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Original Research Paper

General Surgery

A CLINICAL STUDY OF ABDOMINAL WOUND DEHISCENCE

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ABSTRACT

INTRODUCTION:-AWD (abdominal wound dehiscence) is a word that is widely used to describe the separation of different layers of an abdominal wound before it has healed completely. Acute laparotomy wound failure and burst abdomen are two more words that are used interchangeably. Wound dehiscence happens when a wound does not develop the necessary strength to withstand the demands exerted on it. Dehiscence happens when sutures are disrupted by external pressures, absorbable sutures dissolve too quickly, or tight sutures rip through tissues due to excessive strain. AWD has been a long-standing problem for which no surgical unit has offered a complete solution (i.e. none of the surgical units worldwide has reported 0 percent failure rate). However, numerous institutes around the world have been successful in achieving and maintaining failure rates considerably below 1%. These figures, on the other hand, do not deter researchers from continuing their efforts to solve the problem. In the last ten years, there have been a slew of publications attempting to explain how to solve this problem. The goal of this study is to assess the prevalence of abdominal wound dehiscence in relation to various risk factors, co-morbidities, and treatment options. **AIM:-**The study aimed at finding out the prevalence of abdominal wound dehiscence with respect to demographic factors, nature of preceding surgery and different risk factors and also to study the effective management of abdominal wound dehiscence. **METHODS:-**An Observational study on 60 patients comprising all patients admitted to Silchar medical College and Hospital a tertiary care center in Assam within the study period of 1st January 2021 to 31st July 2021 with diagnosed abdominal wound Dehiscence after undergoing surgical interventions. **RESULTS**:-The majority of the patients in this study were between the ages of 41 and 50. Majority were male. 81.67% were operated as emergency surgery. 66.67% have undergone procedures which are classified as contaminated. (80%) were operated with mid line incision. 58% patients with peritonitis due to hollow viscus perforation. 58.33% had hypoalbuminemia. Malnutrition, DM, HT, pulmonary diseases, anemia etc. are important risk factors for wound dehiscence. **CONCLUSION:-**Because of the poor blood supply at Linea Alba, individuals who had a midline laparotomy had a higher risk of wound dehiscence than those who had a paramedian laparotomy. Wound dehiscence is more likely in people with a BMI greater than 25, compared to those with a BMI less than 25. In this study wound dehiscence is mainly associated with complications like hypoproteinemia and pulmonary complications and anaemia.

KEYWORDS : wound dehiscence, laparotomy complications, surgical site infection, burst abdomen

INTRODUCTION:-

AWD (abdominal wound dehiscence) is a word that is widely used to describe the separation of different layers of an abdominal wound before it has healed completely. Acute laparotomy wound failure and burst abdomen are two more words that are used interchangeably.

Wound dehiscence happens when a wound does not develop the necessary strength to withstand the demands exerted on it. Dehiscence happens when sutures are disrupted by external pressures, absorbable sutures dissolve too quickly, or tight sutures rip through tissues due to excessive strain.

The failure of an acute wound can be partial or complete. [1] Only the superficial layers or a portion of the tissue layers reopen in partial dehiscence. All layers of the wound thickness are separated in total wound dehiscence, revealing the underlying tissue and organs that may protrude out of the separated wound. The risk of a burst abdomen, the necessity for prompt intervention, and the probability of recurring dehiscence, surgical site infection, and incisional hernia formation make it one of the most feared post-operative consequences for surgeons.[2]

Abdominal wound dehiscence is a serious postoperative complication that has been linked to fatality rates as high as 45 percent. According to the literature, the incidence ranges from 0.4 percent to 3.5 percent. [3] Wound dehiscence is caused by a variety of reasons including emergency surgery, intra-abdominal bacterial infection, malnutrition, low haemoglobin, elderly age >65 years, systemic co-morbidities (uraemia, diabetes mellitus), and so on. [4]

Prophylaxis requires a thorough understanding of these risk factors. By highlighting the risk factors for wound dehiscence, the incidence rate, and prophylactic measures to prevent or reduce the incidence of wound dehiscence, mortality and morbidity in the form of increased hospital stay, long-term repeated consultations, and additional burden on health-care resources can be reduced. [5]

AWD has been a long-standing problem for which no surgical unit has offered a complete solution (i.e. none of the surgical units worldwide has reported 0 percent failure rate). However, numerous institutes around the world have been successful in achieving and maintaining failure rates considerably below 1%. These figures, on the other hand, do not deter researchers from continuing their efforts to solve the problem.

In the last ten years, there have been a slew of publications attempting to explain how to solve this problem. The goal of this study was to assess the prevalence of abdominal wound dehiscence in relation to various risk factors, co-morbidities, and treatment options.

AIM:-

The study aimed at finding out the prevalence of abdominal wound dehiscence with respect to demographic factors, nature of preceding surgery and different risk factors and also to study the effective management of abdominal wound dehiscence.

METHODS:-

Type : Prospective Study

Sample Size:- 60 patients.

Inclusion Criteria:-all patients with clinically diagnosed wound dehiscence.

Exclusion Criteria:- patients with unstable vitals.

Age below 18years

Wound dehiscence on sites other than abdomen.

Patient who developed wound dehiscence after gynaecological procedure.

During the study period, 60 patients who had an emergency or elective abdominal operation and experienced post-operative dehiscence were included. A detailed medical history was taken, as well as a thorough physical examination and any other pertinent information.

RESULTS:-

Table 1. Distribution Of Study Subjects According To Age :-

AGE	No. Of cases	Percentage
21 to 30	7	11.67%
31 to 40	10	16.67%
41 to 50	23	38.33%
51 to 60	10	16.67%
61 to 70	7	11.67%
More than 70	3	5%
Total	60	100%

The majority of the patients in this study were between the ages of 41 and 50, with the youngest patient being 22 years old and the oldest being 85 years old. The average age of the patients that were afflicted was 46.95.

Table 2. Distribution according to gender :-

SEX	No. Of cases	Percentage
MALE	45	75%
FEMALE	15	25%

Out of 60 cases, 45 cases were male and 15 female cases.

Table 3. Distribution according to nature of surgery.

Nature of surgery	number of cases	Percentage
Emergency	49	81.67%
Elective	11	18.33%

In the present study, out of 60 cases, 49 cases (81.67%) were operated as emergency surgery and 11 cases (18.33%) as elective surgery.

Table 4. Distribution according to types of surgical wound presenting with abdominal wound dehiscence.:-

Type of surgical wound	Number of cases	Percentage
Clean	0	0
Clean contaminated	5	8.33%
Contaminated	40	66.67%
Dirty	15	25%

40 cases i.e. (66.67%) in the presenting study have undergone procedures which are classified as contaminated and no case has undergone clean surgery.

Table 5. Distribution in relation to type of incision :-

Type of incision	Number of cases	Percentage	Total
Upper midline (UM)	8	13.33%	48
Midline (M)	30	50%	
Lower midline (LM)	10	16.67%	
Right upper paramedian (RUP)	5	8.33%	8
Right lower paramedian (RLP)	3	5%	
McBurney's (MCB)	4	6.67%	4

In this study, from a total of 60 cases, 48 cases (80%) were operated with mid line incision and 8 cases (13.33%) were operated with paramedian incision.

Table 6. Distribution in relation toVarious abdominal procedures

Abdominal procedures	Number of cases	Percentage
Resection and anastomosis	16	26.67%
Perforation closure	31	51.67%
Appendectomy	6	10%
Others	7	11.67%

In this study, perforation closure was performed in 31 cases, resection anastomosis in 16 cases, appendectomy in 6 cases, and other procedures such as splenectomy, mesenteric tear repair, adhesiolysis, stricturoplasty, and others were performed on 7 cases with abdominal wound dehiscence.

Table 7. Distribution in relation to underlying intra-abdominal pathology:-

Diagnosis	Number of cases	Percentage
Hollow viscus perforation	35	58.33%
Duodenal ulcer	16	26.67%
Others (GP, IP, JP)	19	31.67%
Appendicular pathologies	6	10%
Intestinal obstruction	10	16.67%
Malignancy	2	3.33%
Others	7	11.67%
Total	60	100%

In this study, 35 patients with peritonitis due to hollow viscus perforation, 6 patients with appendicular pathology, 10 patients with intestinal obstruction, and 2 patients with malignancy were diagnosed.

Table 8. Distribution in relation to body mass index.

BMI	Number of cases	Percentage
Less than 25	22	36.67%
More than 25	38	63.33%

Out of 60 cases 38 pts had B.M.I >25 and 22 patients had B.M.I <25.

Table 9. Distribution in relation to anaemia :-

Haemoglobin	Number of cases	Percentage
More than 10 g/dL	27	45%
Less than 10 g/dL	33	55%

Out of 60 cases 27 patients had Hb% more than 10 g/dl and 33 patients had Hb% less than 10 g/dl.

Table 10 Distribution in relation to liver function test (LFT).

LFT	No. of cases	Percentage
Hypoprotinemia (albumin<2.9 gm/dl)	35	58.33%
Hyperbilirubinemia (total bilirubin> 1.5 mg/dl)	5	8.33%
Raised hepatic enzyme	3	5%
Normal	20	33.33%

3 patients exhibited increased liver enzymes, 35 had hypoalbuminemia, and 5 had hyperbilirubinemia in the current study amongst 60 instances.

Table 11. Distribution In Relation To Co Morbid Conditions At The Time Of Admission.

Conditions	Number of cases	Percentage
Diabetes (DM)	25	41.67%

Hypertension (HTN)	15	25%
Pulmonary disease	35	58.33%
Malnutrition	32	53.33%
Anaemia	33	55%
CRF	4	6.67%
Malignancy	2	3.33%
Steroid use	1	1.67%
Radiation	0	0

Malnutrition, DM, HT, pulmonary diseases, anemia etc. are important risk factors for wound dehiscence.

Table 12. Distribution in relation to Management of wound dehiscence :-

Management	Number of cases	Percentage
Tension suturing	38	63.33%
Mesh repair	22	36.67%

DISCUSSION:-

From January 2021 to July 2021, this study looked at 60 individuals who suffered wound dehiscence. Our research looked into the reasons of abdominal wound dehiscence, as well as the treatment options available before, during, and after surgery, as well as the outcomes of each case. The average age of patients with delayed wound healing was 46.95 years in the current study. Perforation of the hollow viscus and intestinal blockage were prevalent in this age group. The mean age groups in various other studies are as follows.

Table 13

Age	Our study	Kapoor KK et al. 11	Guo S and DiPietro LA6	Waqar SH et al7	Spiliotis J et al8
Mean (years)	46.95	46.25	68.6	39.67	69.5

Table 14. Comparison of age group.

Sex	Our study	Kapoor KK et al. 11	Gabrie'lle H. van Ramshorst et al5	Spiliotis J et al8	Hanif et al 10
Male	45 (75%)	77%	75%	60%	66.67%
Female	15 (25%)	23%	25%	40%	33.33%

With a male-to-female ratio of 3:1, there was a higher male population in our study, which is similar to the study conducted by Gabrielle H. van Ramshorst et al$_5$. This rise in males can be ascribed to the male gender's higher rate of peptic ulcer perforation and intestinal obstruction.

Table 15. Comparison of incidence in elective versus emergency surgery.

Type of surgery	Our study	Afzal S et al2	S H Waqar et al7	John Spilioti s et al8	Cavit ÇÖL et al9	Kapoor KK et al. 11
Emergency	81.67%	90%	72%	60%	45%	87%
Elective	18.33%	10%	28%	40%	55%	13%

In our study, among 60 patients developing wound dehiscence, 81.67% of patients were operated on emergency basis, Which is comparable to studies conducted byKapoor KK et al $_{11}$ and Afzal S et al$_2$

Table 16. Comparison in relation to type of incision :-

	Our study	Kapoor KK et al.11	Cavit ÇÖL et al 9	Spiliotis J et al8
Midline	80%	73%	37.5%	73.33%

In this study, from a total of 60 cases, 48 cases (80%) were operated with mid line incision, which is comparable to studies conducted byKapoor KK et al $_{11}$. and Spiliotis J et al$_8$

Table 17. Comparison in relation to underlying intra-abdominal pathology:-

	Our study	Kapoor KK et al. 11	S H Waqar et al7	Cavit ÇÖL et al 9
Peritonitis	58.33%	46.67%	43%	25%

In this study, 35 patients with peritonitis developed wound dehiscence, Which is comparable to studies like Kapoor KK et al.

Table 18. Comparison in relation to Co morbid conditions at the time of admission.

	Our study	Cavit ÇÖL et al 9	Kapoor KK et al. 11
Pulmonary complications	58.33%	50%	63%
Diabetes	41.67%	32.51%	38%
Hypoproteinemia	58.33%	75%	60%
Anaemia	55%	—	53%

In this study wound dehiscence is mainly associated with complications like hypoproteinemia and pulmonary complications, which is comparable to other studies such as Kapoor KK et al. $_8$

CONCLUSION

Males are more likely than females to experience laparotomy wound dehiscence, with a ratio of 3:1.

Patients between the ages of 41 and 50 were found to have the highest rate of abdominal wound dehiscence, with a mean age of 46.95 years. In individuals with peritonitis owing to hollow viscus perforation, abdominal wound dehiscence is more prevalent than in patients with intestinal blockage. Patients who have a surgical wound that has been identified as contaminated are more likely to have wound dehiscence. Elective surgeries have a lower rate of abdominal wound dehiscence than emergency surgeries (4.54:1).

Because of the poor blood supply at Linea Alba, individuals who had a midline laparotomy had a higher risk of wound dehiscence than those who had a paramedian laparotomy. Wound dehiscence is more likely in people with a BMI greater than 25, compared to those with a BMI less than 25.

In this study wound dehiscence is mainly associated with complications like hypoproteinemia and pulmonary complications and anaemia.

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