Recent Trends in Gynecology & Obstetrics

Research Article

Evaluation of Postoperative Early/Late Period Patient Comfort and Complications in Patients with and without Fascia Corner Suturing in Pfannestiel Incision (Burak Technique)

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ABSTRACT

Objectives: We aimed to investigate the effect of not applying scarpa fascia corner stitching on postoperative patient comfort in patients who underwent Pfannestiel incision.

Material and Methods: Our research is a retrospective case-control study conducted between January 2013-2023. 200 patients, 100 in the study group and 100 in the control group, who underwent surgery through Pfannestiel incision, were included in the study. The patients were classified as Group 1, without Scarpa's fascia corner suturing (Burak Technique), and Group 2, with scarpa fascia corner sutures. The patients were evaluated in terms of postoperative pain score, gas-stool passage time, mobilization, and incisional hernia. SPSS version 28.0.1 was used for statistical analysis.

Results: The indication for surgery was cesarean section and spinal anesthesia was applied to the patients. An incisional hernia developed in 1 patient in the study group. VAS-VRS scores in the first 2 hours after surgery in the study group were statistically significantly lower than in the control group ($p = 0.007$). No statistically significant difference was detected in VAS-VRS values after the first two hours. Gas and stool passage occurred statistically earlier in the patients in the study group ($p=0.004$). Mobilization was statistically easier in patients in the study group ($p = 0.038$). There was no statistically significant difference between the two groups in terms of incisional hernia ($p=0.75$).

Conclusion: In the study group, pain scores were lower in the first two hours, and gas and stool passage time and mobilization were easier. There was no difference between the two groups in terms of incisional hernia. This study suggests that the Burak Technique (without Scarpa's fascia corner suturing) may provide advantages in terms of early postoperative comfort.

KEYWORDS

Pfannestiel Incision, Postoperative Complication, Scarpa Fascia, Incisional Hernia.

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Received: October 09, 2025; **Accepted:** November 24, 2025; **Published:** December 02, 2025

Citation: Isa KAPLAN. Evaluation of Postoperative Early/Late Period Patient Comfort and Complications in Patients with and without Fascia Corner Suturing in Pfannestiel Incision (Burak Technique). Recent Trends Gynecol Obstet. 2025;3(1):1-5.

Introduction

Pfannestiel incision is a frequently used incision in the practice of Gynecology and Obstetrics to reach the baby during cesarean section or in benign gynecological surgeries [1]. The Pfannenstiel skin incision is usually made 3-4 cm above the pubis and is approximately 10-12 cm in length. The incision is slightly curved, 2 cm above the symphysis pubis, with the central part within the cleared area of pubic hair [2]. Being a frequently preferred incision in obstetrics and gynecology practice, it highlights patient comfort. It is important to examine patients in terms of postoperative pain and other complications and to keep the literature up to date. Generally, transverse skin incision is preferred for many patients [3]. This incision is preferred due to better cosmetic results and less postoperative pain compared to vertical incision [3]. It has

also been associated with less hernia formation [4]. Vertical midline incision, which is rarely used, is preferred when the transverse incision does not provide sufficient field of view and there is a risk of subcutaneous or subfascial hematoma formation if the patient has a history of bleeding diathesis [4]. Therefore, the Pfannestiel incision is an easier and more comfortable incision for the surgeon and the patient. Postoperative pain, bleeding, wound infection, wound dehiscence, and other complications are much less compared to vertical incisions [5]. Scarpa fascia suturing is important in terms of postoperative incisional hernia [5]. In our study, postoperative results in obstetric cases that underwent Pfannestiel incision surgery will be examined.

Materials and Methods

Place and Time of Research

Our research was conducted at Uşak University Training and Research Hospital, Department of Gynecology and Obstetrics, between January 2013 and January 2023. Our study is a retrospective case-control study.

Research Population and Sample

The population of the research consists of patients who underwent Pfannestiel incision surgery between January 2013 and January 2023. Patients over the age of 18, who underwent Pfannestiel incision surgery and who gave consent for the study were included in the study. Patients under the age of 18, who underwent surgery with an incision other than the Pfannestiel incision, and who did not consent to the study were excluded from the study.

Study Design

Patients were evaluated in terms of age, body mass index (BMI), and demographic characteristics. Patients operated on through Pfannenstiel incision were divided into two groups. The first group was grouped as patients who did not undergo scarpa fascia corner suturing, and the second group was grouped as patients who underwent scarpa fascia corner suturing. The study was conducted with 200 patients, 100 in the first group and 100 in the second group. Group 2 patients who underwent Scarpa fascia corner suturing were included as the control group. For study safety, patients who underwent spinal anesthesia were included in the study. Patients who used anesthesia methods other than spinal anesthesia were not included in the study. For the study to be safe and homogeneous, care was taken to include patients in the same indication group. Since the number of patients was the highest, the study was conducted on patients who underwent cesarean section for study safety and homogeneous distribution. Patients were questioned about pain status at 2-4 and 6 hours after surgery. Patients were questioned about postoperative gas and stool passage time. Patients were evaluated for postoperative mobilization. The patients included in the study were evaluated for long-term incisional hernia. After the procedure, the patients were monitored for the above-mentioned parameters. Verbal rating scales (VRS) and visual analog scales (VAS) were used to evaluate the patient's pain. A 5-point sedation scale was used to evaluate the patients' postoperative consciousness. According to the 5-point sedation scale, 1: The patient is awake 2: The patient tends to sleep, awake 3: If the patient is awake and asleep, he can be woken up with an audio stimulus 4: The patient can be woken up with a physical stimulus 5: The patient cannot be woken up with both physical and auditory stimuli. VAS and VRS pain scales were applied to patients who scored 2 and 1 on the sedation scale. Patients were informed about VAS and VRS before surgery. According to the pain scale, 1-4 points are considered mild pain, 5-6 points are considered moderate pain, and 7 and above points are considered severe pain. Pain assessment was made at 2-4 and 6 hours postoperatively. Postoperative gas and stool output was evaluated at 3, 6, 9, and 12 hours. During postoperative mobilization, the patient's pain status and ease of mobilization were evaluated. Patients were grouped as easily mobilized, unaided mobilized, with mild pain, moderate pain with assisted mobilization, and severe pain with assisted mobilization. After discharge, patients were evaluated for the development of incisional hernia within 48-72 months after the operation. Standard painkillers were administered to the patients in the postoperative recovery room. As the first step, 10 mg/ml intravenous (IV) paracetamol was given. 50 mg/2 ml dexketoprofen was administered intravenously to patients who had pain despite the administration of paracetamol. He did not need narcotic analgesics in the recovery room. Standard medications were used for the pain protocol in the ward.

1. Paracetamol 10 mg/ml IV was given up to 4 times a day.
2. Dexketoprofen administered IV in mediflex at 50 mg/2ml up to 3 times daily.
3. Pethidine HCL 100 mg/2ml 75 mg was administered intramuscularly (IM) to patients whose pain continued.

Pain scoring was done by a trained nurse working in the ward. Patients were discharged at the 24th or 48th postoperative hour. In the Pfannenstiel technique, the skin incision was made approximately 2 cm above the symphysis, and the middle part of the incision remained within the shaved area of the pubic hair. Skin and subcutaneous tissues were passed. The fascia was opened with the help of tissue scissors. The rectus muscle was crossed with blunt dissection. The parietal peritoneum was opened and the abdomen was entered. Peritonization was not performed after the operation. No stitches were placed on the rectus. Scarpa fascia corner suturing was not performed in Group 1 patients. Fascia was sutured with continuous lockless suture with number 1 polyglactin. In Group 2 patients, the classical continuous fascia closure technique was applied. The right fascia corner was held with a clamp 1. The knot was tied by passing a -U- suture from the left fascia corner. With the free thread, the fascia began to be closed continuously from left to right towards the right fascial corner. When the right fascia corner was reached, a 2nd knot was tied by passing a -U- stitch behind the clamp. In this way, knots were tied at both fascia corners. First, corner suturing was performed on both scarpa fascia corners with No. 1 polyglactin for safety purposes. The study was conducted in a single-center, multidisciplinary manner with a 95% confidence interval.

Statistical Analysis

SPSS (IBM SPSS for Windows, Ver.26) statistical package program was used for the statistical analysis of our study. For comparison of fetal outcomes, and maternal and pregnancy characteristics, the $\chi 2$ test or Fisher's exact test was used for categorical variables and the Mann-Whitney U test was used for continuous variables. Statistical significance was considered $P<0.05$. Bonferroni correction was used where necessary to adjust for multiple comparisons.

Results

The age range of the patients included in the study ranged from 18 to 42 years, and the average age was 29.07. The BMI of the patients included in the study was between 18-40 and the average BMI was 27.4. The number of pregnancies of the patients included in the study was between 1-5 and the average was 2.1. The operation indication for the patients included in the study was cesarean section and spinal anesthesia was performed. An incisional hernia developed in 1 patient in the study group. General characteristics of the patients are given in Table 1.

In patients without corner suturing, VAS-VRS scores in the first 2 hours after the operation were found to be statistically lower than in patients with corner suturing (p=0.007). 2-4. No statistically significant difference was detected in VAS-VRS values after 1 hour and 4 hours in patients with and without corner suturing. Postoperative VAS and VRS scores are given in Table 2.

Gas-stool excretion occurred statistically earlier in patients without corner suturing than in patients with corner suturing (p=0.004). Mobilization was statistically easier in patients without corner suturing (p=0.038). Relevant data are given in Table 3.

Table 1: General Characteristics.

	Maxımum-Minimum	Mean	
Age (Years)	18-42	29.07	
BMI	18-40	27.4	
Number of Pregnancies	1-5	2.1	
Indication	Cesarean Section	120	
	Others	0	
	Total	120	
Type of Anesthesia	Spinal	120	
	General	0	
	Total	120	
Incisional Hernia	Study Group	Yes	1
		No	59
		Total	60
	Control Group	Yes	0
		No	60
		Total	60
BMI: Body Mass Index			

No statistically significant difference was detected in terms of incisional hernia in patients with and without corner suturing (p=0.75).

Table 4: Incisional Hernia.

		N	%	p
Patients With Corner Suture	Yes Hernia	0	0	0.75*
	No Hernia	60	100	
Patients Without Corner Sutures	Yes Hernia	1	1.7	
	No Hernia	59	98.3	

N: Number, %: Percent
*Pearson Chi-Square test 95% confidence interval p<0.05 values are significant

Table 2: Postoperative VAS and VRS Scores.

		Absent		Mild 1-2 points		A Little more 3-4 points		Moderate intensity 5-6 points		Severe 7 points and above		Total		
	Corner Suture	N	%	N	%	N	%	N	%	N	%	N	%	P
0-2 Hours	Yes	12	20	13	21.7	11	18.3	16	26.7	8	13.3	60	100	**0.007**
	No	3	5	4	6.7	16	26.7	23	38.3	14	23.3	60	100	
2-4 Hours	Yes	17	28.3	14	23.3	18	30	9	15	2	3.4	60	100	0.08
	No	7	11.7	11	18.3	31	51.7	10	16.7	1	1.6	60	100	
4> Hours	Yes	24	40	24	40	10	16.7	2	3.3	0	0	60	100	0.27
	No	15	25	29	48.3	15	25	1	1.7	0	0	60	100	

N: Number, %: Percent, VRS: Verbal Rating Scales, VAS: Visual Analog Scales
*Pearson Chi-Square test 95% confidence interval p<0.05 values are significant

Table 3: Other Parameters.

		İn the first 3 hours		İn the first 6 hours		İn the first 9 hours		12 hours and over		Total		
	Corner Suture	N	%	N	%	N	%	N	%	N	%	P
Gas-Gaita Output	Yes	2	3.3	25	41.7	31	51.7	2	3.3	60	100	**0.004***
	No	4	6.7	11	18.3	33	55	12	20	60	100	
Mobilization		Very comfortable		Mild pain unsupported		Moderate pain supported		Severe pain assisted		Total		
	Corner Suture	N	%	N	%	N	%	N	%	N	%	P
	Yes	12	20	28	46.7	17	28.3	3	5	60	100	**0.038**
	No	5	8.3	21	35	25	41.7	9	15	60	100	

N: Number, %: Percent
*Pearson Chi-Square test 95% confidence interval p<0.05 values are significant

Discussion

Fascial closure is a very important condition in abdominal surgeries. Fascia is a strong and durable connective tissue layer that covers the muscles from the outside. Fascias are highly durable tissues containing dense fibrous connective tissue. The average healing time of fascia tissue in animals is reported to be 15-45 days [6].

When closing the incisions, fascial stitches should close the wound and also help resist changes in intra-abdominal pressure. Synthetic graft material can be used in cases where fascia is absent or weak. It can be used by suturing grafts with non-absorbable sutures such as polypropylene. Monofilament absorbable materials such as Polydioxanone (PDS) or inert non-absorbable sutures such as polypropylene can be used in fascia sutures [7].

In abdominal closure, it is possible to stitch the rectus muscle fascia using separate or continuous suture techniques, depending on the surgeon's preference. Generally, a simple continuous suture technique is preferred for routine closures. Many suture materials are sufficient for simple individual suture applications, but suture materials that disappear quickly should not be used in patients with hypoalbuminemic and malnutrition. In continuous suture techniques, strong and non-absorbable or standard absorbable monofilament sewing thread materials (such as polypropylene, polybutester, PDS, and polyglyconate) that provide good knot security should be preferred [8-10]. Standard absorbable suture materials (such as PDS or polyglyconate) may be preferred to prevent excess foreign material from remaining in the incision line [8]. If absorbable sewing thread is preferred, it is recommended to choose monofilament threads that absorb slowly [8,9]. In continuous stitching techniques, a sewing thread thickness that is one size larger than that preferred in separate stitching techniques is preferred [8]. Polyglycolic acid is also used.16 However, one study reported that there is a risk of herniation in the use of polyglycolic acid [9].

Techniques and materials for abdominal wall fascia reapproximation have been extensively researched; Most studies have focused on incisional hernia formation as the primary endpoint. Although the underlying biological mechanism of fascial wound healing failure is unknown, the majority of incisional hernias appear to develop following mechanical disruption of fascial wounds during the initial "lag phase" of the wound healing trajectory; Most studies conclude that laparotomy wound deterioration occurs. Incisional hernias begin to form within 30 days after the closure of the laparotomy wound [11].

Existing studies have shown essentially no real gain in wound strength for the first 4 to 5 days, followed by a rapid increase in strength with a maximum slope around postoperative Day 15, followed by a plateau. Wound strength approaches 70% to 90% of original tissue strength over approximately 120 days. Fascia rarely regains normal, uninjured tissue strength and, in any case, never before 4 months [12-14]. If we look at the existing literature on fascial suturing techniques, it is obvious that more emphasis is placed on incisional hernia formation.

Our study is rare in the literature. Therefore, its contribution to the literature is inevitable. In our study, patients who did not undergo corner suturing and those who did were compared in terms of both postoperative comfort and incisional hernia. The current literature focuses on incisional hernia.

Although most fascia closure articles have examined techniques such as continuous versus interrupted suturing, few have looked at materials. A recent meta-analysis by Hodgson and colleagues included a review of absorbable and nonabsorbable suture materials and found a statistically significant increased risk of hernia with polyglycolic acid sutures, but no difference in risk with polydioxanone compared with nonabsorbable nylon and polypropylene. Additionally, this analysis revealed a statistically significant increase in both suture sinuses and wound pain with nonabsorbable sutures compared with absorbable sutures [15].

In our study, a continuous stitching technique was used. Polyglycolic acid was used as a suture. Our study is mostly concerned with security sutures placed on both corners of the fascia. Safety corner suturing was not performed in the study group of patients. Statistically significant results were obtained in these patients in terms of pain scores, gas and stool passage times, and mobilization in the first two hours postoperatively. No significant difference was detected between the two groups in terms of incisional hernia.

Cesarean section is a major surgery performed through an incision in the abdominal wall and uterine wall. Women who undergo cesarean section complain of abdominal and incision pain [16]. However, surgical techniques may vary greatly between surgeons [17]. In this context, surgical studies on pain reduction methods have generally focused on the effects of skin and subcutaneous tissue closure [18,19]. To make an additional contribution to these, in our studies we investigated the alleviation of cesarean section pain by reducing the number of nodes in fascia closure. In our study, we found a decrease in pain values only in the first two hours. Since there are not many such studies in the literature, we did not have a chance to compare them.

Atılgan and his colleagues conducted a similar study in Turkey. They closed the fascia with the single-knot method. No difference was detected in terms of wound infection, seroma, hematoma, and hernia in the postoperative period in all patients included in the study. However, VAS values at the 8th, 24th hour, and 3rd month were found to be significantly lower in the group in which the single-node fascia closure method was applied [20]. In our study, pain scores in the first two hours were found to be significant. However, unlike the existing literature, gas-stool output and mobilization were also examined. These values were achieved earlier and more easily in the group without corner suturing.

Our study looks at postoperative pain, gas and stool output, and

mobilization, apart from incisional hernia. Therefore, it differs from the literature. There are not many studies to compare with.

Conclusion

This study suggests that the Burak Technique (without Scarpa's fascia corner suturing) may provide advantages in terms of early postoperative comfort.

It was observed that there was a significant decrease in pain scores in the first two postoperative hours in patients who did not undergo fascial corner suturing. It was also observed that these patients were more easily mobilized and their gas and stool evacuation times were shorter. No significant difference was detected in terms of long-term incisional hernia development.

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