasound to assess fetal biometry, presentation & position, placental grading and amniotic fluid.

The patient was admitted for elective cesarean section. All had spinal anesthesia, and received the same medications. A checklist was utilized to collect CS-related and demographic data [age, body mass index [BMI], smoking status, prior C/S, gravidity, fetal age, and duration of CS].

The study evaluated consequences of CS such as patient satisfaction with discharge time, separation of the incision, surgical site infection [SSI], endometritis, urinary tract infection [UTI], gastrointestinal [GIT] complications, rehospitalization, delayed postpartum hemorrhage [PPH], and the degree of pain in 1 and 6 weeks after discharge.

The Wong-Baker faces scale was used to assess the severity of pain and pain as a trigger for satisfaction, as reported by Thrane *et al.* [9].

Surgical site infection was defined as partial or complete incision dehiscence, with purulent or serous discharge with induration, warmth/erythema, and pain, within 30 days after surgery. Separation of incision was recorded if at least 1cm skin incision defect was present. Endometritis was confirmed by temperature $\geq 38^{\circ}\text{C}$ on two different times; clinical diagnosis [≥ 1 clinical finding] of unusual uterine tenderness on a bimanual exam without additional clinical or laboratory results indicating another source of infection, at the same time foul-smelling discharge, tachycardia, and leukocytosis. Urinary tract infection was defined as more than 10^5 bacteria per mL of urine. The GIT complications included nausea, constipation, distention, and abdominal pain. PPH was defined as a significant blood loss that happens between 24 hours and 12 weeks after CS. The requirement for blood transfusions or need for further surgical intervention was used to determine the severity. Therefore, in our study, we applied the requirement for surgical procedure or blood transfusion criteria in the evaluating the severity of PPH.

Data Analysis: Statistical analysis was performed by SPSS statistical software, version 25 [IBM, Chicago, Illinois, USA]. The normality of the

data was tested by the Kolmogorov-Smirnov test. Qualitative data was presented as numbers and percentages and was compared by the Chi-square test. Quantitative data was presented as mean and standard deviations and was compared by the independent t-test. The p-value was considered significant at the level of <0.05.

RESULTS

The women age ranged between 19 and 34 years, while BMI ranged between 18 and 25 Kg/m², with no significant differences between groups A and B. In addition, no one of studied women was a smoker; the gravidity ranged between 1 to 6, while previous CS ranged between 0 and 4, with

no significant difference between groups A and B [Table 1].

In group A, the incidence of surgical site infection was 13% decreased significantly to 0% at 6 weeks' post-operative. In addition, we reported 4 cases of separated incision postoperative which were completely cured at 6 weeks postoperative and 1 case with abdominal constipation and distention for one day which was treated by medications at home [Table 2]. The postoperative pain score ranged between 4 to 8, with no significant difference between study groups. On the other side, the satisfaction rate was significantly higher among group A than the group B [89.0% vs 75.0%, respectively] [Table 2].

Table [1]: Demographic and clinical data of the studied participants

Variable	Measures	Total	Group A [n=100]	Group B [n=100]	P value
Age [years]	Mean±SD	26.7±4.6	26.7±4.6	26.8±4.6	0.866
	Min. – Max.	19.0 – 34.0	19.0- 34.0	19.0- 34.0	
BMI [Kg/m ²]	Mean±SD	23.4 ± 1.7	23.4 ± 1.3	23.4 ± 2.0	0.90
	Min. – Max.	18 – 25	20.3 – 25	18 – 25	
Smoking	[n,%]	0 [0.0%]	0 [0.0%]	0 [0.0%]	-
Gravidity	Mean±SD	3.35 ± 1	3.42 ± 1.15	3.27 ± 0.9	0.3
	Min. – Max.	1 – 6	2 – 6	1 – 6	
Previous CS	Mean±SD	1.91±0.98	2.0 ± 1.0	1.8 ± 1.0	0.114
	Min. – Max.	0 – 4	0 – 4	0 – 4	

Table [2]: Operative and postoperative data among study groups

Variable	Measures	Total	Group A [n=100]	Group B [n=100]	P value
Gestational age [weeks]	Mean±SD	38.3 ± 0.8	38.3 ± 0.8	38.2 ± 0.7	0.359
	Min. – Max.	37 – 40	37 – 40	37 – 40	
Duration of CS [minute]	Mean±SD	53.9 ± 6.7	54.6 ± 5.9	53.1 ± 7.4	0.115
	Min. – Max.	40 – 67	40 – 67	40 – 67	
Postoperative complications [n,%]	SSI	25[12.5%]	13[13.0%]	12[12.0%]	0.8
	Endometritis	0 [0.0%]	0 [0.0%]	0 [0.0%]	-
	UTI	0 [0.0%]	0 [0.0%]	0 [0.0%]	-
	Wound dehiscence	8 [4.0%]	4 [4.0%]	4 [4.0%]	1.00
	GIT-comp	1 [0.5%]	1 [1.0%]	0 [0.0%]	0.92
	Re-hospitalization	0 [0.0%]	0 [0.0%]	0 [0.0%]	-
	Delayed PPH	0 [0.0%]	0 [0.0%]	0 [0.0%]	-
Postoperative Pain score	Mean±SD	5.31±1.32	5.18 ±1.27	5.44 ± 1.37	0.181
	Min. – Max.	4 – 8	4 – 8	4 – 8	
Patient satisfaction	Yes [n,%]	164 [82.0%]	89 [89.0%]	75 [75.0%]	<0.05*

DISCUSSION

The CS and its consequences are important for the scientific medical community due to its higher incidence, as the commonest obstetrical surgery. Their incidence showed progressive continuous increase worldwide. It is associated with significant reduction of maternal-fetal mortality when used for medically indicated conditions. However, the increased incidence of CS was associated with a longer duration of hospital stay, with significant public concern [10]. In the US for example, one third of women delivered by CS and admitted for 3 – 4 days after surgery [8]. When compared to normal vaginal delivery [NVD], CS is associated with a higher risk of maternal problems [e.g., infections and longer hospitalization]. The maternal morbidity is also increased with

repeated CS [11]. However, many women strongly desire the early discharge after elective CS, especially when their care needs were met. The CS as one-day surgery [discharge at the same day of CS] continues to rise, irrespective of the absence of consensus. A progressive nationwide reduction of hospital stay duration after elective CS was observed from 2004 to 2016 with significant regional variations [11,12].

The American College of midwifery and Gynecology recommended early discharge if the newborn is ready to go home and the mothers adhere to basic needs [e.g., normal blood pressure, no infection, and good pain control] [8], which was also recommended by NICE guidelines to reduce costs [2,13,14].

The current work designed to examine the value of early discharge after early elective CS. No significant differences were recorded between study groups [those discharge 12 and 24 hours after elective CS]. However, the early discharge was associated with significant increase of patient satisfaction [89% vs 75% for those discharged 12 and 24 hours after surgery]. The results of the current work are in line with **Bayoumi et al.** [15] who aimed to assess the value of early discharge after elective CS [after 24 hours' vs 72 hours] regarding maternal and neonatal complications. They found that no significant differences were recorded for patient demographics. In addition, **Tan et al.** [16] aimed to compare the outcome between women discharged from the hospital on post-CS day 1 or day 2. They reported no significant differences were recorded regarding patient age. As well, **Umbeli et al.** [7] who revealed that there were no differences between controls and study groups in their age, BMI, or smoking status.

In line with the results of the current work, **Bayoumi et al.** [15] found no significant differences between groups regarding gestational age at delivery, past history and postoperative complications. They reported that, there was abdominal pain in 7.1%, chest infection in 1.8 %, pulmonary embolism [PE] in 3.6%, deep venous thrombosis [DVT] in 5.4%, Intestinal ileus in 8.9%, postpartum hemorrhage, pulmonary embolism [PE] in 10.7% and wound infection in 62.5%. Comparable results were reported by **Tan and his colleges** [16]. As well, **Umbeli et al.** [7] revealed that there were no differences between controls and study groups in their parity. Moreover, **Ghaffari et al.** [8] demonstrated that CS duration, GA, gravity, previous CS and postoperative complications were comparable between groups. They reported that, no significant differences were recorded for surgical site infections, incision separation, endometritis, UTI, intestinal problems, readmissions, and secondary PPH after surgery or discharge. In addition, pain scores on the day of discharge were comparable between groups. **Fasubaa et al.** [6] aimed to find out the value of shorter hospital stay after CS. They recorded no significant differences for the rate of wound infection rates [6% vs 10% for the shorter and prolonged hospitalization respectively]. However, the recorded low incidence of depression, neonatal sepsis, hospital bill and higher satisfaction in the early home discharge group. They concluded that, reduction of the cost and psychological stress in early discharge group make elective CS more acceptable.

Conclusion: Early discharge [12 hours] after elective CS is comparable to the delayed discharge [24 hours] except for higher patient satisfaction [89.0% vs 75.0%]. Thus, we recommended early discharge after elective CS provided that, both mother and her fetus had no problems and received proper medical care and advice. However, results need further validation in multi-centric studies due to small sample size [a limiting step of the current work] irrespective of sample size justification.

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