A Clinical Study on Abdominal Wound Dehiscence in a Tertiary Care Hospital in Tamil Nadu

DR. N J DHANISHMA
DR. SREETHAR
DR. JAYASAKTHI
1. JUNIOR RESIDENT, DEPARTMENT OF GENERAL SURGERY, SREE MOOKAMBIKA INSTITUTE OF MEDICAL SCIENCES KANYAKUMARI, TAMIL NADU, INDIA.

2. PROFESSOR, DEPARTMENT OF GENERAL SURGERY SREE MOOKAMBIKA INSTITUTE OF MEDICAL SCIENCES COLLEGE KANYAKUMARI, TAMIL NADU, INDIA

3.ASSISTANT PROFESSOR, DEPARTMENT OF GENERAL SURGERY SREE MOOKAMBIKA INSTITUTE OF MEDICAL SCIENCES COLLEGE KANYAKUMARI, TAMIL NADU, INDIA.

CORRESPONDING AUTHOR:
DR.N J DHANISHMA
JUNIOR RESIDENT, DEPARTMENT OF GENERAL SURGERY, SREE MOOKAMBIKA INSTITUTE OF MEDICAL SCIENCES KANYAKUMARI, TAMIL NADU, INDIA.

ABSTRACT

Background:

Abdominal wound dehiscence is a serious postoperative complication following laparotomy, leading to increased morbidity, prolonged hospitalization, and higher healthcare costs. Despite surgical advances, its incidence remains significant, particularly in resource-constrained settings. This study aimed to evaluate the demographic and clinical characteristics, associated risk factors, and outcomes of patients with abdominal wound dehiscence in a tertiary care hospital in Tamil Nadu.

Methods:

A prospective observational study was conducted over a 12-month period at a tertiary care center in Tamil Nadu. A total of 24 patients who developed abdominal wound dehiscence post-laparotomy were enrolled. Data were collected on demographics, type and indication of surgery, risk factors, clinical presentation, and outcomes. Statistical analysis was performed using descriptive methods due to the small sample size.

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Results:

Among the 24 patients, the majority were male (70.8%) and aged above 40 years. Emergency surgeries accounted for 70.8% of cases, most commonly for perforation peritonitis (41.7%). Major risk factors identified included anemia (54.2%), hypoproteinemia (45.8%), and diabetes mellitus (41.7%). Dehiscence typically occurred between postoperative days 5–10, with 70.8% presenting as complete dehiscence (burst abdomen). Surgical site infection was the most common complication (75%). Secondary suturing was required in 83.3% of patients. The overall mortality rate was 8.3%.

Conclusion:

Abdominal wound dehiscence is multifactorial, with preventable causes such as poor nutritional status and infection playing a significant role. Early identification and timely intervention can improve patient outcomes. Region-specific strategies are essential in reducing the burden of this complication.

Keywords:

Abdominal wound dehiscence, burst abdomen, postoperative complications, risk factors, laparotomy.

INTRODUCTION

Abdominal wound dehiscence, often referred to as "burst abdomen," represents a significant postoperative complication characterized by the partial or complete disruption of a surgical incision's layers[1]. This condition not only poses immediate health risks but also contributes to prolonged hospital stays, increased healthcare costs, and elevated morbidity and mortality rates. Despite advancements in surgical techniques and postoperative care, the incidence of wound dehiscence remains a pressing concern in surgical practice[2,3].

The incidence of abdominal wound dehiscence varies globally, with studies reporting rates between 0.4% and 3.5% following abdominal surgeries[4]. In the Indian context, particularly in tertiary care centers, the incidence has been reported to be around 2.3%, with a higher prevalence observed in emergency laparotomies compared to elective procedures. Factors contributing to this complication include patient-related aspects such as age, nutritional status, and comorbidities, as well as surgery-related factors like the type of incision and the presence of infection[5,6].

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Several studies across India have delved into the risk factors and outcomes associated with abdominal wound dehiscence. A study conducted at Nair Hospital, Mumbai, identified anemia, malnutrition, obesity, diabetes mellitus, and respiratory conditions as significant contributors to wound dehiscence. The study emphasized the higher occurrence in emergency surgeries and highlighted the importance of surgical technique and postoperative care[7].

Research from R.N.T. Medical College, Udaipur, underscored the role of intra-abdominal infections, anemia, hypoalbuminemia, and jaundice in increasing the risk of wound dehiscence. The study also noted a higher incidence among male patients in their fourth and fifth decades of life [8].

At Bangalore Medical College, a clinical study highlighted the prevalence of wound dehiscence in patients undergoing emergency surgeries, particularly those with peritonitis due to hollow viscus perforation. The study also pointed out the significance of comorbidities like diabetes and chronic obstructive pulmonary disease in delaying wound healing[6]. These studies collectively emphasize the multifactorial nature of abdominal wound dehiscence and the need for comprehensive strategies to mitigate its occurrence.

Given the persistent incidence and associated complications of abdominal wound dehiscence, especially in resource-limited settings, there is a pressing need for region-specific studies. Tamil Nadu, with its diverse patient demographics and healthcare infrastructure, presents a unique context for examining the factors contributing to wound dehiscence. Understanding the local epidemiology, risk factors, and outcomes can inform targeted interventions, optimize surgical practices, and enhance patient care. This study aims to fill the existing knowledge gap by providing insights specific to the Tamil Nadu population, thereby contributing to the broader efforts in reducing the burden of abdominal wound dehiscence.

AIM AND OBJECTIVES

Aim:

To analyze the incidence, risk factors, clinical profile, and outcome of abdominal wound dehiscence in postoperative patients in a tertiary care hospital in Tamil Nadu.

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Objectives:

1. To identify the demographic and clinical risk factors associated with abdominal wound dehiscence.
2. To assess the management outcomes and complications among patients with wound dehiscence.

MATERIALS AND METHODS

Study Design and Setting

This was a prospective observational study conducted in the Department of General Surgery at a tertiary care hospital in Tamil Nadu. The study was carried out over a period of 18 months, from January 2023 to June 2024.

Study Population

All postoperative patients who developed abdominal wound dehiscence following laparotomy during the study period were included. These patients were managed either conservatively or surgically and followed up until discharge or death.

Inclusion Criteria

- Patients aged 18 years and above.
- Patients who underwent either emergency or elective abdominal surgeries and subsequently developed wound dehiscence.
- Patients who provided informed consent for participation.

Exclusion Criteria

- Patients with dehiscence limited only to skin and subcutaneous tissues (superficial wound separation without fascial involvement).
- Pediatric patients (less than 18 years of age).
- Patients lost to follow-up or those unwilling to participate.

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Sample Size

A total of 24 patients who fulfilled the inclusion criteria were included in the study. The sample size was determined based on similar previous studies conducted in South India and with consideration for adequate statistical power.

Data Collection

After obtaining institutional ethical committee approval and written informed consent from participants, data were collected using a structured proforma. The following parameters were recorded:

- **Demographic details:** Age, sex, occupation, and socioeconomic status.
- **Clinical history and comorbidities:** Diabetes mellitus, anemia, nutritional status (serum albumin), chronic respiratory illnesses, smoking status, and other relevant medical history.
- **Surgical details:** Type of surgery (elective/emergency), duration of surgery, type of incision, wound class (clean, contaminated, infected), and suture material used.
- **Postoperative course:** Onset and type of wound dehiscence, associated complications such as surgical site infections, and the mode of management (conservative or operative).

Laboratory investigations including hemoglobin levels, serum albumin, total leukocyte count, and fasting blood glucose were also documented. Imaging studies were performed where necessary to rule out intra-abdominal complications.

Definitions Used

- **Abdominal Wound Dehiscence** was defined as partial or complete disruption of the abdominal fascia with or without evisceration of abdominal contents.
- **Partial Dehiscence:** Separation of wound without complete disruption of fascia.
- **Complete Dehiscence (Burst Abdomen):** Full-thickness separation including fascia, often with bowel protrusion.

Management Protocol

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Patients with partial dehiscence and no signs of sepsis were managed conservatively with regular dressings and antibiotics. Complete dehiscence cases were managed surgically with resuturing under appropriate anesthesia. Supportive measures included nutritional optimization, correction of anemia and electrolytes, and management of comorbidities.

Follow-up and Outcome Measures

Patients were followed until discharge. Outcomes assessed included the need for re-operation, duration of hospital stay, incidence of surgical site infection, and mortality.

Statistical Analysis

Data were compiled in Microsoft Excel and analyzed using SPSS version 25. Descriptive statistics were used for demographic and clinical parameters. Categorical variables were expressed as frequencies and percentages, while continuous variables were presented as mean ± standard deviation. Chi-square test or Fisher's exact test was used to determine associations between categorical variables, and a p-value <0.05 was considered statistically significant.

RESULTS

Table 1: Demographic Profile of Patients with Abdominal Wound Dehiscence (n = 24)

Characteristic	Category	Number (%)
Age Group (years)		
21–30		3 (12.5%)
31–40		7 (29.2%)
41–50		6 (25.0%)
>50		8 (33.3%)
Gender		
Male		17 (70.8%)

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Characteristic	Category	Number (%)
Female		7 (29.2%)
Occupation		
Manual laborer		10 (41.7%)
Housewife		6 (25.0%)
Others (retired/shop/student)		8 (33.3%)

Table 2: Risk Factors Associated with Wound Dehiscence (n = 24)

Risk Factor	Number (%)
Anemia (Hb < 10 g/dL)	13 (54.2%)
Hypoproteinemia (Albumin < 3 g/dL)	11 (45.8%)
Diabetes Mellitus	10 (41.7%)
Emergency Surgery	17 (70.8%)
Chronic cough or COPD	6 (25.0%)
Smoking	9 (37.5%)
Obesity (BMI > 30)	4 (16.7%)
Previous abdominal surgery	3 (12.5%)

Table 3: Type of Surgery and Wound Classification (n = 24)

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Parameter	Category	Number (%)
Type of Surgery	Emergency laparotomy	17 (70.8%)
	Elective laparotomy	7 (29.2%)
Indication	Perforation peritonitis	10 (41.7%)
	Intestinal obstruction	6 (25.0%)
	Appendicular abscess	4 (16.7%)
	Others	4 (16.7%)
Wound Classification	Contaminated	14 (58.3%)
	Dirty/Infected	10 (41.7%)

Table 4: Clinical Features and Type of Dehiscence (n = 24)

Parameter	Category	Number (%)
Onset of Dehiscence	POD 5–7	9 (37.5%)
	POD 8–10	10 (41.7%)
	After POD 10	5 (20.8%)
Type of Dehiscence	Partial	7 (29.2%)
	Complete (Burst abdomen)	17 (70.8%)
Associated Symptoms	Purulent discharge	18 (75.0%)
	Evisceration	8 (33.3%)

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Parameter	Category	Number (%)
	Pain	19 (79.2%)

Table 5: Management and Outcomes (n = 24)

Parameter	Category	Number (%)
Management Strategy	Secondary suturing	20 (83.3%)
	Conservative (dressing, antibiotics)	4 (16.7%)
Complications Observed	Surgical site infection	18 (75.0%)
	Septicemia	3 (12.5%)
	Respiratory distress	2 (8.3%)
Hospital Stay Duration	≤10 days	4 (16.7%)
	>10 days	20 (83.3%)
Mortality		2 (8.3%)

DISCUSSION

Demographic Profile

In our study, the majority of patients with abdominal wound dehiscence were males aged over 40 years. This aligns with findings from Verma et al.[8], who reported a higher incidence among males in their fourth and fifth decades of life. Similarly, Kapoor et al.[6] observed a predominance of male patients in the fifth decade. The increased prevalence in males may be attributed to factors such as higher rates of emergency surgeries and comorbid conditions like

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smoking and chronic obstructive pulmonary disease (COPD), which are more common in this demographic.

Surgical Factors

Emergency surgeries accounted for 70.8% of dehiscence cases in our study, with perforation peritonitis being the most common indication. This is consistent with findings from Modi et al.[9], who reported a high incidence of wound dehiscence following emergency exploratory laparotomies, particularly in cases of hollow viscus perforation. The urgency of these procedures often precludes optimal preoperative preparation, increasing the risk of postoperative complications.

Risk Factors

Anemia (54.2%), hypoproteinemia (45.8%), and diabetes mellitus (41.7%) were the predominant risk factors identified. These findings are corroborated by Mahey et al.[7], who emphasized the role of anemia and malnutrition in wound healing complications. Additionally, Verma et al.[8] highlighted the significance of hypoalbuminemia and diabetes mellitus as contributing factors. These conditions impair collagen synthesis and immune function, thereby delaying wound healing and increasing susceptibility to dehiscence.

Timing and Type of Dehiscence

The majority of dehiscence cases occurred between postoperative days 5 and 10, with 70.8% presenting as complete dehiscence (burst abdomen). This temporal pattern is in line with observations by Gupta et al.[10], who noted that wound dehiscence commonly manifests within the first two weeks post-surgery. The early postoperative period is critical, as the wound tensile strength is minimal, making it susceptible to mechanical stress and infection.

Management and Outcomes

Secondary suturing was the primary management strategy employed in 83.3% of cases, with a mortality rate of 8.3%. Kapoor et al.[6] reported similar management approaches, emphasizing the effectiveness of secondary suturing in achieving wound closure. However, the mortality rate in our study was lower compared to the 22.5% reported by Vardhini et al.[11], possibly due to early intervention and improved postoperative care in our setting.

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Comparison with Other Studies

Our findings are consistent with several studies conducted across India:

- Mahey et al.[7] identified anemia, malnutrition, and diabetes mellitus as significant risk factors for wound dehiscence.
- Verma et al.[8] emphasized the role of hypoalbuminemia and intra-abdominal infections in the development of wound dehiscence.
- Modi et al.[9] reported a high incidence of dehiscence following emergency surgeries, particularly in cases involving hollow viscus perforation.

These studies collectively underscore the multifactorial etiology of abdominal wound dehiscence and the importance of addressing modifiable risk factors to improve patient outcomes.

CONCLUSION

Abdominal wound dehiscence remains a significant postoperative complication associated with increased morbidity, prolonged hospital stay, and higher healthcare costs. This study highlights that risk factors such as anemia, hypoproteinemia, diabetes mellitus, emergency surgeries, and postoperative infections play a crucial role in the development of wound dehiscence. Early identification of these risk factors, along with appropriate preoperative optimization and meticulous surgical techniques, can significantly reduce the incidence. Prompt recognition and timely intervention, especially in complete dehiscence cases, are essential to improve patient outcomes. Strengthening perioperative care, particularly in resource-limited settings like many areas of Tamil Nadu, is vital for better surgical prognosis and reduced complication rates.

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