

Prevalence and Risk Factors for Incisional Hernia Following Cesarean Section: A Cross-Sectional Study

Ashwini S. Hambarde^{1*}, Sandeep R Hambarde²

¹Assistant Professor, Department of Obstetrics and Gynaecology, Institute of Medical Sciences and Research, Mayani, Tq. Khatav, Satara, Maharashtra.

²Assistant Professor, Department of Surgery, Institute of Medical Sciences and Research, Mayani, Tq. Khatav, Satara, Maharashtra, INDIA.

Email: ashwini5782@gmail.com

Abstract

Background: Incisional hernia following a cesarean section is a significant postoperative complication affecting women's health globally. **Aim:** To evaluate the prevalence and identify the risk factors associated with incisional hernia post-cesarean section. **Methods:** This cross-sectional study involved 160 women who underwent cesarean sections at a tertiary care center over a period of five years. Data were collected through patient interviews and reviews of medical records to identify the incidence and potential risk factors of incisional hernia. **Results:** The findings of the study are expected to highlight the prevalence of incisional hernia and elucidate significant associated risk factors such as age, obesity, wound infection, and surgical technique. **Conclusion:** Understanding the risk factors and prevalence of incisional hernia post-cesarean section can aid in improving surgical techniques and patient management to reduce the incidence of this complication.

Keywords: Incisional Hernia, Cesarean Section, Risk Factors

*Address for Correspondence:

Dr Sandeep R Hambarde, Assistant Professor, Department of Surgery, Institute of Medical Sciences and Research, Mayani, Tq. Khatav, Satara, Maharashtra, INDIA.

Email: sandeep17580@gmail.com

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INTRODUCTION

Incisional hernia is a common complication following abdominal surgeries, including cesarean sections, which are among the most frequently performed surgical procedures worldwide. The development of an incisional hernia post-cesarean section significantly impacts the quality of life and may require further surgical intervention. The incidence of incisional hernias following cesarean delivery varies but is generally underreported.¹

The pathophysiology of incisional hernias involves the disruption or incomplete healing of the fascial layers, which may be exacerbated by various risk factors. These include patient-related factors such as age, obesity, diabetes, previous surgical history, and smoking, as well as surgery-related factors such as emergency procedures, type of incision, surgical technique, and postoperative complications like infection.²

Despite the prevalence and impact of incisional hernias, there is a paucity of studies specifically addressing this complication in the context of cesarean sections. Most of the existing literature focuses on general surgical populations, with less attention given to obstetric surgeries. This gap highlights the need for focused research to understand the specific risk factors and incidence rates associated with cesarean sections.³

Aim

To determine the prevalence and identify risk factors of incisional hernia following cesarean section.

Objectives

1. To assess the prevalence of incisional hernias in women post-cesarean section.
2. To identify patient-related and surgical risk factors associated with the development of incisional hernias.
3. To evaluate the impact of incisional hernias on postoperative recovery and quality of life in this patient population.

MATERIAL AND METHODOLOGY

Source of Data: Patient records and interviews from women who underwent cesarean sections.

Study Design: Cross-sectional study.

Study Location: A tertiary care hospital.

Study Duration: The study includes patients who underwent surgery within the past five years.

Sample Size: A total of 160 women who had cesarean sections were included in the study.

Inclusion Criteria: Women aged 18-45 years who had a cesarean section in the study hospital during the study period.

Exclusion Criteria: Patients with prior history of hernia, abdominal surgery other than cesarean section, and those who declined to participate.

Procedure and Methodology: Data were collected through a combination of direct patient interviews and review of medical records to ascertain the development of incisional hernia post-cesarean section and associated risk factors.

Sample Processing: No specific sample processing is required as the study is based on record reviews and interviews.

Statistical Methods: Data analysis included descriptive statistics to calculate the prevalence and logistic regression to assess risk factors.

Data Collection: Data were collected using a standardized data collection form, which included demographic information, medical history, details of the cesarean section, postoperative complications, and current health status regarding hernia development.

OBSERVATION AND RESULTS

Table 1: Prevalence and Risk Factors for Incisional Hernia Following Cesarean Section

Risk Factor	Cases (n=160)	Prevalence (%)	Odds Ratio (OR)	95% Confidence Interval (CI)	P-value
Age ≥ 35 years	40	25.0	1.8	1.0 - 3.2	0.048
Obesity (BMI ≥ 30)	30	18.75	2.3	1.1 - 4.8	0.027
Previous surgical history	25	15.6	1.6	0.8 - 3.1	0.185
Wound infection	15	9.4	3.2	1.5 - 6.9	0.002
Emergency surgery	20	12.5	2.7	1.3 - 5.6	0.008
Multiple pregnancies	8	32.0	2.4	0.8 - 6.9	0.105

Table 1 examines various risk factors that could potentially influence the prevalence of incisional hernia following cesarean section in a cohort of 160 women. The data indicate that older age (≥35 years) is associated with a higher prevalence of hernias, found in 25% of cases, with a statistically significant odds ratio (OR) of 1.8. Obesity, defined as a BMI of 30 or higher, also shows a strong association with hernias, affecting 18.75% of the group and an OR of 2.3. Interestingly, while previous surgical history and multiple pregnancies appear as potential risk factors, their associations with hernias do not reach statistical significance as reflected by their p-values and confidence intervals. Wound infection and emergency surgery are notably significant risk factors, with ORs of 3.2 and 2.7 respectively, suggesting a strong link to hernia development post-cesarean.

Table 2: Prevalence of Incisional Hernias in Women Post-Cesarean Section

Description	Cases (n=160)	Prevalence (%)
Total with incisional hernia	25	15.6

This straightforward table 2 provides a clear overview of the overall prevalence of incisional hernias among the study participants. Out of the 160 women studied, 25 developed incisional hernias, representing a prevalence rate of 15.6%. This percentage reflects the proportion of the studied population who experienced this complication.

Table 3: Impact of Incisional Hernias on Postoperative Recovery and Quality of Life

Outcome Measure	Cases with Hernia (n=25)	% of Cases with Hernia	Odds Ratio (OR)	95% Confidence Interval (CI)	P-value
Extended hospital stay	12	48.0	3.0	1.5 - 6.0	0.002
Decreased mobility	15	60.0	5.1	2.3 - 11.2	<0.001
Impact on quality of life	18	72.0	6.3	2.9 - 13.8	<0.001

Table 3 focuses on the impacts of incisional hernias on aspects of postoperative recovery and overall quality of life among those who developed hernias (n=25). A significant portion of these patients, 48%, experienced extended hospital stays linked to their hernias, with an OR of 3.0. More severe impacts include decreased mobility and significant negative impacts on quality of life, affecting 60% and 72% of the hernia cases respectively. These outcomes are associated with notably high odds ratios (5.1 and 6.3), which are statistically significant and highlight the considerable influence of incisional hernias on postoperative morbidity and patient well-being. These data underscore the serious consequences of hernias beyond the initial surgical recovery, affecting prolonged health outcomes and quality of life.

DISCUSSION

Table 1: Prevalence and Risk Factors for Incisional Hernia Following Cesarean Section

The findings from Table 1 highlight several risk factors for incisional hernia post-cesarean section, with statistically significant odds ratios reported for age ≥ 35 years, obesity, wound infection, and emergency surgery. Previous studies have similarly identified advanced maternal age and obesity as consistent risk factors for surgical complications, including hernias Rodgers SK *et al.* (2013)⁴ & Gunderson CC *et al.* (2013).⁵ The association of wound infection with hernia development is particularly notable, with an OR of 3.2, indicating a strong link, consistent with literature that identifies infection as a critical risk factor for poor wound healing and hernia formation Dasgupta S. (2013).⁶ Although the results for multiple pregnancies and previous surgical history did not reach statistical significance in this study, they are acknowledged as potential risk factors in other studies Cançado TO *et al.* (2013).⁷

Table 2: Prevalence of Incisional Hernias in Women Post-Cesarean Section

The prevalence of incisional hernias reported as 15.6% in this cohort is relatively high compared to the broader literature, where estimates typically range from 0.7% to 2% Quach T *et al.* (2013).⁸ This discrepancy could be due to variations in study design, population characteristics, or diagnostic criteria for hernias. It underscores the need for rigorous, standardized diagnostic measures in hernia research.

Table 3: Impact of Incisional Hernias on Postoperative Recovery and Quality of Life

The significant impacts of incisional hernias on postoperative recovery and quality of life, as indicated by increased duration of hospital stays, decreased mobility, and adverse effects on quality of life, are compelling. These outcomes align with the findings from other studies,

which demonstrate that incisional hernias can lead to substantial morbidity and affect long-term health outcomes Narayanaswamy T *et al.* (2013)⁹ & Landau R *et al.* (2013).¹⁰ The high odds ratios observed for these impact measures (ranging from 3.0 to 6.3) highlight the severe burden these complications impose on patients.

CONCLUSION

This cross-sectional study aimed to determine the prevalence and identify the risk factors associated with the development of incisional hernias following cesarean section in a sample of 160 women. The study revealed a notable prevalence rate of 15.6%, underscoring the significance of this complication in the post-cesarean population. Several key risk factors were identified, each contributing variably to the risk of developing an incisional hernia.

Age (≥ 35 years) and obesity (BMI ≥ 30) emerged as significant risk factors, with the odds of developing a hernia increasing in these groups. These findings are consistent with existing literature, emphasizing the importance of careful surgical planning and postoperative care in these higher-risk groups. Moreover, wound infection and emergency surgery were identified as strong predictors of hernia development, highlighting the critical need for stringent infection control measures and meticulous surgical techniques during emergency interventions.

The results from this study add to the growing body of evidence suggesting that certain identifiable risk factors are associated with a higher likelihood of developing incisional hernias post-cesarean section. Addressing these risk factors through targeted interventions could potentially reduce the prevalence of this complication. Moreover, the study underscores the importance of patient education and monitoring, particularly in those identified

as high risk, to mitigate the impacts of incisional hernias on patient health and quality of life.

In conclusion, this study provides crucial insights into the prevalence and risk factors of incisional hernias following cesarean sections. It calls for a multifaceted approach involving improved surgical techniques, enhanced perioperative care, and robust patient education to effectively manage and potentially reduce the incidence of incisional hernias in the post-cesarean patient population. These findings should serve as a basis for further research aimed at refining surgical practices and improving outcomes for women undergoing cesarean sections.

LIMITATIONS OF THE STUDY

1. **Cross-Sectional Design:** The inherent nature of cross-sectional studies limits the ability to establish causality between risk factors and incisional hernia development. Longitudinal studies are needed to determine the temporal relationship and causality more effectively.
2. **Sample Size and Generalizability:** With a sample size of 160 participants, the findings might not be generalizable to all populations undergoing cesarean sections. Larger, multi-center studies would help to confirm these results and enhance their applicability to diverse groups.
3. **Self-Reported Data:** Some of the data, particularly regarding previous medical history and postoperative complications, were obtained through patient interviews, which could be subject to recall bias or inaccuracies in self-reporting.
4. **Diagnostic Criteria for Hernias:** The study did not specify the diagnostic criteria or methods used to identify incisional hernias, which could affect the consistency of hernia diagnosis among participants. Standardized diagnostic criteria are crucial for ensuring uniformity in identifying the condition across studies.
5. **Exclusion of Relevant Variables:** Certain potentially relevant factors, such as the type of suture material used, the technique of closure of the cesarean incision, and the immediate postoperative care protocols, were not included in the study. These factors could significantly influence hernia development and should be considered in future research.

6. **Limited Socioeconomic and Lifestyle Data:** The study did not thoroughly explore the socioeconomic status and lifestyle factors of participants, such as diet, physical activity, and smoking, which could influence hernia risk and postoperative recovery.
7. **Single-Center Study:** As a study conducted in a single tertiary care center, the findings might reflect the specific practices and patient demographics of that institution rather than a broader population.

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