

Evaluation of postoperative early/late period patient comfort and complications in patients with and without fascia corner suturing in pfannestiel incision (Burak Technique)

Short Title: Fascia corner suturing patient Comfort

İsa Kaplan

Obstetrics and Gynecology Clinic, Özel Kemalöz Öztan Hospital, Uşak/Merkez, Turkey

*Correspondence: İsa Kaplan, Obstetrics and Gynecology Clinic, Özel Kemalöz Öztan Hospital, Uşak/Merkez, Turkey

Received: February 24, 2026 | Published: April 10, 2026

Citation: İsa Kaplan. Evaluation of postoperative early/late period patient comfort and complications in patients with and without fascia corner suturing in pfannestiel incision (Burak Technique). *Wom Health Perinat Int Discov.* 2026;1(1):1-5.

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. A total of 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

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 Pfannestiel 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, a transverse skin incision is preferred for many patients.³ This incision is preferred due to better cosmetic results and

less postoperative pain compared to a vertical incision.⁴ It has also been associated with less hernia formation.⁴ A vertical midline incision, which is rarely used, is preferred when the transverse incision does not provide sufficient field of view and when 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 Pfannenstiel incision surgery between January 2013 and January 2023. Patients over the age of 18 who underwent Pfannenstiel 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 Pfannenstiel 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 consisted of patients who did not undergo Scarpa fascia corner suturing, and the second group consisted of 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. To ensure safety and homogeneity, care was taken to include patients within the same indication group. Since the number of patients was highest in this category, the study was conducted on patients who underwent cesarean section to ensure safety and homogeneous distribution.

Patients were questioned about pain status at 2, 4, and 6 hours after surgery. Patients were also questioned about postoperative gas and stool passage time. Postoperative mobilization was evaluated. 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 level:

1. The patient is awake.
2. The patient tends to sleep but is awake.
3. The patient can be awakened with an auditory stimulus.
4. The patient can be awakened with a physical stimulus.
5. The patient cannot be awakened with both physical and auditory stimuli.

VAS and VRS pain scales were applied to patients who scored 1 or 2 on the sedation scale. Patients were informed about VAS and VRS before surgery.

According to the pain scale:

1. 1–4 points indicate mild pain,
2. 5–6 points indicate moderate pain,
3. 7 points and above indicate severe pain.

Pain assessment was performed at 2, 4, and 6 hours postoperatively. Postoperative gas and stool output were 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:

1. Easily mobilized
2. Unaided mobilized with mild pain
3. Moderate pain with assisted mobilization
4. Severe pain with assisted mobilization

After discharge, patients were evaluated for the development of incisional hernia within 48–72 months after the operation. Standard analgesics were administered in the postoperative recovery room. As the first step, 10 mg/ml intravenous (IV) paracetamol was given. Intravenous 50 mg/2 ml dexketoprofen was administered to patients who continued to have pain despite paracetamol. Narcotic analgesics were not required in the recovery room. Standard medications were used according to the pain management protocol in the ward.

- Paracetamol 10 mg/ml IV was given up to 4 times a day.
- Dexketoprofen 50 mg/2 ml was administered intravenously in Mediflex up to 3 times daily.
- Pethidine HCl 100 mg/2 ml (75 mg) was administered intramuscularly (IM) to patients whose pain persisted.
- Pain scoring was performed 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 pubis, and the middle part of the incision remained within the shaved area of the pubic hair. The skin and subcutaneous tissues were dissected. The fascia was opened with the help of tissue scissors. The rectus muscle was separated by blunt dissection. The parietal peritoneum was opened, and the abdomen was entered. Peritonization was not performed after the operation. No sutures were placed on the rectus muscle. Scarpa fascia corner suturing was not performed in Group 1 patients. The fascia was sutured with a continuous, non-locking suture using No. 1 polyglactin.

In Group 2 patients, the classical continuous fascia closure technique was applied. The right fascial corner was held with a clamp. The first knot was tied by passing a U-shaped suture from the left fascial corner. With the free thread, the fascia was closed continuously from left to right toward the right fascial corner. When the right fascial corner was reached, a second knot was tied by passing a U-shaped stitch behind the clamp. In this way, knots were tied at both fascial corners. Additionally, corner suturing was performed on both Scarpa fascia corners using 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, Version 26) statistical package program was used for the statistical analysis of the study. For comparison of fetal outcomes and maternal and pregnancy characteristics, the χ^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 at $P < 0.05$. Bonferroni correction was applied where necessary to adjust for multiple comparisons.

Ethics committee approval

Pre-research approval was obtained from the Clinical Research Ethics

Committee of Uşak University Faculty of Medicine.

Approval date: 08.06.2023

Approval number: 124-124-01

Results

The age range of the patients included in the study was 18–42 years, and the mean age was 29.07 years. The BMI of the patients ranged between 18–40, with a mean BMI of 27.4. The number of pregnancies ranged from 1–5, with an average of 2.1. The indication for surgery in all patients was cesarean section, and spinal anesthesia was performed. An incisional hernia developed in 1 patient in the study group. The general characteristics of the patients are presented in Table 1.

In patients without corner suturing, VAS–VRS scores in the first 2 hours after the operation were statistically lower than in patients with corner suturing ($p = 0.007$). No statistically significant difference was detected in VAS–VRS values at 4 and 6 hours postoperatively between the two groups. Postoperative VAS and VRS scores are presented in Table 2.

Gas and stool passage occurred statistically earlier in patients without corner suturing compared to patients with corner suturing ($p = 0.004$). Mobilization was statistically easier in patients without corner suturing ($p = 0.038$). Relevant data are presented in Table 3&4.

No statistically significant difference was detected between the groups in terms of incisional hernia development ($p = 0.75$).

Table 1 General Characteristics

	Maximum-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

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		P	
	N	%	N	%	N	%	N	%	N	%	N	%		
0-2 Hours	CornerSuture													
	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

	CornerSuture	In the first 3 hours		In the first 6 hours		In the first 9 hours		12 hours and over		Total		P
		N	%	N	%	N	%	N	%	N	%	
Gas-GaitaOutput	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	
		Very comfortable		Mild pain unsupported		Moderate pain supported		Severe pain assisted		Total		
Mobilization	CornerSuture	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

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

Discussion

Fascial closure is a very important aspect of abdominal surgeries. The fascia is a strong and durable connective tissue layer that covers the muscles externally. It consists of dense fibrous connective tissue and plays a crucial role in maintaining abdominal wall integrity. The average healing time of fascial tissue in animals has been reported to be 15–45 days.⁶

When closing incisions, fascial sutures should approximate the wound edges and help resist changes in intra-abdominal pressure. Synthetic graft material may be used in cases where the fascia is absent or weak. These grafts can be sutured using non-absorbable sutures such as polypropylene. Monofilament absorbable materials such as polydioxanone (PDS) or inert non-absorbable sutures such as polypropylene may also be used in fascial closure.⁷

In abdominal closure, the rectus fascia may be sutured using either interrupted or continuous techniques, depending on the surgeon's preference. Generally, a simple continuous suture technique is preferred for routine closures. Rapidly absorbable suture materials should be avoided in patients with hypoalbuminemia or malnutrition. In continuous techniques, strong non-absorbable or standard absorbable monofilament sutures (such as polypropylene, polybutester, PDS, or polyglyconate) that provide good knot security are recommended.^{8–10}

Standard absorbable sutures such as PDS or polyglyconate may be preferred to reduce the amount of foreign material remaining in the incision line.⁸ If absorbable sutures are selected, slowly absorbing monofilament materials are recommended. In continuous suturing techniques, a suture size one unit larger than that used for interrupted sutures is generally preferred.⁸ Polyglycolic acid is also used in fascial closure; however, some studies have reported an increased risk of herniation associated with its use.⁹

Techniques and materials for abdominal wall fascia reapproximation have been extensively researched, with most studies focusing primarily on incisional hernia formation. Although the exact biological mechanism underlying fascial wound healing failure remains unclear, most incisional hernias appear to develop following mechanical disruption of the fascial wound during the initial "lag phase" of wound healing. Incisional hernias typically begin to form within 30 days after laparotomy closure.¹¹

Wound strength generally shows minimal gain during the first 4–5 days, followed by a rapid increase with a peak around postoperative day 15, and then reaches a plateau. Over approximately 120 days, wound strength approaches 70–90% of original tissue strength. However, fascia rarely regains its original uninjured strength and typically not before 4 months.^{11–13}

Most studies in the literature emphasize incisional hernia formation

when evaluating fascial suturing techniques. In contrast, our study is relatively rare because it evaluates both postoperative comfort and incisional hernia. In our study, patients with and without corner suturing were compared in terms of postoperative comfort and long-term incisional hernia development. While the current literature mainly focuses on hernia outcomes, our study additionally assessed pain, gas–stool passage, and mobilization.

Although most fascial closure studies have compared continuous versus interrupted techniques, fewer have examined suture materials. A meta-analysis by Hodgson et al. reported a significantly increased risk of hernia with polyglycolic acid sutures but found no difference in risk between polydioxanone and non-absorbable nylon or polypropylene. The analysis also revealed significantly higher wound pain with non-absorbable sutures compared to absorbable sutures.¹⁵ In our study, a continuous suturing technique was used, and polyglycolic acid was selected as the suture material. The main focus was on the security sutures placed at both fascial corners. In the study group, safety corner suturing was not performed. Statistically significant improvements were observed in pain scores, gas–stool passage time, and mobilization within the first two postoperative hours. No significant difference was detected between the groups regarding incisional hernia.

Cesarean section is a major surgical procedure involving incisions in both the abdominal and uterine walls. Women undergoing cesarean section frequently report abdominal and incisional pain.¹⁶ Surgical techniques may vary significantly among surgeons.¹⁷ Most previous studies investigating pain reduction have focused on skin and subcutaneous tissue closure.^{18,19} In contrast, our study evaluated whether reducing the number of knots in fascial closure could alleviate postoperative pain. We observed a significant reduction in pain only during the first two postoperative hours. Due to the limited number of similar studies in the literature, comparison opportunities were restricted.

Atılgan *et al.*²⁰ conducted a similar study in Turkey using a single-knot fascial closure method. They reported no differences in wound infection, seroma, hematoma, or hernia rates. However, VAS scores at the 8th hour, 24th hour, and 3rd month were significantly lower in the single-knot group.²⁰ In our study, pain reduction was significant in the first two hours only. Additionally, unlike previous studies, gas–stool passage and mobilization were evaluated. These parameters improved earlier and more easily in the group without corner suturing. Our study differs from the existing literature because it evaluates postoperative pain, gas and stool passage, and mobilization in addition to incisional hernia. There are limited comparable studies available.

Conclusion

This study suggests that the Burak Technique (without Scarpa's fascia corner suturing) may provide advantages in terms of early postoperative comfort. A significant decrease in pain scores was observed in the first two postoperative hours in patients who did not undergo fascial corner suturing. These patients were mobilized more easily, and their gas and stool evacuation times were shorter. No significant difference was detected between the groups in terms of long-term incisional hernia development.

Acknowledgements

None.

Conflicts of interest

Author declares that there is no conflict of interest.

References

1. Brown SR, Good fellow PB. Transverse versus midline incisions for abdominal surgery. *Cochrane Database of Systematic Reviews*. 2005(4):CD005199.
2. Dahlke JD, Mendez-Figueroa H, Rouse DJ, *et al.* Evidence-based surgery for cesarean delivery: an updated systematic review. *American Journal of Obstetrics and Gynecology*. 2013;209(4):294–306.
3. Hofmeyr JG, Novikova N, Mathai M, *et al.* Techniques for cesarean section. *American Journal of Obstetrics and Gynecology*. 2009;201(5):431–444.
4. Mathai M, Hofmeyr GJ. Abdominal surgical incisions for caesarean section. *Cochrane Database of Systematic Reviews*. 2003(4):CD004453.
5. Wylie BJ, Gilbert S, Landon MB, *et al.* Comparison of transverse and vertical skin incision for emergency cesarean delivery. *Obstetrics & Gynecology*. 2010;115(6):1134–1140.
6. McFadden MS. Suture Materials and Suture Selection for Use in Exotic Pet Surgical Procedures. *Journal of Exotic Pet Medicine*. 2011;20(3):173–181.
7. Gülbenat Ö. *Deri yaralarında çeşitli dikiş materyallerinin yara iyileşmesi üzerine etkilerinin karşılaştırılması (Yüksek lisans tezi)*. Fırat Üniversitesi. 2020.
8. Macphail CM. Biomaterials, suturing and hemostasis. In: T Fossum, C Dewey, C Horn, *et al.* (Eds.), *Small animalsurgery* (4th ed., pp. 64–83). Elsevier. 2013.
9. Greenberg JA, Clark RM. Advances in Suture Material for Obstetric and Gynecologic Surgery. *Reviews in Obstetrics and Gynecology*. 2009;2(3):146–158.
10. Hodgson NC, Malthaner RA, Ostbye T. The search for an ideal method of abdominal fascial closure: a meta-analysis. *Ann of Surg*. 2000;231(3):436–442.
11. Franz MG. The Biology of Hernia Formation. *Surgical Clinics of North America*. 2008;88(1):1–15.
12. Rath AM, Chevrel JP. The healing of laparotomies: review of the literature. Part 1. Physiologic and pathologic aspects. *Hernia*. 1998;2:145–149.
13. Douglas DM. The healing of aponeurotic incisions. *Br J Surg*. 1952;40:79–84.
14. Tera W, Aberg C. Tissue strength of structures involved in musculo-aponeurotic layer sutures in laparotomy incisions. *Acta Chir Scand*. 1976;142:349–355.
15. Hodgson NC, Malthaner RA, Ostbye T. The search for an ideal method of abdominal fascial closure: a meta-analysis. *Annals of Surgery*. 2000;231(3):436–442.
16. Encarnacion B, Zlatnik MG. Cesarean delivery technique: evidence or tradition? A review of the evidence-based cesarean delivery. *Obstet Gynecol Surv*. 2012;67(8):483–494.
17. Pergialiotis V, Prodromidou A, Perrea DN, *et al.* The impact of subcutaneous tissue suturing at caesarean section on wound complications: a meta-analysis. *BJOG*. 2017;124(7):1018–1025.
18. Cunningham FG, Williams JW. *Williams obstetrics* (22nd ed.). *McGraw-Hill Publishers*. 2005.
19. Demers S, Roberge S, Afuni YA, *et al.* Survey on uterine closure and other techniques for Caesarean section among Quebec's obstetrician-gynaecologists. *J Obstet Gynaecol Can*. 2013;35(4):329–333.
20. Atılgan R, Pala Ş, Halisçelik MA, *et al.* Comparison of the Effectiveness of Classical and Single-knot Fascia Closure Methods in Reducing Pain and Tenderness in the Incision Area After Cesarean Section: A Prospective Cohort Study. *J Clin Obstet Gynecol*. 2023;33(4):203–209.