

**Original article:**

## **A Prospective Study to Assess Etiology of Abdominal Wound**

### **Dehiscence in a Tertiary Care Hospital**

**Nagendra Singh Bhadauria<sup>1</sup>, Pawan Kumar<sup>2</sup>, Amit Singh<sup>3</sup>**

<sup>1</sup>Assistant Professor, <sup>2</sup>Resident, Department of General Surgery, J. L. N. Medical College, Ajmer, Rajasthan, India.

<sup>3</sup>Associate Professor, Department of General Surgery, Govt. (RVRS) Medical College, Bhilwara, Rajasthan, India.

Corresponding author: Dr. Pawan Kumar, Resident, Department of General Surgery, J. L. N. Medical College, Ajmer, Rajasthan, India.

#### **ABSTRACT:**

**Background:** Abdominal wound dehiscence is a serious, difficult, and frustrating postoperative complication experienced by many surgeons worldwide associated with high morbidity and mortality, with significant effect on health care cost, for both the patients and the hospitals. The present study was conducted to assess etiology of abdominal wound dehiscence in a tertiary care hospital.

**Materials and Methods:** This clinical study was conducted to assess etiology of abdominal wound dehiscence in a tertiary care hospital over a period of 6 months. The subjects were followed after laparotomy till their wound healed or abdominal wound dehiscence occurred. A detailed proforma of the etiological factors, examination findings and investigations was prepared. Statistical analysis was performed with IBM SPSS Statistics (International Business Machines Corporation (IBM), New York, USA), version 22 for Windows.

**Results:** The present study showed total no. of patient's laparotomy operated 400 during study period. Out of total patients, 70 patients have developed abdominal wound dehiscence. In our study majority of patients belongs to the age group 20-30 years. The major cause of abdominal wound dehiscence in this study was perforation peritonitis.

**Conclusion:** This study concluded that there are other etiology for abdominal wound dehiscence but the major cause was perforation peritonitis in the study.

**Keywords:** abdominal wound dehiscence, laparotomy, postoperative complication.

#### **INTRODUCTION**

Abdominal wound dehiscence (AWD) is a terminology that is commonly used to explain the separation of different layers of an abdominal wound before complete healing has taken place. Other terms used are acute laparotomy wound failure and burst abdomen.<sup>1</sup> Abdominal wound dehiscence (burst abdomen, fascial dehiscence) is a severe postoperative complication, with mortality rates reported as high as 45%.<sup>2,3</sup> The incidence, as described in the literature, ranges from 0.4% to 3.5%.<sup>4,5</sup> Wound dehiscence usually occurs when a wound fails to achieve required strength to withstand stresses placed upon it. Dehiscence occurs when overwhelming forces disrupt sutures, when absorbable sutures dissolve too rapidly or when tight sutures cut through tissues through unnecessary pressure.<sup>6</sup> There are two basic types of wound dehiscence, partial or complete, depending on the extent of separation. In partial dehiscence, only the superficial layers or part of the tissue layers reopen. In complete wound dehiscence, all layers of the wound thickness are separated, revealing the underlying tissue and organs, which may protrude out of the separated wound. This can be seen in some cases of abdominal wound dehiscence.<sup>6</sup> No single cause is responsible for wound dehiscence and as a rule a

combination of factors is operating. If the support system fails before the functional and structural integrity is regained, then the wound edges break apart. Many such factors like anemia, jaundice, uremia, diabetes, hypoalbuminemia, chronic obstructive pulmonary diseases, advanced malignancy, steroid use, obesity, wound infection and emergency surgery have been defined.<sup>7,8</sup> Some factors like jaundice, obesity, anemia, emergency surgery and diabetes have recently been challenged.<sup>9</sup> The present study was conducted to assess etiology of abdominal wound dehiscence in a tertiary care hospital.

## MATERIALS AND METHODS

This clinical study was conducted to assess etiology of abdominal wound dehiscence in a tertiary care hospital over a period of 6 months. Before the commencement of the study ethical approval was taken from the Ethical committee of the institute and informed consent was obtained from the patients. The subjects were followed after laparotomy till their wound healed or abdominal wound dehiscence occurred. The complete record of all the patients were maintained and kept confidential. All patients who have developed wound dehiscence after any abdominal incisions with or without abdominal evisceration were included in the study. Patient less than 20 years of age and previous history of laparotomy were excluded from the study. A detailed proforma of the etiological factors, examination findings and investigations was prepared. Statistical analysis was performed with IBM SPSS Statistics (International Business Machines Corporation (IBM), New York, USA), version 22 for Windows.

## RESULTS

The present study showed total no. of patient's laparotomy operated 400 during study period. Out of total patients, 70 patients have developed abdominal wound dehiscence. In our study majority of patients belongs to the age group 20-30 years. The major cause of abdominal wound dehiscence in this study was perforation peritonitis.

**Table 1: Distribution of patients according to age**

Age group(yrs)	N(%)
20-30	20(28.57%)
31-40	13(18.57%)
41-50	7(10%)
51-60	16(22.85%)
above 60 years	14(20%)
Total	70(100%)

**Table 2: Distribution of patients on basis of primary disease leading to burst abdomen**

Disease	No. of Cases N(%)
Perforation peritonitis	26(37.14%)
Obstruction	14(20%)
Tumor	8(11.42%)
Upper gastrointestinal bleeding	5(7.14%)
Necrotising Pancreatitis	6(8.57%)

<b>Trauma</b>	8(11.42%)
<b>Others</b>	3(4.2%)
<b>Total</b>	70(100%)

## DISCUSSION

The clinical study of wound healing is complicated considerably by the fact that it is uncommon for any factor to exist in isolation and it may be difficult, indeed, to determine which factor is of greatest importance in a particular case.<sup>10</sup>

A fresh wound has no strength of its own and regains artificial support with sutures. Strength of wound is of two types. Intrinsic strength is that which is due to collagen deposition and extrinsic strength is one which is bestowed on the wound by its sutures. Intrinsic strength is zero at first postoperative day and increases gradually with the passage of time. The support of sutures must be maintained for sufficient time so that normal functional and structural continuity is restored.<sup>11</sup>

The present study showed total no. of patient's laparotomy operated 400 during study period. Out of total patients, 70 patients have developed abdominal wound dehiscence. In our study majority of patients belongs to the age group 20-30 years. The major cause of abdominal wound dehiscence in this study was perforation peritonitis.

Jaiswal and Shekhar reported that 56% of cases were peritonitis.<sup>12</sup> Muneiah et al. reported 72.2% were peritonitis.<sup>13</sup> Talukdar et al. found peritonitis was found to have a significant effect in predicting wound dehiscence.<sup>14</sup> Age has also been reported as a risk factor in other studies.<sup>15</sup> The explanation for this might lie in deterioration of the tissue repair mechanism in the elderly. As age increases, collagen undergoes quantitative and qualitative changes. Also there is alteration in the early inflammatory period of wound infection and decrease in hypoxic response of the wound with advancing age.<sup>16</sup> Various study done by Garg R et al and Muneiah SN et al who observed that old age (45 years) as an independent risk factor for AWD.<sup>13,17</sup>

## CONCLUSION

This study concluded that there are other etiology for abdominal wound dehiscence but the major cause was perforation peritonitis in the study.

## REFERENCES

1. J. A. R. Smith, "Complications, prevention and management," in *Clinical Surgery in General*, p. 350, Churchill-Livingstone, London, UK, 1999.
2. Fleischer GM, Rennert A, Rühmer M. Die infizierte Bauchdecke und der Platzbauch. *Chirurg* 2000; 71:754– 762.
3. Poole GV Jr. Mechanical factors in abdominal wound closure: the prevention of fascial dehiscence. *Surgery* 1985; 97:631–640.
4. Webster C, Neumayer L, Smout R et al. National Veterans Affairs Surgical Quality Improvement Program. Prognostic models of abdominal wound dehiscence after laparotomy. *J Surg Res* 2003; 109:130– 137.

5. Gislason H, Grønbech JE, Søreide O. Burst abdomen and incisional hernia after major gastrointestinal operations—comparison of three closure techniques. *Eur J Surg* 1995; 161:349–354.
6. Nyhus and Condons hernia. *Diagnostic and Imaging of abdominal wall hernia* 5th edition;
7. Burger JW, Van't Riet M, Jeekel J. Abdominal incisions: techniques and post operative complications. *Scand J Surg* 2002; 91: 315-21.
8. Col C, Soran A, Col M. Can postoperative abdominal wound dehiscence be predicted? *Tokai J Exp Clin Med* 1998; 23 (3): 123-27.
9. Riou JP, Cohen JR, Johnson H Jr. Factors influencing wound dehiscence. *Am J Surg* 1992; 163: 324-30.
10. Reiter D. Methods and materials for wound management. *Otolaryngol Head Neck Surg* 1994; 110: 550.
11. Lazarus GS, Cooper DM. Definitions and guidelines for assessment of wounds and evaluation of healing. *Arch Dermatol* 1994; 130: 489.
12. Jaiswal NK, Shekhar S. Study of burst abdomen: it's causes and management. *Int Surg J* 2018; 5:1035–1040.
13. Muneiah NS, Kumar NM, Sabitha P, Prakash DG. Abdominal wound dehiscence – a look into the risk factors. *IOSR J Dent Med Sci* 2015; 14:47–54.
14. Talukdar M, Gopalarathnam S, Paul R, Shaan AR. Clinical study on factors influencing wound dehiscence in emergency exploratory laparotomy. *Trauma* 2016; 30:30.
15. Riou JP, Cohen JR, Johnson H Jr. Factors influencing wound dehiscence. *Am J Surg* 1992; 163:324–330.
16. G. Lakshmi, T.R. Ravimohan. Post laparotomy abdominal wound dehiscence – a study in tertiary care hospital. *International Journal of Contemporary Medical Research* 2018;5(11):K1-K5.
17. Garg R, Shah S, Singh S, Singh B. A prospective study of predictors for post laparotomy abdominal wound dehiscence. *J Clin Diagn Res.* 2014; 8(1):80-3.

Date of Submission: 2 August 2020

Date of Acceptance: 10 September 2020

Date of Publishing: 15 December 2020

Author Declaration: Source of support: Nil, Conflict of interest: Nil

Ethics Committee Approval obtained for this study? YES

Was informed consent obtained from the subjects involved in the study? YES

Plagiarism Checked: Urkund Software

Author work published under a Creative Commons Attribution 4.0 International License



DOI: 10.36848/IJBAMR/2020/16215.55695