
# COMPARATIVE PERFORMANCE OF THREE ABDOMINAL ENTRY TECHNIQUES IN CESAREAN DELIVERY: PFANNENSTIEL, JOEL–COHEN/MISGAV-LADACH, AND LOWER MIDLINE LAPAROTOMY

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*To present a comparative 3-group summary of abdominal entry techniques used for cesarean delivery, focusing on (i) skin-to-delivery interval, (ii) estimated blood loss, and (iii) intraoperative complications, and to interpret the findings in light of the most recent (last 5 years) evidence and guidance*

**ABSTRACT**

*Optimizing abdominal entry during cesarean delivery remains a practical priority, particularly for urgent procedures where time-to-delivery, blood loss, and intraoperative safety are critical. Contemporary recommendations increasingly emphasize standardization of technique and the use of evidence-based steps across the abdominal wall and uterine entry, while preserving the surgeon's ability to individualize the approach for obesity, adhesions, placenta previa/accreta spectrum suspicion, or anticipated hemorrhage. Recent international guidance and evidence syntheses indicate that Joel–Cohen–based entry can reduce operative time and some morbidity outcomes compared with more traditional sharp dissection approaches, although effects may vary by clinical context and patient phenotypes.*

**Background**. Optimizing abdominal entry during cesarean delivery remains a practical priority, particularly for urgent procedures where time-to-delivery, blood loss, and intraoperative safety are critical. Contemporary recommendations increasingly emphasize standardization of technique and the use of evidence-based steps across the abdominal wall and uterine entry, while preserving the surgeon's ability to individualize the approach for obesity, adhesions, placenta previa/accreta spectrum suspicion, or anticipated hemorrhage. Recent international guidance and evidence syntheses indicate that Joel–Cohen–based entry can reduce operative time and some morbidity outcomes compared with more traditional sharp dissection approaches, although effects may vary by clinical context and patient phenotype.

**Objective.** To present a comparative 3-group summary of abdominal entry techniques used for cesarean delivery, focusing on (i) skin-to-delivery interval, (ii) estimated blood loss, and (iii) intraoperative complications, and to interpret the findings in light of the most recent (last 5 years) evidence and guidance.

Materials and methods. A comparative observational summary was prepared for three abdominal entry techniques:

- Pfannenstiel transverse incision (n=105)
- Joel–Cohen/Misgav-Ladach–based transverse entry (n=101)
- Lower midline laparotomy (vertical) (n=100)

The sample sizes were reduced twofold from the original dataset for conference thesis presentation, while preserving the relative group structure. Outcomes were summarized as mean values (minutes for skin-to-delivery; milliliters for blood loss) and percent frequency for intraoperative complications. The source table was provided in an aggregated format (column header M±SD), but SD values were not available in the extracted dataset; therefore, results are reported as means and percentages only.

**Results.** Across 306 cesarean deliveries, the lowest mean skin-to-delivery interval was observed in the lower midline laparotomy group (5.9 min), followed by the Joel–Cohen/Misgav-Ladach group (6.3 min), with the Pfannenstiel group showing the longest interval (7.8 min). Mean blood loss was lowest in the Joel–Cohen/Misgav-Ladach group (540 ml), intermediate in the Pfannenstiel group (612 ml), and highest in the lower midline laparotomy group (680 ml). Intraoperative complications occurred least frequently with the Joel–Cohen/Misgav-Ladach approach (3.5%), followed by Pfannenstiel (4.3%), and were highest with lower midline laparotomy (6.1%).

| Group (n) | Skin-to-delivery, min (mean) | Blood loss, ml (mean) | Intraoperative complications, % |
|---|---|---|---|
| Pfannenstiel (105) | 7.8 | 612 | 4.3 |
| Joel–Cohen/Misgav-Ladach (101) | 6.3 | 540 | 3.5 |
| Lower midline laparotomy (100) | 5.9 | 680 | 6.1 |

**Discussion.** The present comparative summary demonstrates a clinically meaningful trade-off between speed of fetal extraction and surgical morbidity proxies. The lower midline approach achieved the fastest skin-to-delivery interval, but this advantage coincided with higher blood loss and the highest complication rate. In contrast, the Joel–Cohen/Misgav-Ladach approach showed the most favorable balance, combining a short skin-to-delivery interval with the lowest blood loss and lowest intraoperative complication rate.

These findings are directionally consistent with recent evidence syntheses emphasizing the benefits of Joel–Cohen–based entry steps (more blunt, layer-sparing expansion) for reducing blood loss and improving perioperative outcomes. FIGO's good practice recommendations also support selecting incision and entry steps based on anticipated difficulty and risk profile while promoting evidence-based standardization to reduce complications.

At the same time, recent randomized evidence in obese patients (BMI ≥35 kg/m$^2$) suggests that Cohen versus Pfannenstiel skin incision may yield broadly similar composite

maternal morbidity outcomes, with important limitations due to early trial termination and limited power; this highlights that incision choice alone may not fully determine outcomes without considering the complete entry technique, operator experience, and case complexity. In high-risk scenarios such as placenta previa, contemporary cohort data indicate that vertical incisions can be associated with greater blood loss and worse maternal/neonatal outcomes, though confounding by indication is substantial (vertical incisions are often chosen for more complex cases).

**Clinical implications.** For routine or urgent cesarean delivery where rapid access is required but excessive hemorrhage risk is not anticipated, a Joel–Cohen/Misgav-Ladach–based transverse approach may represent an efficient and safety-favorable option, aligning with recent evidence-based recommendations. In contrast, lower midline laparotomy should remain a selective strategy for specific indications (e.g., anticipated difficult access, extensive adhesions, certain placenta localization concerns, or need for wider exposure), acknowledging the potential for increased blood loss and complications observed in this cohort.

**Limitations.** The analysis is limited by aggregated data (absence of SD, inability to adjust for confounders such as BMI, prior cesarean delivery, adhesions, placenta previa/accreta suspicion, and urgency category), and by possible selection bias, as more complex cases may preferentially receive lower midline laparotomy.

Conclusion. In this comparative 3-group summary, lower midline laparotomy provided the shortest skin-to-delivery interval but was associated with the highest mean blood loss and complication rate. The Joel–Cohen/Misgav-Ladach approach demonstrated the most favorable overall profile (low blood loss and complications with near-fastest extraction), supporting its consideration as an evidence-aligned standard entry technique for many cesarean deliveries, with individualized escalation to midline laparotomy when clinically indicated.

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