INSIGHTS-JOURNAL OF
HEALTH AND REHABILITATION

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

COMPARISON OF OPERATIVE TIME, POSTOPERATIVE PAIN AND CONSUMPTION OF ANALGESIA IN JOEL COHN VERSUS PFANNENSTEIL INCISION FOR LOWER ABDOMINAL CESAREAN SECTION

Original Research

Komal Mannan[1]*, Sadaf Zafar[2]
[1]Senior Registrar, Department of Gynaecology and Obstetrics, Lahore General Hospital, Lahore, Pakistan.
[2]Women Medical Officer, Rural Health Centre, Warburton, Nankana Sahib, Pakistan.
Corresponding Author: Komal Mannan, Senior Registrar, Department of Gynaecology and Obstetrics, Lahore General Hospital, Lahore, Pakistan, Drkomalmannan@gmail.com
Acknowledgement: The authors gratefully acknowledge the support of the surgical and nursing staff at Lahore General Hospital.

Conflict of Interest: None
Grant Support & Financial Support: None

ABSTRACT

Background: Cesarean section is one of the most frequently performed major abdominal surgeries worldwide, playing a vital role in ensuring maternal and fetal safety during high-risk deliveries. With rising cesarean rates, optimizing surgical techniques has become increasingly important to improve maternal outcomes. Among the various types of abdominal incisions used, the Joel-Cohen and Pfannenstiel approaches are commonly practiced, each with distinct procedural characteristics and postoperative outcomes. Comparative studies are essential to identify the most efficient and least morbid option for routine obstetric care.

Objective: To compare the Joel Cohen and Pfannenstiel incisions in terms of operative time, postoperative pain, and analgesic consumption in women undergoing lower segment cesarean section.

Methods: This randomized experimental study was conducted over 12 months at the Department of Obstetrics and Gynecology, Lahore General Hospital. A total of 70 women undergoing primary lower segment cesarean section at >37 weeks of gestation were enrolled and randomly assigned to two equal groups. Group A underwent cesarean delivery via Joel-Cohen incision, while Group B received Pfannenstiel incision. Postoperative pain was measured at 6 and 12 hours using a visual analogue scale (VAS). Total analgesic consumption within the first 12 hours was also recorded. Data were analyzed using SPSS v23 with a significance level set at $p<0.05$.

Results: The mean operative time was significantly shorter in the Joel-Cohen group (3.48 ± 0.61 minutes) compared to the Pfannenstiel group (3.97 ± 0.78 minutes; $p = 0.005$). Pain scores at 6 hours (6.60 ± 0.69 vs. 7.34 ± 0.76; $p < 0.001$) and 12 hours (2.34 ± 0.48 vs. 3.34 ± 0.64; $p < 0.001$) were lower in the Joel-Cohen group. Mean analgesic consumption was also reduced (106.28 ± 9.42 mg vs. 125.71 ± 8.84 mg; $p < 0.001$).

Conclusion: The Joel-Cohen incision significantly reduced operative time, postoperative pain, and analgesic requirements compared to the Pfannenstiel incision, indicating its potential as a preferred technique for lower segment cesarean section.

Keywords: Analgesia, Cesarean Section, Joel-Cohen Incision, Obstetric Surgical Procedures, Pain Measurement, Pfannenstiel Incision, Postoperative Pain.

INSIGHTS-JOURNAL OF
HEALTH AND REHABILITATION

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

INTRODUCTION

Cesarean section has become a cornerstone of modern obstetrics, providing a life-saving alternative when vaginal delivery poses risks to either the mother or fetus. As one of the most frequently performed surgical procedures globally, its incidence continues to rise, with approximately 30 million deliveries recorded worldwide in 2015 alone. In the United States, over 1.1 million cesarean sections were conducted in 2019, reflecting both increased medical indications and evolving patient preferences (1,2). Despite continuous efforts to reduce unnecessary cesarean births due to their associated short- and long-term risks, global trends suggest that the rates are unlikely to decline significantly in the near future (3–5). The technique used for cesarean delivery is critical to maternal outcomes. Surgical approach influences operative time, blood loss, postoperative recovery, analgesia requirements, and incidence of complications such as infection, wound dehiscence, and chronic pelvic adhesions (6,7). Among the widely adopted techniques, the Pfannenstiel and Joel-Cohen incisions are most prevalent. The Pfannenstiel incision, characterized by a curved transverse cut two fingerbreadths above the pubic symphysis, has long been favored for its aesthetic advantages and reduced postoperative discomfort (8). In contrast, the Joel-Cohen incision—a straight transverse incision 3 cm above the traditional Pfannenstiel—has gained attention due to its association with reduced operative time, blood loss, and febrile morbidity, attributed largely to its emphasis on blunt dissection and minimal tissue trauma (9,10).

Although both incisions are widely used, limited data exist directly comparing their effectiveness in terms of operative efficiency, postoperative pain, and complication rates in the context of lower segment cesarean sections (LSCS). This presents a crucial gap in clinical understanding, especially in low- and middle-income countries where surgical outcomes can be further influenced by infrastructural limitations, high patient volumes, and inadequate postoperative care (11,12). Moreover, patient recovery—particularly the ability to mobilize, care for the newborn, and avoid complications—remains a pivotal factor in determining surgical success. Poorly managed postoperative pain not only affects maternal satisfaction but also correlates with delayed recovery and increased risk of chronic pain syndromes and post-traumatic stress (13,14). Given the continued high rates of cesarean delivery and the critical impact of surgical technique on maternal outcomes, it becomes essential to evaluate which incision method—Pfannenstiel or Joel-Cohen—offers superior clinical advantages in modern obstetric practice. This study is therefore designed to compare Pfannenstiel and Joel-Cohen incisions in females undergoing delivery through lower segment cesarean section, specifically assessing differences in operative time, postoperative pain, analgesic requirement, and complication rates.

METHODS

This experimental study was conducted in the Department of Obstetrics and Gynecology, Unit III, Lahore General Hospital, Lahore, over a duration of twelve months following the approval of the research synopsis. Approval was obtained from the institutional ethical review board prior to study initiation and written informed consent was taken from all participants to ensure ethical compliance and voluntary participation. A total of 70 pregnant women were recruited using a probability consecutive sampling technique. The sample size—35 participants in each group—was calculated with a power of 90%, a confidence level of 95%, and a difference in mean postoperative pain scores of 23.1 ± 9.5 for the Pfannenstiel group and 16.3 ± 6.9 for the Joel-Cohen group, based on previously reported data (15,16). The sample size was determined using the standard formula for comparing two means. Inclusion criteria involved women aged between 18 to 40 years, presenting at a gestational age of more than 37 weeks (based on last menstrual period), and undergoing their primary lower segment cesarean section under spinal anesthesia. Exclusion criteria included women with a previous cesarean delivery, multifetal pregnancies confirmed via ultrasound, or comorbid conditions such as gestational or chronic diabetes (BSR >186 mg/dL), hypertension (BP ≥160/100 mmHg), liver dysfunction (ALT or AST >40 IU or hepatitis B/C positivity), or renal dysfunction (serum creatinine >1.8 mg/dL or those undergoing hemodialysis). Participants were randomized into two equal groups using the lottery method. In Group A, cesarean sections were performed using the Joel-Cohen incision, while in Group B, the Pfannenstiel incision was employed. All procedures were carried out under spinal anesthesia by a primary researcher and a trained resident obstetric surgeon with at least three years of experience in gynecological surgeries. Prior to data collection, both techniques were demonstrated to the assisting surgeon and supervised for the first ten procedures to ensure standardization.

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

Operative time was recorded from the skin incision to the opening of the peritoneal cavity using a stopwatch. Postoperative pain was assessed at 6 and 12 hours using a validated visual analogue scale (VAS), and analgesic consumption was documented over the first 12 hours post-surgery. Tramadol in milligrams was administered as required to maintain a VAS pain score of less than 4, and this dosage was recorded (17,18). The occurrence of postoperative complications, including wound infection (noted by purulent discharge or localized pain), wound dehiscence, and hematoma formation, was also observed and documented. Data were entered and analyzed using SPSS version 23. Normality of data distribution was assessed using the Shapiro-Wilk test. Continuous variables such as age, gestational age, BMI, operative time, pain scores, and analgesic usage were presented as mean ± standard deviation or median and interquartile range depending on distribution. Categorical variables, including parity and indication for cesarean section, were reported as frequencies and percentages. Comparative analysis between the two groups was performed using the independent samples t-test for normally distributed data and the Mann-Whitney U-test for non-normally distributed variables. A p-value of less than 0.05 was considered statistically significant. Data were further stratified by age, gestational age, parity, ASA status, BMI, and indication for surgery, followed by post-stratification analysis using the appropriate statistical test within each subgroup.

RESULTS

A total of 70 patients undergoing lower segment cesarean section were included, with equal distribution between the two groups. The overall median age was 30 years (IQR = 9.5), and there was no statistically significant difference in mean age between the Joel Cohen group (31.31 ± 5.31 years) and the Pfannenstiel group (29.94 ± 5.73 years) ($p = 0.303$). The median gestational age across the cohort was 39.78 weeks (IQR = 2.72), with mean gestational ages of 39.71 ± 1.18 weeks in the Joel Cohen group and 39.28 ± 1.10 weeks in the Pfannenstiel group ($p = 0.114$). Regarding parity, a statistically significant difference was observed between groups ($p = 0.040$), with 0% nulliparous patients in the Joel Cohen group compared to 8.6% in the Pfannenstiel group. The most common indication for cesarean delivery was fetal distress, reported in 48.6% of cases across both groups. No significant difference in indication patterns was found between groups ($p = 0.670$). The median BMI of patients was 29.0 kg/m² (IQR = 7.0), with mean BMI values of 28.34 ± 4.84 in the Joel Cohen group and 28.94 ± 4.09 in the Pfannenstiel group ($p = 0.578$), indicating comparable baseline characteristics. Operative outcomes showed significantly shorter mean operative time in the Joel Cohen group (3.48 ± 0.61 minutes) compared to the Pfannenstiel group (3.97 ± 0.78 minutes) ($p = 0.005$). Pain scores were significantly lower in the Joel Cohen group at both 6 hours (6.60 ± 0.69 vs. 7.34 ± 0.76; $p < 0.001$) and 12 hours postoperatively (2.34 ± 0.48 vs. 3.34 ± 0.64; $p < 0.001$). Similarly, analgesic consumption over the first 12 hours was significantly less in the Joel Cohen group (106.28 ± 9.42 mg) compared to the Pfannenstiel group (125.71 ± 8.84 mg) ($p < 0.001$).

Complications were recorded in 21.43% of all patients, with a significantly higher rate in the Pfannenstiel group (31.4%) compared to the Joel Cohen group (11.4%) ($p = 0.041$). Among those with complications, wound infection was most common (53.3%), followed by wound dehiscence (33.3%) and hematoma (13.3%). Although more wound infections occurred in the Pfannenstiel group, the type-specific complication comparison did not reach statistical significance ($p = 0.205$). Stratified analysis revealed significant differences in operative time, postoperative pain, and analgesia consumption based on age, gestational age, BMI, and parity. In patients ≤30 years, the Joel Cohen group showed significantly lower operative times and pain scores ($p < 0.05$). Among patients with gestational age >39 weeks, operative time and pain remained significantly lower in the Joel Cohen group ($p < 0.05$). BMI stratification revealed that among patients with BMI >25 kg/m², the Joel Cohen group had significantly better outcomes for operative time, pain scores, and analgesic use ($p < 0.05$). Similarly, multiparous women in the Joel Cohen group experienced less postoperative pain and required lower analgesic doses ($p < 0.001$).

Table 1: Comparison of Baseline Characteristics Between Study Groups

Variable	Study Groups	n	Mean	SD	Median	IQR	Minimum	Maximum	p-value
Age (years)	Group A	35	31.31	5.31	30	9.50	22.00	40.00	0.303
	Group B	35	29.94	5.73					
Gestational Age (weeks)	Group A	35	39.71	1.18	39.78	2.72	37.00	41.00	0.114
	Group B	35	39.28	1.10					
BMI (kg/m²)	Group A	35	28.34	4.84	29.00	7.00	22.00	36.00	0.578
	Group B	35	28.94	4.09					

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

Group A = Joel Cohen incision; Group B = Pfannenstiel incision

Table 2: Comparison of parity between study groups

		Study Groups			
		Group A	Group B	**Total**	**p-value**
Parity	Null	0	3	3	0.040
		0.0%	8.6%	4.3%	
	Primary	6	10	16	
		17.1%	28.6%	22.9%	
	Two	6	11	17	
		17.1%	31.4%	24.3%	
	Three	10	2	12	
		28.6%	5.7%	17.1%	
	Four	7	3	10	
		20.0%	8.6%	14.3%	
	Five	6	6	12	
		17.1%	17.1%	17.1%	
Total		35	35	70	
		100.0%	**100.0%**	**100.0%**	

Group A = Joel Cohen incision; Group B = Pfannenstiel incision

Table 3: Comparison of indication of C-section delivery between study groups

Indication Of Cesarean Delivery	**Study Groups**		**Total**	**p-value**
	Group A	Group B		
Breech In Labour	4	4	8	0.670
	11.4%	11.4%	11.4%	
Cord Prolapse	0	2	2	
	0.0%	5.7%	2.9%	
Fetal Distress	17	17	34	
	48.6%	48.6%	48.6%	
Grade III	5	4	9	
	14.3%	11.4%	12.9%	
Non-Reactive Etg	5	4	9	
	14.3%	11.4%	12.9%	
Qou Trial	4	4	8	
	11.4%	11.4%	11.4%	
Total	35	35	70	
	100.0%	**100.0%**	**100.0%**	

Group A = Joel Cohen incision; Group B = Pfannenstiel incision

Table 4: Descriptive and Comparative Statistics of Operative Time, Postoperative Pain, and Analgesic Consumption Between Study Groups

Outcome Measure	**Study Group**	**n**	**Mean**	**SD**	**Minimum**	**Maximum**	**p-value**
Operative Time (minutes)	Overall	70	3.73	0.74	3.00	5.00	0.005
	Group A	35	3.48	0.61			
	Group B	35	3.97	0.78			
Pain Score After 6 Hours	Overall	70	6.97	0.81	6.00	8.00	<0.001
	Group A	35	6.60	0.69			

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

Outcome Measure	Study Group	n	Mean	SD	Minimum	Maximum	p-value
	Group B	35	7.34	0.76			
Pain Score After 12 Hours	Overall	70	2.84	0.75	2.00	4.00	<0.001
	Group A	35	2.34	0.48			
	Group B	35	3.34	0.64			
Analgesia Consumption (mg) (First 12 Hours)	Overall	70	116.00	13.34	90.00	140.00	<0.001
	Group A	35	106.28	9.42			
	Group B	35	125.71	8.84			

Group A = Joel Cohen incision; Group B = Pfannenstiel incision

Table 5: Comparison of Overall and Type-Specific Postoperative Complications Between Study Groups

Complication Type	Study Group A (Joel Cohen)	Study Group B(Pfannenstiel)	Total (n=70)	Percentage A	Percentage B	Overall %	p-value
Any Complication	4	11	15	11.4%	31.4%	21.4%	0.041
No Complication	31	24	55	88.6%	68.6%	78.6%	
Wound Infection	1	7	8	25.0%	63.6%	53.3%	0.205
Wound Dehiscence	2	3	5	50.0%	27.3%	33.3%	
Hematoma	1	1	2	25.0%	9.1%	13.3%	

Note: Complication types are based on the subset of 15 patients who experienced at least one complication.

Table 6: Comparison of Operative Time, Pain Scores, and Analgesic Consumption Between Study Groups Stratified by Age and Gestational Age

Stratification Criteria	Study Group	n	Mean	SD	p-value
Operative Time (minutes)					
Age ≤ 30 years	Group A	16	3.56	0.63	0.042
	Group B	24	4.04	0.75	
Age > 30 years	Group A	16	3.42	0.61	0.153
	Group B	24	3.82	0.87	
Gestational Age ≤ 39 weeks	Group A	12	3.58	0.51	0.189
	Group B	21	3.95	0.86	
Gestational Age > 39 weeks	Group A	23	3.43	0.66	0.018
	Group B	14	4.00	0.67	
Pain Score After 6 Hours					
Age ≤ 30 years	Group A	16	6.75	0.77	0.024
	Group B	24	7.33	0.76	
Age > 30 years	Group A	16	6.47	0.61	0.002
	Group B	24	7.36	0.81	
Gestational Age ≤ 39 weeks	Group A	12	6.33	0.49	0.001
	Group B	21	7.28	0.78	
Gestational Age > 39 weeks	Group A	23	6.74	0.75	0.011
	Group B	14	7.43	0.75	
Pain Score After 12 Hours					
Age ≤ 30 years	Group A	16	2.31	0.47	<0.001
	Group B	24	3.21	0.65	
Age > 30 years	Group A	16	2.37	0.49	<0.001
	Group B	24	3.64	0.50	

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

Stratification Criteria	Study Group	n	Mean	SD	p-value
Gestational Age ≤ 39 weeks	Group A	12	2.25	0.45	<0.001
	Group B	21	3.19	0.67	
Gestational Age > 39 weeks	Group A	23	2.39	0.49	<0.001
	Group B	14	3.57	0.51	
Analgesic Consumption (mg) (12 hours)					
Age ≤ 30 years	Group A	16	108.75	8.85	<0.001
	Group B	24	124.58	9.31	
Age > 30 years	Group A	16	104.21	9.61	<0.001
	Group B	24	128.18	7.51	
Gestational Age ≤ 39 weeks	Group A	12	106.67	8.87	<0.001
	Group B	21	125.71	9.25	
Gestational Age > 39 weeks	Group A	23	106.08	9.88	<0.001
	Group B	14	125.71	8.52	

Table 7: Comparison of Operative Time, Postoperative Pain, and Analgesic Consumption Between Study Groups Stratified by BMI and Parity

Stratification Criteria	Study Group	n	Mean	SD	p-value
Operative Time (minutes)					
BMI ≤ 25 kg/m²	Group A	13	3.61	0.65	0.762
	Group B	7	3.71	0.75	
BMI > 25 kg/m²	Group A	13	3.41	0.59	0.003
	Group B	7	4.03	0.79	
Nulliparous & Primary Parous	Group A	6	3.67	0.82	0.237
	Group B	13	4.15	0.80	
Multiparous	Group A	29	3.45	0.57	0.032
	Group B	22	3.86	0.77	
Pain Score After 6 Hours					
BMI ≤ 25 kg/m²	Group A	13	6.61	0.65	0.309
	Group B	7	7.00	1.00	
BMI > 25 kg/m²	Group A	13	6.59	0.73	<0.001
	Group B	7	7.43	0.69	
Nulliparous & Primary Parous	Group A	6	6.83	0.75	0.162
	Group B	13	7.38	0.76	
Multiparous	Group A	29	6.55	0.68	0.001
	Group B	22	7.32	0.78	
Pain Score After 12 Hours					
BMI ≤ 25 kg/m²	Group A	13	2.15	0.37	<0.001
	Group B	7	3.57	0.53	
BMI > 25 kg/m²	Group A	13	2.45	0.51	<0.001
	Group B	7	3.28	0.65	
Nulliparous & Primary Parous	Group A	6	2.33	0.52	0.019
	Group B	13	3.15	0.69	
Multiparous	Group A	29	2.34	0.48	<0.001
	Group B	22	3.45	0.59	
Analgesic Consumption (mg) (First 12 Hours)					
BMI ≤ 25 kg/m²	Group A	13	104.61	11.98	<0.001
	Group B	7	131.43	8.99	

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

Stratification Criteria	Study Group	n	Mean	SD	p-value
BMI > 25 kg/m²	Group A	13	107.27	7.67	<0.001
	Group B	7	124.28	8.35	
Nulliparous & Primary Parous	Group A	6	105.00	5.48	<0.001
	Group B	13	126.92	7.51	
Multiparous	Group A	29	106.55	10.09	<0.001
	Group B	22	125.00	9.63	

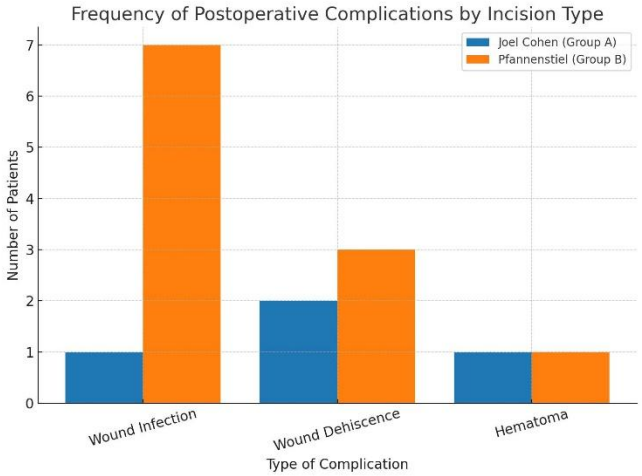

Figure 2 Frequency of Postoperative Complications by Incision Type

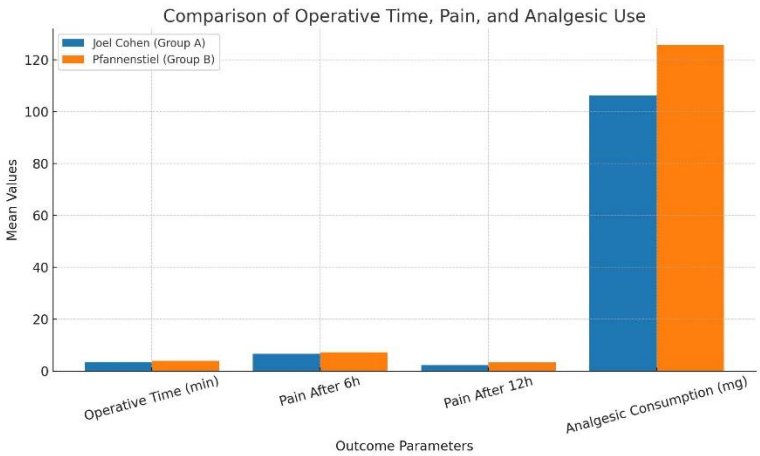

Figure 1 Comparison of Operative Time, Pain and Analogistic Use

DISCUSSION

The present study demonstrated that the Joel-Cohen incision technique offers statistically and clinically superior outcomes compared to the Pfannenstiel incision in patients undergoing lower segment cesarean section. Operative time was significantly shorter with the Joel-Cohen approach, accompanied by lower postoperative pain scores at both 6 and 12 hours, as well as reduced analgesic requirements within the first 12 hours postoperatively. These findings are consistent with previously published evidence, which has repeatedly shown that the Joel-Cohen incision, originally described for hysterectomy and later modified for cesarean section, facilitates a faster and less traumatic surgical experience due to its emphasis on blunt dissection and minimal tissue disruption (14,15). Numerous comparative studies have also highlighted the shorter fetal extraction times associated with the Joel-Cohen method, further supporting its efficiency. Reported mean extraction times for the Joel-Cohen incision have ranged from approximately 3.25 to 4.85 minutes, whereas the Pfannenstiel incision has shown longer times, often exceeding 5 to 7 minutes depending on the study population and surgical setting (16,17). In addition to time efficiency, a comprehensive Cochrane review also revealed that the Joel-Cohen method leads to reduced postoperative pain and lesser analgesia consumption, aligning closely with the current study's results (18,19). Despite the popularity of the Pfannenstiel incision, often chosen for its cosmetic advantages, growing evidence suggests that it may not offer the most favorable perioperative profile. The present findings corroborate earlier reports showing higher pain scores and greater analgesic demand following Pfannenstiel incisions, even when performed by experienced surgeons. These differences may be attributed to the sharper dissection and greater tissue handling required in the Pfannenstiel technique, which could contribute to increased postoperative discomfort and a heightened inflammatory response (20-22).

Adhesion formation is another critical aspect where the Joel-Cohen incision appears advantageous. Previous investigations observed lower incidences of thick adhesions and postoperative pelvic pain in patients who underwent surgery using the Joel-Cohen approach compared to those who had Pfannenstiel incisions. This difference is clinically relevant, particularly for patients undergoing repeat cesarean deliveries, as extensive adhesions can complicate future abdominal surgeries and increase intraoperative risks (23,24). However, it is noteworthy that long-term outcomes such as uterine scar integrity, fertility implications, or risk of incisional hernia were

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

not explored in the current study and remain areas requiring further investigation. While the findings strongly support the Joel-Cohen incision as a preferable alternative, certain limitations must be acknowledged. The study sample size, though adequately powered for primary outcomes, was relatively modest and conducted at a single center, limiting generalizability. Additionally, pain assessments were restricted to the first 12 postoperative hours, thereby overlooking longer-term pain trajectories or functional recovery metrics. Complication rates were recorded, but the study did not include a detailed evaluation of surgical site healing quality, cosmetic satisfaction, or maternal psychological outcomes, all of which could offer further insights into patient-centered care.

Another limitation involves the subjective nature of pain assessment, despite using a validated scale. Pain perception can be influenced by individual thresholds, psychological states, and external factors such as nursing care. Standardizing analgesic protocols across groups helped mitigate this variability, yet residual confounding cannot be entirely ruled out. Furthermore, while statistical significance was achieved for several parameters, the clinical impact—particularly in terms of maternal satisfaction, neonatal outcomes, or health economics—was not quantified and deserves exploration in future research. Nevertheless, the study's strengths include its randomized comparative design, the use of clear operational definitions, and consistent surgical execution by experienced professionals under standardized conditions. The inclusion of both elective and emergency cesarean sections increases the applicability of findings to routine obstetric practice. In conclusion, the Joel-Cohen incision technique demonstrated notable advantages over the Pfannenstiel method in terms of reduced operative time, lower postoperative pain, decreased analgesic consumption, and fewer complications in the immediate postoperative period. While the findings reinforce the clinical utility of the Joel-Cohen incision in cesarean sections, larger multicentric trials with extended follow-up are warranted to validate these outcomes and assess long-term implications on maternal health and surgical recovery.

CONCLUSION

This study concluded that the Joel-Cohen incision is a more effective and patient-friendly technique than the Pfannenstiel incision for lower segment cesarean deliveries. It was associated with shorter operative time, reduced postoperative pain, and lower analgesic requirements, highlighting its potential to enhance surgical efficiency and maternal recovery. These findings support the adoption of the Joel-Cohen method as a preferred approach in routine obstetric practice, offering practical benefits for both patients and healthcare providers.

AUTHOR CONTRIBUTION

Author	Contribution
Komal Mannan*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Sadaf zafar	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published

REFERENCES

1. Nepali R, Upadhyaya Kafle S, Pradhan T, Dhamala JN. Scar Endometriosis: A Rare Cause of Abdominal Pain. Dermatopathology (Basel). 2022;9(2):158-63.
2. Guo J, Yang D, Zhang B, Xu X, Yang Z, Zhao Y, et al. The safety of Pfannenstiel incision for specimen extraction in laparoscopic colorectal surgery for colorectal cancer: a systematic review and meta-analysis. Wideochir Inne Tech Maloinwazyjne. 2024;19(1):1-10.
3. Güven E, Dura MC, Aktürk H, Güraslan H. Safety of Laparoscopic Entry Points in Patients With a History of Abdominal Surgery: A Research Article. Cureus. 2023;15(10):e47244.
4. Roofthooft E, Joshi GP, Rawal N, Van de Velde M. PROSPECT guideline for elective caesarean section: updated systematic review and procedure-specific postoperative pain management recommendations. Anaesthesia. 2021;76(5):665-80.

5. Buyukkurt S, Sucu M, Hatipoglu I, Ozlu F, Unlugenc H, Evruke C, et al. Placenta accreta spectrum surgery with the Joel Cohen incision for abdominal access: a single-center experience. Ginekol Pol. 2023.
6. Soyer-Caliskan C, Celik S, Basbug A, Hatirnaz S, Guclu M, Akbaba E, et al. Morbidly adherent placenta and cesarean section methods. A retrospective comparative multicentric study on two different skin and uterine incision. Ginekol Pol. 2021;92(5):359-64.
7. Kandemir H, Kirtis E, Bulbul GA, Dogan S, Mendilcioglu I, Sanhal CY, et al. Intraoperative and Postoperative Outcomes of Pfannenstiel and Midline Skin Incisions in Placenta Accreta Spectrum Disorders: Single-Center Experience. Medicina (Kaunas). 2024;60(7).
8. Gadeer R, Baatiah NY, Alageel N, Khaled M. Incidence and Risk Factors of Wound Infection in Women Who Underwent Cesarean Section in 2014 at King Abdulaziz Medical City, Jeddah. Cureus. 2020;12(12):e12164.
9. Özdemir F, Şahin AS, Salihoğlu Z. EVALUATION OF ULTRASONOGRAPHIC ANATOMY OF TRANSVERSUS ABDOMINIS PLANE BEFORE AND AFTER CESAREAN SECTION. Acta Clin Croat. 2022;61(1):3-10.
10. Cromi A, Laganà AS, Ghezzi F, Valdatta L, Casarin J, Cherubino M. Cosmetic outcomes of skin closure with tissue adhesive or staples in repeated cesarean section: A randomized controlled trial. Eur J Obstet Gynecol Reprod Biol. 2022;271:112-6.
11. Baranco N, Zhang J, Khan S, Mastrogiannis D. Comparison between high transverse and low transverse Pfannenstiel skin incisions during cesarean delivery for morbidly obese patients. J Matern Fetal Neonatal Med. 2024;37(1):2375021.
12. Tinhofer IE, Tsai TY, Cheong DC, Lin TE, Kuo WL, Huang JJ. Coherences of Cesarean Sectioning Scars and Other Abdominal Scars and Venous Augmentation Using SIEV in Free DIEP Flaps for Breast Reconstruction. Microsurgery. 2025;45(2):e70039.
13. McCurdy RJ, Harding S, Felder L, Beáta A, Schnatz P, Berghella V. Cohen vs Pfannenstiel cesarean skin incision for body mass index ≥35 kg/m(2): a randomized controlled trial. Am J Obstet Gynecol MFM. 2024;6(12):101528.
14. Kaya B, Ozay OE, Ozay AC, Tüten A. Can the Pfannenstiel skin incision length be adjusted according to the fetal head during elective cesarean delivery? Front Surg. 2023;10:1227338.
15. Almeida LLF, Neves GL, Pinhati MES, Lamaita RM, Cândido EB, da Silva AL. Beyond the cut: a cross-sectional analysis of the long-term clinical and functional impact of cesarean section scars. Rev Bras Ginecol Obstet. 2025;47.
16. van den Bosch OFC, Fiset ME, Downey K, Maxwell C, Carvalho JCA. Anesthetic management of patients with class 3 obesity undergoing elective Cesarean delivery: a single-centre historical cohort study. Can J Anaesth. 2023;70(2):202-10.
17. de Queiroz VKP, da Nóbrega Marinho AM, de Barros GAM. Analgesic effects of a 5% lidocaine patch after cesarean section: A randomized placebo-controlled double-blind clinical trial. J Clin Anesth. 2021;73:110328.
18. Zhang N, Robrahn S, Thornburgh KR, Moon J, Ather MK, Boney CP, et al. Abdominal Wall Endometriosis: A Case Report and Literature Review of Pfannenstiel Incision Endometrioma. Cureus. 2024;16(8):e66223.
19. Paramythiotis D, Karlafti E, Tsomidis I, Iraklis G, Malliou P, Karakatsanis A, et al. Abdominal wall endometriosis: a case report. Pan Afr Med J. 2022;41:193.
20. Rexhepi M, Asani LV, Mulaki L, Koprivnjak K, Azemi M. Abdominal Wall Endometriosis at the Cesarean Section Scar. Pril (Makedon Akad Nauk Umet Odd Med Nauki). 2023;44(3):121-6.
21. Antoine, C., Pimentel, R. N., Reece, E. A. & Oh, C. 2021. Endometrium-free uterine closure technique and abnormal placental implantation in subsequent pregnancies. The Journal of Maternal-Fetal & Neonatal Medicine, 34, 2513-2521.
22. Basuki, D. R., Nofiyanto, E. & Laksono, R. M. 2022. Multimodal Analgesia Transversus Abdominis Plane Block-Ketorolac Combination being Superior to Paracetamol-Ketorolac as Postoperative Pain Management after Cesarean Section in an Indonesian Hospital. The Open Pain Journal, 15.
23. Dahlke, J.D., Mendez-Figueroa, H., Maggio, L., Sperling, J.D., Chauhan,S. P.& Rouse, D.J.2020.Thecaseforstandardizingcesareandelivery technique: seeing the forest for the trees. Obstetrics and gynecology, 136, 972.
24. Dasanayake, D., Jodhi, A., Roomadu, K. & Saumya, G. 2020. Skin closure with Pfannenstiel incision in lower segment caesarean section; comparison of wound outcome with interrupted vs. subcuticular techniques. Galle Medical Journal, 25.