

# Characteristics of post cesarean section pain

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## ABSTRACT

**Aim:** The aim of this study was to analyze the characteristics of postoperative pain in patients undergoing cesarean delivery for elective or urgent reasons.

**Material and Method:** This study is an observational descriptive cross-sectional analysis involving 78 patients who underwent cesarean delivery. Visual pain scale (VAS) scores of 78 patients were evaluated in the first 6 hours and the patients were asked about the characteristic descriptions of the pain.

**Results:** Mean VAS scores in the first 6 hours postoperatively were  $5.56 \pm 1.31$ . Body localizations where the patients feel pain were 7.7% in the incision site, 14.1% under the umbilicus, 23.1% in the whole abdominal region, 50% on the right side of the incision, 1.3% on the left side of the incision and 3.8% on both sides of the incision. There was no statistically significant difference between the location of pain and the number of cesarean sections ( $p > 0.05$ ). There was a statistically significant relationship between the postoperative mobilization hours and the patients' satisfaction scores ( $p < 0.05$ ).

**Conclusion:** Treatment of the post-cesarean pain is very important for the recovery process of the mother and the development of the early bond between the mother and the infant. If the post-cesarean delivery pain is identified, evaluated and its characteristics are determined, appropriate interventions can be made to reduce or eliminate the pain.

**Keywords:** Cesarean, delivery, pain

## INTRODUCTION

Post cesarean section pain is still a problem to be solved (1). To prevent or minimize postoperative pain, the characteristics of the pain should be analyzed well (2). Thus, maternal and infant compliance can be increased and the mother can better focus on breastfeeding (3,4). Pain that is not effectively relieved postoperatively may increase the stress response of the body which begins with surgery (5). Prolonged stress response may affect the healing process, leading to complications (6,7).

Being a mother is a very important experience in women's life. Feeling less pain during this period is important both for the health of the mother and the happiness of the mother and her baby (8). The satisfaction of the mother with childbirth experience ensures the harmony between the mother and the baby quickly and has a positive long-term effect (9).

Over the past 20 years, there has been a serious increase in the cesarean delivery rate in the world (10). In our country, cesarean delivery frequency was reported as 51.2% (11). After the cesarean delivery, the pain in the incision area prevents the mother from performing several activities

from activities of daily living to breastfeeding (12). The pain suffered by the mother should be controlled to take care of her baby immediately after cesarean delivery (13). Pain is a subjective symptom and the objective measurement is very difficult. Pain scores were developed to determine the pain severity more objectively. The most commonly used scoring system is the visual analogue scale (VAS). Pain intensity and pain relief can be evaluated with VAS (14). In the VAS score, patients evaluate the severity of pain between no pain and the worst pain on the 100 mm line (15). VAS has been evaluated by several researchers and is generally found valid and reliable (16,17). It has been reported that patients with visual impairment may have difficulty seeing the scale or elderly patients may have difficulty marking scale (18). Dissatisfaction and painful experiences after birth can cause pathologies such as depression, post-traumatic stress disorder, sexual dysfunction, negative feelings fed to the baby, the mother's inability to adapt to her role and breastfeeding problems (19). This study aimed to investigate the characteristics of post-cesarean section pain.

## MATERIAL AND METHOD

The study included 78 volunteer patients who fulfilled the research criteria. This study was approved by the university/local human research ethics committee and all procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study was carried out with the permission of Research Ethics Committee of Beykoz University (Permission granted/CAAE number: 2019/30.4, Decision no: 1). Inclusion criteria included cesarean delivery in the hospital where the research was carried out, literacy, not having communication problems, being in 24 hours after surgery, postoperative mobilization, infant not being in the neonatal intensive care unit and postpartum unit and accompanying the baby during the interview and willingness to participate in the study. Patients who had preeclampsia, pre-gestational or gestational diabetes, fibromyalgia, anxiety disorder, depression, psychiatric, chronic diseases, etc. were excluded from the study. They were asked about the demographic features of the puerperium, the types of anesthesia, VAS scores (0-10), the nature of the pain they suffered, the place where they felt the most severe pain and other accompanying complaints (nausea, vomiting, headache, etc.) and these features were recorded in the case report form.

### Statistical Analysis

The data obtained from the study were analyzed with the Statistical Package for the Social Sciences (SPSS), 21<sup>st</sup> version (SPSS Inc., Chicago, Illinois, USA).

**Data:** The number of samples (N), mean ( $\bar{X}$ ),  $\pm$ standard deviation (SD), the minimum-maximum values and percentages of the values are given. Pairwise comparisons of the incision pain groups were made by two Independent Sample T-Test and multiple comparisons were made with ANOVA (one-way analysis of variance). The normal distribution of the data was effective in the selection of these methods. Turkey's Post-Hoc Tests was used to find the significance source of the data obtained from the comparison tests. Correlation relationships between parameters were determined with the Pearson method. For statistical significance level,  $p < 0.05$  was accepted. Comparisons in categorical data were made with Chi-Square ( $\chi^2$ ) analysis.

## RESULTS

The mean age of the 78 pregnant women included in the study was  $30.85 \pm 5.24$  and the mean body mass index (BMI) was  $28.81 \pm 5.45$ . 61.5% of the pregnant women underwent the first cesarean delivery and 38.5%

underwent the second and higher cesarean delivery. Emergency cesarean delivery was performed in 33.3% and elective cesarean delivery was performed in 66.7%. Spinal anesthesia in 35.9%, general anesthesia in 62.8% and combined spinal-epidural anesthesia in 1.3% are shown in **Table 1**.

**Table 1.** Characteristics of patients, distribution according to type of surgical intervention and type of anesthesia

Age (mean $\pm$ std)	30.85 $\pm$ 5.24
BMI (mean $\pm$ std)	28.81 $\pm$ 5.45
Type of surgical intervention (n:78)	
Emergency cesarean (%)	33.3%
Elective cesarean (%)	66.7%
Type of anesthesia	
Spinal	35.9%
General	62.8%
Combined spinal-epidural	1.3%

The smoking rate was 28.2% in pregnant women. The smoking rate among the spouses of the pregnant women was 32.1%. The mean VAS scores in the first 6 hours postoperatively were  $5.56 \pm 1.31$ . The VAS score of patients was 3 in 5.1%, 4 in 20.5%, 5 in 14.1%, 6 in 37.2%, 7 in 16.7%, and 8 in 6.4%. Preoperative ASA scores were ASA 1 in 88.5% and ASA 2 in 11.5%. Body areas where the patients felt pain were 7.7% in the incision site, 14.1% under the umbilicus, 23.1% in the whole abdominal region, 50% on the right side of the incision, 1.3% on the left side of the incision, 3.8% on both sides of the incision. The pain was described as follows: 70.5% as flammable prickles and 29.5% as tingling are shown in **Table 2**.

**Table 2.** Pain places and description of the patients

Pain Place	Number of patients (n)	Percentage (%)
Incision site	6	7.7
Uterus recovery	11	14.1
Diffuse abdominal pain	18	23.1
Incision only right	39	50.0
Incision only left	1	1.3
Incision on two sides	3	3.8
Flammable prickles	55	70.5
Tingle	23	29.5

When VAS scores were compared based on types of anesthesia (general, spinal, epidural+spinal), no statistically significant difference was found between

the averages ( $p>0.05$ ). When the body mass indexes and pain definitions of the patients were compared, no statistically significant difference was found between the pain definitions of the patients ( $p>0.05$ ) as shown in **Table 3**.

**Table 3.** Comparison of visual analogue scale (VAS) scores and anesthesia types and comparison of BMI and pain definitions

Types of anesthesia	VAS score and BMI mean±std	p value
General VAS score	5.50±1.31	0.870
Spinal VAS score	5.63±1.31	
Epidural+spinal VAS score	6.00±**	
Flammable prickles BMI	28.57±4.474	0.559
Tingle BMI	27.91±4.563	

\* $p>0.05$ ; no statistically significant  
 \*\* test value is not calculated from the small number of data

There was no statistically significant difference between the number of cesarean delivery and pain sites ( $p>0.05$ ). 61.5% of the patients experienced primary cesarean delivery and 38.5% experienced repeated cesarean delivery. Most of the patients were those who

experienced pain on the right side of the incision and underwent primary cesarean delivery. No statistically significant difference was found between the pain sites of the patients based on the type of administered anesthesia ( $p>0.05$ ) as shown in **Table 4**.

There was no statistically significant difference between the pain at the incision site and the number of cesarean deliveries ( $p>0.05$ ). There was no statistically significant difference between the pain at the incision site and the indications for cesarean delivery (emergency/elective) ( $p>0.05$ ). There was no statistically significant difference between the pain and the characteristic features of the incision site pain ( $p>0.05$ ) as shown in Table 10. Of the patients who felt pain on the right side of the incision, 72.6% felt flammable tingling and 27.4% felt tingling as shown in **Table 5**.

In our study, a statistically significant relationship was found between the age of the patients and the pain felt at the incision site ( $p<0.05$ ). There was a statistically significant relationship between postoperative mobilization hours and satisfaction scores of the patients ( $p<0.05$ ).

**Table 4.** Comparison of pain location with obstetric history and anesthesia types

Comparison of pain location and obstetric history								
Obstetric history (number of cesarean) (n)	Pain location						p value	
	incision site	Uterus recovery	Diffuse abdominal pain	Incision only on the right side	Incision only left side	Incision on two sides		
Primer n:48	4	5	11	27	0	1	0.401	
	Expected value	3.7	6.8	11.1	24.0	0.6		1.8
	(61.5%)	66.7%	45.5%	61.1%	69.2%	0.0%		33.3%
≥2 n:30	2	6	7	12	1	2		
	Expected value	2.3	4.2	6.9	15.0	0.4		1.2
	(38.5%)	33.3%	54.5%	38.9%	30.8%	100.0%		66.7%
Comparison of pain location and anesthesia types								
Anesthesia types	Pain location						p value	
	Incision site	Uterus recovery	Diffuse abdominal pain	Incision only on the right side	Incision only left side	Incision on two sides		
Spinal n:28	2	4	5	16	0	1	0.460	
	Expected value	2.2	3.9	6.5	14.0	.4		1.1
	35.9%	33.3%	36.4%	27.8%	41.0%	0.0%		33.3%
General n:49	3	7	13	23	1	2		
	Expected value	3.8	6.9	11.3	24.5	.6		1.9
	62.8%	50.0%	63.6%	72.2%	59.0%	100.0%		66.7%
Spinal + Epidural n:1	1	0	0	0	0	0		
	Expected value	0.1	0.1	0.2	0.5	0.0	0.0	
	1.3%	16.7%	0.0%	0.0%	0.0%	0.0%	0.0%	

N: Number of patients

Table 5. Comparison of pain location with obstetric history and anesthesia types				
Comparison of cesarean delivery types and incision site pain				
Obstetric story (number of cesarean delivery)		Pain at the incision site		p value
		yes	no	
Primer	n	41	7	0.089
	Expected value	38.2	9.8	
	%	66.1%	43.8%	
≥2	n	21	9	
	Expected value	23.8	6.2	
	%	33.9%	56.3%	
Comparison of cesarean delivery types and incision site pain				
Cesarean delivery indication		Pain at the incision site		p value
		yes	no	
Emergency	n	21	5	0.547
	Expected value	20.7	5.3	
	%	33.9%	31.3%	
Elective	n	41	11	
	Expected value	41.3	10.7	
	%	66.1%	68.8%	
Comparison of pain characteristic and pain at the incision site				
Description of pain		Pain at the incision site		p value
		yes	no	
Flammable prickles	n	45	10	0.540
	expected value	43.7	11.3	
	%	72.6%	62.5%	
Tingle	n	17	6	
	expected value	18.3	4.7	
	%	27.4%	37.5%	

## DISCUSSION

It is important to establish the connection between mother and baby and encourage breastfeeding immediately after cesarean delivery. The recovery time and mobilization of the mother after cesarean delivery are closely related to postoperative pain. Pain that cannot be relieved in the postoperative period leads to unnecessary discomfort of the patient, delayed recovery, prolonged hospital stay, and reduced patient participation in treatment and care (20).

Preoperative information has an important role in coping with postoperative pain and anxiety as well as medical treatment and approaches. A sense of uncertainty added to the fears increases anxiety, especially when the necessary information about the operation is not provided. Increased anxiety and fear cause an increase in the severity of pain (21).

Generally, the highest pain score occurs at the postoperative 12<sup>th</sup> hour. In the current study, the resting VAS scores of the patients were found to be less than the movement state. When the factors affecting the intensity of pain were evaluated, high BMI, prolonged operation time, divorced women and general anesthesia administration were reported more (22,23).

Several studies have suggested that preoperative factors may predict postoperative pain. But there are conflicting results. For example, some researchers reported a correlation between postoperative pain and preoperative stress, anxiety, and personality traits, while others did not (24,25). Anesthesiologist's experience is also important (26). In the study conducted by Fecho K et al. (27), it was reported that the duration of surgery was a predictive factor in post-cesarean section pain and that prolongation of the surgery led to increased pain scores. Besides, it has been reported that as the complexity of surgery increases, pain scores increase. Kessous R et al. (28) reported that the meperidine requirement was higher in patients receiving general anesthesia in the first 24 hours postoperatively. In a study conducted by Gonano C et al. (29), it was reported that patients undergoing general anesthesia had higher pain scores in patients undergoing a postanesthesia care unit.

In our study, no statistically significant difference was found between the pain scores of the patients based on the type of anesthesia. In our study, patients reported that their pain often occurred on the right side of the incision. When we reviewed the literature, we could find limited edition work reporting pain localization after cesarean delivery. In the study conducted by Sousa L et

al. (30), it was reported that for 75% of the participants, the pain was located around the surgical delivery area and for 41.7%, pain was experienced in mixed areas and felt superficially and deeply. In the study conducted by Astepe B, no significant relationship was found between preoperative anxiety scores and VAS scores at 6<sup>th</sup>, 12<sup>th</sup> and 18<sup>th</sup> hours postoperatively (31). In the same study, post-operative pain-relief was found more in patients with high preoperative anxiety scores. In the study conducted in France, 78 births were evaluated and 60 of them stated that it was beneficial for them to have their spouses with them at birth. In the same study, pain scores were reported to be lower in patients with their spouses (32). Surgery can stimulate psychological and emotional reactions, causing stress for patients (33). The single-centered study is the limitation of the study in terms of the small sample size.

## CONCLUSION

As a result of the study, the patients reported that the most common sensation of pain was felt at the right side of the incision after cesarean delivery. If the post-cesarean section pain is identified, evaluated and its characteristics are determined, appropriate interventions can be made to reduce or eliminate the pain. There is a need for new methods and investigations for the cause of pain and treatment of pain after cesarean delivery.

## ETHICAL DECLARATION

**Ethics Committee Approval:** The study was carried out with the permission of Research Ethics Committee of Beykoz University (Permission granted /CAAE number: 2019/30.4, Decision no: 1).

**Informed Consent:** All patients signed the free and informed consent form.

**Referee Evaluation Process:** Externally peer-reviewed.

**Conflict of Interest Statement:** The authors have no conflicts of interest to declare.

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**Author Contributions:** All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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