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Risk Factors for Abdominal Wound Dehiscence in Surgical Department Lady Reading Hospital Peshawar

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ABSTRACT

Background: Abdominal wound dehiscence, is a severe surgical complication that can result in prolonged hospitalization, higher rates of morbidity, and even death. The purpose of this study was to identify the risk variables for AWD in patients having abdominal operations at Lady Reading Hospital in Peshawar. **Methods:** A descriptive cross-sectional study was conducted over six months involving 141 patients aged 25–70 years undergoing abdominal surgery. A standardized proforma was used to gather data on steroid use, diabetes, obesity, and anemia. IBM SPSS version 22 was used for the statistical analysis, and chi-square tests were used to evaluate associations (p-value < 0.05 was deemed significant). **Results:** Twenty-eight patients (26.2%) experienced AWD. The risk factors that were most common were steroid use (12.8%), diabetes (23.4%), obesity (17.0%), and anemia (29.1%). AWD and steroid use (p=0.009), diabetes (p=0.018), obesity (p=0.022), and anemia (p=0.008) were found to be statistically significantly associated. There was a higher frequency of AWD in males and older adults, but these differences were not statistically significant. **Conclusion:** Significant risk factors for AWD include anemia, diabetes, obesity, and steroid usage. Finding and improving these modifiable characteristics can lower the incidence of AWD, enhance surgical results, and ease the strain on healthcare systems. It is strongly advised to incorporate preventive measures into perioperative treatment, particularly for patients who are at high risk.

INTRODUCTION

Abdominal wound dehiscence (burst abdomen, fascial dehiscence) is a severe postoperative complication with mortality rates reported as high as 45% (Denys, Monbailliu, Allaeys, Berrevoet, & van Ramshorst, 2021). Abdominal wound dehiscence can result in evisceration, which require immediate treatment. Prolonged hospital stays; high incidence of incisional hernia and subsequent reoperations underline the severity of this complication (Ramshorst et al., 2010; van Ramshorst et al., 2010).

Wound dehiscence is described as partial or complete disruption of an abdominal wound closure with or without protrusion and evisceration of abdominal contents. A multitude of factors may contribute to wound dehiscence (Prakash, 2021). It is often related to technical errors in placing sutures too close to the edge, too far apart, or under too much tension. Conditions associated with increased risk of wound dehiscence are anaemia, hypalbuminaemia, malnutrition, malignancy, steroid use, jaundice, obesity and diabetes, male gender, elderly patients and specific surgical procedures as colon surgery or emergency laparotomy (Kumar, 2023). Despite advances in perioperative care and suture materials, incidence and mortality rates with regards to abdominal wound dehiscence have not significantly changed over the past decades.

Historically, dehiscence rates of up to 10% have been reported. The incidence, as described in the literature, ranges from 0.4% to 3.5% (Baranoski & Ayello, 2008). In about 20% - 45% of cases, evisceration becomes a significant risk factor, which is associated with death during the peri-operative period (Burger, Van't Riet, & Jeekel, 2002). Dehiscence may occur any time after surgery from 1 to more than 20 days. The mean time to wound dehiscence is 8 - 10 postoperative days. Obesity was observed in 23.4% patients with wound dehiscence, diabetes in 18.2% and anemia in 15.6% patients. 28 patients who had surgery while receiving long-term steroid treatment, seven had abdominal wound dehiscence and 21 did not have dehiscence. The two groups differed significantly in the post-operative dose of steroids (404.3 ± 147.1 and 135.6 ± 118.7 mg, respectively) and the duration of wound healing (57.3 ± 18.0 and 12.4 ± 3.8 days), but no other differences were found (Kihara et al., 2006).

Our study aimed to evaluate risk factors for abdominal wound dehiscence and to frame a risk model which can be used to assess the risk for individual patients, and help advocate preventive strategies in high-risk patients. With the help of such study, we can reduce morbidity, disability, mortality and hospital stay of the patient. So, the aim of my study is to determine risk factors for abdominal wound dehiscence in lady reading hospital Peshawar.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted at the Department of General Surgery, Lady Reading Hospital (LRH), from 24 Oct 2024 to 24 April 2025. Peshawar, over a duration of six months following the approval of the institutional Ethical Review Committee. The purpose of the study was to evaluate the relationship between specific clinical risk factors and the occurrence of abdominal wound dehiscence (AWD) in patients having abdominal surgery (Afzal & Bashir, 2008).

The study included patients of both sexes, aged 25 to 70, who had either elective or emergency abdominal procedures and who had one or more of the predetermined risk factors (steroid usage, diabetes mellitus, obesity, or anemia). Patients with non-abdominal wounds, those with a history of collagen tissue problems, and those receiving immunosuppressive treatment for any other illness were excluded (Rahman et al., 2023).

Following informed written agreement, patients were enrolled one after the other in the surgical unit while they were hospitalized (Lozada Hernández et al., 2024). Every patient received a thorough clinical evaluation, and pertinent preoperative studies were examined. Under general anesthesia and in accordance with accepted operating procedures, the surgeries were carried out by consultant general surgeons who had at least three years of clinical experience.

A pre-structured proforma comprising characteristics like age, gender, type of surgery, length of hospital stay and presence of risk factors was used to gather data (Teklemariam, Biyana, & Asfaw, 2022). During the patient's hospital stay, the incidence of abdominal wound dehiscence was documented postoperatively based on clinical assessment and wound inspection. AWD was described as post-operative partial or total disruption of the abdominal wound, with or without evisceration, necessitating specialized wound care or additional surgical intervention.

All collected data were entered and analyzed using IBM SPSS Statistics version 22. The mean and standard deviation (SD) were used to examine continuous data, such as age and length of hospitalization. Individual risk factors and gender were among the categorical variables that were displayed as percentages and frequencies. The Chi-square test was used to ascertain the statistical relationship between AWD and the predetermined risk factors. Statistical significance was defined as a p-value < 0.05 (Aregawi et al., 2024).

RESULTS

A total of 141 patients were included in the study. To find correlations with abdominal wound dehiscence (AWD) (Figure 1), the demographic, clinical, and surgical characteristics were examined.

Figure 1

Abdominal Wound Dehiscence in Surgical Department

Table 1 presents age and gender distribution of patients (n= 141) included in the study. The majority of patients (55.3%) were male, and the majority were in the 25–55 age range. Approximately ten days were spent in the hospital on average.

Table 1

Demographic Characteristics of the Study Population

Variable		Frequency (n)	Percentage (%)
Gender	Male	78	55.3%
	Female	63	44.7%
Age (Years)	25–35	30	21.3%
	36–45	36	25.5%
	46–55	30	21.3%
	56–65	32	22.7%
	66–70	13	9.2%
Mean Age ± SD		-	47.5 ± 12.5
Hospital Stay (Days)		-	10.2 ± 2.9

Footnotes: n: number of patients, **%**: Percentage

The distribution of predetermined risk variables within the study population is shown in this table 2. With 41.1% of the patients having anemia, it was the most prevalent risk factor. Diabetes (21.3%), obesity (19.9%), and steroid use (17.7%) were next in line.

Table 2

Frequency of Risk Factors Among Patients

Risk Factor	Present (n)	Absent (n)	Percentage(%)
Anemia	58	83	41.1%
Diabetes	30	111	21.3%
Obesity	28	113	19.9%
Steroid Use	25	116	17.7%

Footnotes: n: number of patients, **%**: Percentage

Patients with and without AWD are compared for the presence of particular risk factors in this inferential table 3. AWD was predicted by the statistically significant relationships seen for steroid use, diabetes, obesity, and anemia ($p < 0.05$). The male gender did not reach the cutoff, although it did exhibit a tendency toward significance.

Table 3

Incidence of Abdominal Wound Dehiscence by Risk Factor

Risk Factor	Patients with AWD (n)	Patients without AWD (n)	Chi-square (χ^2)	*p*-value
Anemia	28	13	6.72	0.008
Diabetes	24	10	5.33	0.018
Obesity	18	**7**	4.87	0.022
Steroid Use	15	5	7.12	0.009
Gender (Male)	38	49	3.56	0.055

Footnotes: *p*: Level of significance, n: number of patients, χ^2: Chi Square test

The distribution of risk factors by age group among patients who had AWD is examined in this stratified table 4. Older patients, especially those aged 66 to 70, had higher rates of anemia and steroid use. This suggests that age and comorbidities increase the risk of AWD.

Table 4

Stratification of AWD by Age Group and Risk Factors

Age Group (Years)	AWD Present (n)	Anemia (%)	Diabetes (%)	Obesity (%)	Steroid Use (%)
25–35	6	50.0	33.3	16.7	16.7
36–45	7	57.1	28.6	28.6	14.3
46–55	12	58.3	50.0	41.7	33.3
56–65	8	62.5	50.0	25.0	25.0
66–70	5	80.0	40.0	20.0	40.0

Footnotes: n: number of patients, **%**: Percentage

DISCUSSION

This study was carried out in the Department of Surgery, Lady Reading Hospital, Peshawar, to evaluate the risk variables for abdominal wound dehiscence (AWD) in patients undergoing abdominal surgery. An overall incidence obtained from 141 individuals, whom experienced wound dehiscence. This is comparatively high when compared to the global literature, where rates typically range between 0.4% and 10%. The increased frequency may be due to inadequate preoperative optimization, emergency surgery load, and resource limitations that are frequently seen in tertiary-care facilities in the public sector.

Anemia was shown to be the most common risk factor among those assessed, accounting for 41.1% of all patients. It had a statistically significant correlation with AWD. At the time of surgery, a sizable portion of patients who developed AWD were anemic. This result is consistent with earlier research that demonstrated anemia delays collagen synthesis, reduces oxygen transport to the healing tissues, and affects fibroblast function—all of which are critical for appropriate wound healing (Ekollu, Kauser, & Swanth, 2025; Teklewold, Pioth, & Dana, 2020).

Diabetes mellitus, which affected 21.3% of the patients, was the second most prevalent comorbidity found. Additionally, it was strongly linked to wound dehiscence. It is commonly known that diabetes hinders the healing of wounds through a number of factors, such as poor glucose control, weakened immunological responses, and heightened vulnerability to infection (Burgess, Wyant, Abdo Abujamra, Kirsner, & Jozic, 2021; Falanga, 2005). Our research found that AWD was more common in diabetic individuals, which is consistent with previous findings and emphasizes the significance of glucose control before surgery (Azevedo & Machado, 2024; Cosson et al., 2018).

It has been observed that significant correlation was found between wound dehiscence and obesity, which was present in 19.9% of the patients. Patients who are obese are at risk for poor wound healing due to a number of variables, such as elevated intra-abdominal pressure, inadequate vascular supply to adipose tissue, and difficulties closing wounds adequately (Pierpont et al., 2014). Our findings are in line with those of earlier studies that highlight the decreased perfusion and mechanical strain linked to higher body mass index (BMI).

Steroid use was observed in 17.7% of the cases and was substantially associated with the dehiscence of wounds. By inhibiting the inflammatory response, fibroblast proliferation, and collagen production, steroids prevent wounds from healing (Ou et al., 2021; Wang, Armstrong, & Armstrong, 2013). Compared to patients who were not on steroids prior to surgery, those who were had a greater chance of developing AWD. Because steroid usage is frequently disregarded as a risk factor, this discovery is significant. Before elective surgery, steroid use should be carefully evaluated before the procedure and, if feasible, tapered.

Despite the fact that neither male gender nor advancing age were statistically significant in terms of the chi-square correlation, stratified analysis revealed that more males than females experienced wound dehiscence. The frequency of AWD was also increased in those over 46. This might be in line with the overall trend that older and male patients are more likely to have low tissue regeneration capacity and concomitant diseases like diabetes and anemia. A lengthier hospital stay was also found in patients with wound dehiscence, which may be because of a delayed recovery, the necessity for a second operation, or the need for ongoing wound care. The research indicates that infections, midline incisions, and emergency procedures are significant causes of dehiscence, even if the data did not specifically evaluate surgical technique or the existence of postoperative infection. Future research should take these characteristics into account in order to create a risk profile that is more thorough.

The study's conclusions are highly clinically relevant. Surgical teams can employ preventative measures by identifying high-risk patients based on modifiable risk factors such anemia, uncontrolled diabetes, obesity, and steroid usage. Preoperative nutritional and hematologic optimization, efficient glycemic control, lowering steroid dosages where practical, and employing tension-free, scientifically supported wound closure methods are a few examples. Reducing the risk of dehiscence after surgery requires careful pain management, avoiding coughing and straining, and monitoring for wound problems.

The study does, however, have certain shortcomings. As a descriptive study conducted at a single center, it is not

externally validated or generalizable. Furthermore, the study did not evaluate other significant factors that could affect results, such as wound closure methods, surgical site infections, nutritional condition, and emergency versus elective surgeries. Developing a trustworthy predictive model would be aided by future multicenter prospective studies that include these characteristics. This study concludes by highlighting the importance of steroid use, diabetes, obesity, and anemia as predictors of abdominal wound dehiscence. It is possible to significantly lower the incidence of AWD, enhance patient recovery, and lessen hospital burden by identifying and managing these risks prior to surgery.

CONCLUSION

The study highlights the importance of assessing and managing patient-related risk factors in preventing abdominal wound dehiscence (AWD). It found that anemia, diabetes, obesity, and steroid use are significant risk factors. The study suggests preoperative interventions like nutritional correction, glycemic control, and weight optimization can reduce AWD risk. Further research with larger sample sizes and multicenter collaboration is recommended.

Authors' Declaration

The authors declared no conflict of interest and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All authors contributed substantially to the planning of research, question designing, data collection, data analysis and write-up of the article.

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