

Study to Assess the Etiology of Abdominal Wound Dehiscence in a Tertiary Care Centre

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ABSTRACT

Background: Dehiscence of surgical wound is a postoperative snag that involves breakage of surgical site of incision. Despite all the investigations, still a large number of patients suffer from postoperative wound dehiscence. The present study was conducted with the aim to assess the etiology of abdominal wound dehiscence.

Materials and Methods: The eligible patients with diagnosis of peritonitis reporting to the hospital for surgery were included in the study. Patients aged less than 12 years, on steroid medication or anticancer therapy were excluded from the study. Standard midline incision was given to all the patients and the wound was closed by continuous sutures. The subjects were divided into two groups, group 1 have experienced dehiscence while the Group 2 patients did not have dehiscence. All the parameters were arranged in a tabulated form and analysed using SPSS software. P value of less than 0.05 was considered as significant.

Results: There was a significantly higher number of patients with anaemia in group 1 compared to group 2. Jaundice was observed only in 5 patients of Group 1 and 2 patients of group 2. There was no significant difference between the two groups.

The mean total protein level also showed no significant difference between the groups.

Conclusion: The subjects that underwent prolonged duration of surgery in the presence of risk factors like anaemia and low protein levels had increased incidence of dehiscence.

Keywords: Abdominal, Dehiscence, Surgery, Wound.


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INTRODUCTION

Dehiscence of surgical wound is a postoperative snag that involves breakage of surgical site of incision. Wound dehiscence after abdominal surgery is related with high mortality rates between 10–44%.^{1,2} Various studies have investigated risk factors that cause wound dehiscence. Subjects older than 65 years of age are more susceptible to develop wound dehiscence due to the deterioration in tissue repair system as compared with younger subjects.³ Various other well-established risk factors are hypoproteinemia, anaemia, local wound infection, emergency surgery and hypertension.¹ Different factors that enhance the intra-abdominal pressure like distension of abdomen, coughing, constipation, and vomiting also increase the chances of wound dehiscence after the surgery.⁴ Additionally, surgical experience, operative timings more than 2.5 hours, incision type, suture stuff, drain placement, medical history like obesity with body mass index more than 30⁵, pneumonia, chronic obstructive pulmonary disease, and malignancy also have impact on wound dehiscence.⁶

Despite of the investigations, still a large number of patients suffer from postoperative wound dehiscence. The present study was conducted with the aim to assess the etiology of abdominal wound dehiscence.

MATERIALS AND METHODS

The eligible patients with diagnosis of peritonitis reporting to the hospital for surgery were included in the study. The study was conducted in a prospective fashion. All the subjects were informed about the study and a written consent was obtained from them in their vernacular language.

A detailed medical history was obtained from all the patients with the complete demographic information. Patients aged less than 12 years, on steroid medication or anticancer therapy were excluded from the study. Standard midline incision was given to all the patients and the wound was closed by continuous sutures. The patient's nutritional condition on admission was fully estimated.

The subject's were regarded as malnourished if the serum protein level was lower than 60 g/l. Anemia was considered if hemoglobin level was less than 11 g/l. The peritonitis was long-established by presence of clinical signs and symptoms and by the presence of purulent exudates of abdomen. The subjects were divided into

two groups, group 1 have experienced dehiscence while the Group 2 patients did not have dehiscence.

All the parameters were arranged in a tabulated form and analysed using SPSS software. P value of less than 0.05 was considered as significant.

Table 1: Clinical characteristics in the groups

Characteristic	Group 1 (n=46)	Group 2 (n=57)
Mean Age	35.47+/-6.12	34.92+/-3.54
Gender		
Males	37	49
Females	9	8
Diagnosis		
Enteric perforation	31	26
Duodenal perforation	9	14
Blunt abdominal trauma	3	9
Appendicular perforation	3	8

Table 2: Distribution of risk factors in the groups

Risk Factor	Group 1	Group 2	P value
Anemia	34	21	<0.05
Jaundice	5	2	>0.05
Total Protein mean g/l (SD)	5.1(0.6)	6.2(0.4)	>0.05
Operating time in hours (SD)	2.3(0.41)	1.8(0.20)	<0.05
Wound contamination	40	17	<0.05
Post-operative ileus	22	1	<0.05
Post-operative pulmonary infection	13	6	<0.05

RESULTS

There was a total of 46 patients with wound dehiscence and 57 patients did not have wound dehiscence. Table 1 shows the clinical characteristics of the study group. The mean age in Group 1 was 35.47+/-6.12 while that in group 2 was 34.92+/-3.54. There were 37 males and 9 females in Group 1. In group 2, there were 49 males and 8 females. There were 31 patients with Enteric perforation in Group 1 and 26 in group 2. There were 9 patients with Duodenal perforation in Group 1 and 14 patients in group 2. The blunt trauma patients were 3 in group 1 and 9 in group 2 respectively. The Appendicular perforation patients were 3 in group 1 and 8 in group 2 respectively.

Table 2 shows Distribution of risk factors in the groups. There was a significantly higher number of patients with anaemia in group 1 compared to group 2. Jaundice was observed only in 5 patients of Group 1 and 2 patients of group 2. There was no significant difference between the two groups. The mean total protein level also showed no significant difference between the groups. There was a significant difference in the Post-operative ileus incidence amongst the groups. Wound infection and Post-operative pulmonary infection also showed a significant difference amongst the groups.

DISCUSSION

Amongst all the complications of abdominal surgery, dehiscence of wound is easily the most dishonourable.⁷ It is increasingly stressful for both the patient and the surgeon; it is a common complication, with the morbidity consequences and even a potentially dreadful outcome at times.⁸ However, it has been little understood with very few information about its exact pathology, there is always a little a surgeon can do to take preventive steps.⁹ Makela et al. In his study found an incidence of 10%; their study had 30% patients managed emergently.¹⁰ Riou et al. Found that 51.6% of patients had dehiscence had an emergency surgery.¹¹ Wound dehiscence is related with considerable mortality. Madson et al. and Greenberg et al have found the mortality rate between 10% - 30%.^{8,9} In our study, the mean age in Group 1 was 35.47+/-6.12 while that in group 2 was 34.92+/-3.54. There were 37 males and 9 females in Group 1. In group 2, there were 49 males and 8 females. There were 31 patients with Enteric perforation in Group 1 and 26 in group 2. There were 9 patients with Duodenal perforation in Group 1 and 14 patients in group 2. The blunt trauma patients were 3 in group 1 and 9 in group 2 respectively. The Appendicular perforation patients were 3 in group 1 and 8 in group 2 respectively. There was a significantly higher number of

patients with anaemia in group 1 compared to group 2. Jaundice was observed only in 5 patients of Group 1 and 2 patients of group 2. There was no significant difference between the two groups. The mean total protein level also showed no significant difference between the groups. There was a significant difference in the Post-operative ileus incidence amongst the groups. Wound infection and Post-operative pulmonary infection also showed a significant difference amongst the groups. Anemia and low protein levels are well known factors to impact the wound healing.¹² Wound infection is a prime risk factor that leads to wound dehiscence.¹¹ Prolonged ileus and pulmonary infections are also quite known to increase the intraabdominal pressure and hence leading to wound dehiscence.^{13,14} Both played a significant role in our series. Wound closure technique also plays an important role in wound dehiscence. Presently preferred surgical wound closure technique is by a continuous polypropylene suture with Jenkin's technique due to its simplicity, rapidity, low incidence of wound dehiscence, and its dominance in infected areas.¹⁵ Smaller sample size and single institute-based study were the few drawbacks of the present study.

CONCLUSION

The subjects that underwent prolonged duration of surgery in the presence of risk factors like anaemia and low protein levels had increased incidence of dehiscence. Also, postoperative ileus and wound infection were important factors that lead to wound dehiscence.

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