

Observation of the Incidence and Factors Predictive Of Wound Dehiscence Following Emergency Abdominal Surgeries and Its Management in DMCH

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Abstract: Introduction: Wound dehiscence is a cause of significant morbidity especially in patients undergoing emergency laparotomies. Various factors like those inherent in the patient, surgical technique, stormy post operative course etc may be contributory, and it is necessary to look for suitable measures by which this complication may be prevented.

Materials and Methods: 50 cases of abdominal wound disruption of various grades, out of 1200 emergency laparotomies were systemically analyzed. Cases were selected at random from the Upgraded Department of Surgery, DMCH, Laheriasarai, Bihar. Cases were studied according to plan presented- history, presentation, contributory factors during post-operative period, primary disease for operation, incision, type of surgery, technique of closure and suture used, examination, investigations and management. Follow up were done after 1, 3, and 6 months.

Results: The incidence of wound dehiscence was found to be 4.167%. Highest incidence was found in 41 to 50 years of age group, which was 24%. M: F ratio was 3.55:1. Maximum number occurred after operations for abdominal injuries, duodenal perforation and small bowel perforation and obstruction; after paramedian incisions (72%); with use of chromic catgut (90%). Serosanguinous discharge was found in 58% cases. 58% of cases had soiled peritoneal cavity. 82% had dehiscence on 7th to 10th day postoperatively. 66% had partial while 34 % had complete dehiscence. Important associations found were abdominal distension (58%), cough (56%), hypoproteinemia (62%), anaemia (28%). 46% had hospital stay more than 20 days. Mortality rate was 10% and 18% developed incisional hernia.

Conclusion: Of the various general predisposing factors anaemia and hypoproteinemia were found to play a significant role both alone or in combination with malnutrition. Other factors which were found to be contributory were steroid therapy, obesity, diabetes, uremia, jaundice, chest infection and smoking. No incision was immune. It may occur with any suture and with any method of closure though lowest with monofilament non absorbable sutures (Prolene) and the use of mass closure technique for vertical incisions. Rise of intra-abdominal pressure can cause increased strain upon the wound & lead to dehiscence. Wound infection is another factor. Serosanguinous discharge was found to be the most pathognomonic sign.

Keywords: Emergency Laparotomy, Wound Dehiscence, Discharge, Wound Infection, Abdominal Closure

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I. Introduction

Abdominal wound dehiscence is a continuing problem in abdominal surgery. In most cases, wound disruption is a nuisance rather than a serious complication; but in some patients wound disruption comes as a terminal event. Hence it is necessary for surgeon to look for suitable measures by which this complication may be prevented. As a matter of fact the best way to do it is obviously a study of the aetiological factors which either singly or in combination produce dehiscence of abdominal wound and its management.

Factors which ultimately lead to wound dehiscence may be inherent in the patient. These predisposing factors may be in the form of anaemia, hypoproteinemia and of course the primary disease itself. The placement of incision, technique of handling of tissue and type of suture materials used are also significant. Injudiciously placed incision is bound to have its own deleterious effect on the wound healing. The introduction of polyglactin 'vicryl' and polypropylene 'Prolene' have revolutionized in the field of suture materials and have proved their superiority to other sutures available. Post-operative vomiting, abdominal distention, cough and hiccup may lead to severe muscular strain and consequent rise in the intra-abdominal pressure leading to disruption of inner sutured layer. Post-operative wound infection may significantly retard healing and eventually producing dehiscence.

Clinically, the cases of wound dehiscence can be divided into three distinct groups. In the first group, the convalescence of the patient is unsatisfactory from the start. Their pulse and temperature are persistently elevated and pulmonary complications are particularly frequent. The second type of wound dehiscence may be entirely unsuspected until some sudden strain precipitate complete separation of wound margins. Constitutional factors appear to be the basis of unsatisfactory healing in the third group. This group includes patients suffering from carcinoma, diabetes, jaundice, as well as diseases and surgery associated with soiled peritoneal conditions. Here the clinical picture is not characteristic except redness and some amount of oedema with indurations around the wound margins. The aetiopathology of the dehiscence of abdominal wound is thus complex and it is obvious that only a single factor is not responsible for a particular case.

II. Material And Methods

The present study was done on the patients who underwent emergency abdominal operations at Darbhanga Medical College & Hospital, Laheriasarai, Bihar, in the Upgraded Department of Surgery during September 2014 to November 2015. The cases were selected for this study who subsequently presented with features of dehiscence of abdominal wound. 50 cases of abdominal wound disruption of various grades, out of 1200 emergency laparotomies were systemically analyzed. Following plan was followed while studying the selected cases-

- Obtaining proper history- name, age, sex, address, occupation, dates of admission, operation, discharge and dehiscence, addiction history.
- Clinical presentation- Serosanguinous discharge post-operatively; bursting sensation after some strain during post-operative period; Purulent/faeculent/bilious discharge on removal of wound stitches.
- Examination of the patient
 - General (Cachexia, Obesity, Hypertension, Anaemia, Jaundice, Toxaemia);
 - Local examination of the wound:
 - Type of the discharge (Serous, Serosanguinous, Purulent/faeculent/bilious)
 - Type of dehiscence- Partial or Complete (without or with evisceration respectively)
 - Presence or absence of infection.
- Investigations-
 - TLC, DLC
 - Hb% (estimation after 48 hours post-operative)
 - Blood sugar
 - Total plasma protein level
 - Blood urea level.
 - Serum creatinine
 - Serum Bilirubin
 - Bacteriology (culture and sensitivity of discharge from the wound).
 - R/E of urine, R/E of stool.
 - Radiological Investigation - Chest x-ray, X-ray of abdomen in supine & erect posture

Various technical, perioperative and patient related aspects were sorted out and studied for all the cases-

- Contributory factors during post-operative period- Cough, Wound infection, Hiccup, Abdominal pain, Abdominal Distention, Vomiting/retching, Straining during act of micturition and defecation, Constipation, Bowel leakage, Uremia, Electrolyte Imbalance
- Primary disease for operation- Inflammatory, Traumatic, Neoplastic
- Type of abdominal incision- Paramedian (Upper/Lower), Kocher's, Midline (Supra/Infraumbilical), Grid iron
- Type of surgery- Unprepared gut surgery- small gut anastomosis, colonic anastomosis
- Technique of wound closure
- Type of suture material used- Absorbable (Chromic catgut, Vicryl), Non absorbable (Prolene)
- Use of retention suture
- Drainage of peritoneal cavity/wound- Through main or separate stab wound
- State of peritoneal cavity during surgery- Clear, Soiled (Purulent exudates, Faecal), Haemoperitoneum
- Peritoneal toilet during surgery- Saline, Lomodex in saline, Metronidazole solution, Povidone Iodine
- Disease associated with surgical condition- Malignant pathology, Diabetes, Renal disease, Surgical jaundice, Respiratory disease (chronic bronchitis, asthma, pulmonary Tuberculosis), Shock due to any reason

Management of Abdominal wound Dehiscence:

Partial dehiscence

When the condition was recognized, meticulous dressing of wound was started. On opening the dressing a swab for culture and sensitivity was taken from the wound. Then the wound as well surrounding skin was cleaned with a weak solution of Cetavalon. The margin of wound was cleaned with Povidone Iodine solution. Finally, the wound was lightly packed with gauze soaked in strong solution of electrolyte chlorine. If the discharge was copious and very foul smelling, irrigation of the wound was done with solution of hydrogen peroxide.

After dressing the wound, many tailed bandages were applied routinely. Initially daily dressing was done. When the discharge decreased and infection began to clear, dressing was done on alternate days and then with an interval of two to three days. When the discharge was minimal and infection subsided as well as healthy granulation appeared, a plan for secondary suturing was made. Except patients below 10 years (in whom general anaesthesia was given) local anaesthesia was used. The wound margin was freshened by cutting the borders of the wound and secondary suture with ordinary thread was applied using interrupted mattress technique. In selected cases usually retention sutures supported on small piece of rubber tube was applied. In few cases a drain of corrugated rubber was given in subcutaneous plane which was removed after 48 hours. Simple sutures were removed on 8th to 10th day while the retention one on 14th day.

Complete dehiscence

Immediate re-suturing of the dehisced wound was carried out after proper resuscitation of the patients. As soon as wound dehiscence was recognized, patient was sedated. The general condition and fluid balance was judged and blood transfusion was arranged accordingly. The protruding viscera was freely bathed in luke warm normal saline solution and covered with sterile towels. The wound was covered with dressing and a firm many tailed binder was applied.

The patient was taken to operation theatre and general anaesthesia given. After removing the abdominal binder and dressing, the protruding abdominal contents were wrapped in fresh packs soaked in warm saline. The wound surfaced and surrounding skin was cleaned with Cetavalon and Povidone Iodine. When the skin was toweled off, the protruding gut was returned gently to abdominal cavity and was retained in place by introducing a moist abdominal pack into the wound. The wound was now mopped dry and the disintegrated fragments of catgut and non-absorbable suture materials were removed. The wound margin was freshened up by clipping away necrotic tissues and oedematous skin tag gently. If only a small portion of wound had dehisced, that portion alone was sutured. If, however, dehiscence involved more than half of the wound, the whole wound was re-sutured again.

Mattress sutures were applied to produce most accurate closure of the wound. The sutures were tied over small pieces of rubber tubing transversely to avoid cutting of skin by sutures or if possible, without rubber tubing. For approximation of skin edges, interrupted vertical mattress sutures were used. However, too accurate approximations were not attempted, so that drainage may not be impaired.

The alternate skin sutures were removed on 8th day & remaining on 10th day. The through and through sutures were removed on 14th and 16th post-operative day depending on state of oedema and discharge from the wound. The wound was supported by many tailed bandage throughout the period of convalescence.

General Management:

The general management of the patients with abdominal wound dehiscence is equally important. The paralytic ileus and abdominal distention was managed by Ryle's tube aspiration and intravenous fluid therapy according to the need of body as judged by estimating the serum electrolytes.

Nutritional support of the patients post-operatively after repair was done with whole blood, proteins, vitamins and minerals. In few cases anabolic steroids were also used during post-operative period. Care for infection of the wound was accomplished by loose skin closure, drainage in subcutaneous plane, and antibiotic coverage according to the culture and sensitivity report of the discharge from the wound.

For avoidance of cough, inhalation of pain warm water vapour and antitussive were prescribed as well as early mobilization and chest physiotherapy were instituted for prevention of chest infection. Follow up of repaired cases for incidence of incisional hernia, if any and review of wound healing were done after one month, three months and six months interval as far as possible. If an incisional hernia was detected the patient was advised to wear abdominal corset, which gave encouraging results in children and young patients.

III. Result

There were 50 cases of wound dehiscence out of 1200 emergency laparotomies done, the overall incidence being 4.167%. Table no. 1 shows incidence rates of dehiscence in various age groups. The disruption rate increased with advancing age and the maximum rate was in age group of 41-50 years.

Table no 1: Incidence rates of dehiscence in various age groups

Age in decades	No. of disruption	Incidence
1-10	2	4.0%
11-20	3	6.0%
21-30	7	14.0%
31-40	9	18.0%
41-50	12	24.0%
51-60	11	22.0%
61 years and onwards	6	12.0%

In relation to sex, the disruption rate was about >3 times more common in males (ratio 3.55:1). 39 males and 11 females were affected. 23 cases (52%) were thin built, 17 were average and 7 were heavy built. 31 patients (62%) belonged to low socioeconomic group (poor farmers, manual laborers), 16 were middle and 3 were from well-to-do families.

Table no. 2 shows distribution in relation to primary disease. 8 cases of dehiscence had duodenal perforation as the cause for emergency laparotomy. 7 cases were due to abdominal injury, small bowel perforation and small bowel obstruction each. 6 were associated with acute appendicitis or appendicular perforation; 5 had abdominal malignancy (Ca stomach/colon/gall bladder); 4 had large bowel obstruction; 3 had gastric perforation and 2 had gangrenous GB.

Table no. 2: distribution of cases in relation to primary disease for which the patient was operated upon.

Disease	No. of cases	Percentage
Duodenal perforation	8	16.0%
Gastric perforation	3	6.0%
Small bowel perforation :		
- Typhoid	5	10.0%
- Meckel's diverticulum	2	4.0%
Small bowel obstruction		
- Round worm	1	2.0%
- Ileocaecal tuberculosis	2	4.0%
- Intussusception	1	2.0%
- Volvulus	2	4.0%
- Bands & Adhesions	1	2.0%
Large bowel obstruction :		
- Volvulus pelvic colon	2	4.0%
- Compound volvulus	2	4.0%
Appendix		
- Acute appendicitis	2	4.0%
- Appendicular Perforation	4	8.0%
Acute pancreatitis	1	2.0%
Abdominal injury		
- Solid viscera	2	4.0%
- Stomach & Intestine	5	10.0%
Abdominal malignancy :		
- Ca stomach	2	4.0%
- Ca colon	2	4.0%
- Ca gall bladder	1	2.0%
Gangrenous gall bladder	2	4.0%

Paramedian incision was the most common type (36 cases) associated with wound dehiscence. 10 cases had midline approach and 2 cases each had Kocher's and Mc Burney's incision. While closure of abdomen, layered approach was used in 47 cases and mass closure was done in 3. While closing peritoneum and rectus sheath, dehiscence occurred in 45 cases where chromic catgut was used, vicryl was used in 4 and prolene in 1 case. No retention sutures were used in 43 cases of disruption while used in 7. In 36 cases, abdominal drain was used through a separate stab wound; no drain applied in 14 cases.

Table no. 3 shows the state of peritoneal cavity at laparotomy. After opening the abdomen, 21 patients had clean peritoneal cavity while it was soiled in 29.

Table no. 3: Showing the state of peritoneal cavity in relation to wound dehiscence.

Peritoneal cavity	No. of Disruption	Percentage
Clean	21	42%
Solid		
- Presence of exudates	22	44%
- Faecal	2	4%
- Biliary	1	2%
- Haemoperitoneum	4	8%

Table no. 4 shows the clinical presentation of dehiscence. 41 cases presented with falling apart of wound margins after removal of stitches, 7 cases had serosanguinous discharge from the wound before removal of stitches and 2 had a feeling of sudden 'give' or bursting sensation in the wound after some strain.

Table no. 4: Showing the clinical presentation of dehiscence.

Clinical Presentation	No. of cases	Percentage
Falling apart of wound margins after removal of stitches	41	82%
Serosanguinous discharge from the wound before removal of stitches	7	14%
Feeling of sudden 'give' or bursting sensation in the wound after some strain	2	4%

Factors in the post operative period contributing to wound dehiscence were abdominal distension, cough, vomiting and hiccup in 29, 28, 12 and 3 cases respectively. The dehiscence was observed clinically before 7th PO day in 9, 7th to 10th day in 39 and after 10th day in 2. It was partial in 33 while complete in 17 cases. At the time of dehiscence, the discharge from the wound was purulent in 19, serous in 18, serosanguinous in 11 and faeculent in 2 cases.

Table no. 5 shows the incidence of infection according to bacteriological examination of discharge from the wound. Upon culture only 7 had a negative report, while 43 were positive. Among them, 25 were positive for E. coli, 7 for S. aureus, 4 each for P. pyocynus and non hemolytic streptococcus and 3 for Proteus spp

Table no. 5: Incidence of infection

Type of infection	No. of cases	Percentage
Dehiscence cultured		
- Positive	43	86%
- Negative	7	14%
Escherichia coli	25	50%
Staphylococcus aureus	7	14%
Non-haemolytic streptococcus	4	8%
Pseudomonas pyocynus	4	8%
Proteus	3	6%

Severe anaemia (Hb% below 60) was present in 28 cases of dehiscence, 17 cases had Hb% between 60 and 80 while 5 had above 80 to 100. Similarly hypoproteinemia was present in 31 patients while 19 had normal protein levels. 36 cases had blood urea level of 20-40 mg%, 8 cases had level 41-60 mg% and 6 had level above 60 mg%.

During management, immediate resuturing was done in 15 cases. In 32 cases dressing along with abdominal support followed by secondary suturing and retention sutures was done. 5 patients died giving an overall mortality of 10% in this series. 30 patients who had wound dehiscence were smokers as opposed to 20 who were non smokers. Upon follow up, 9 cases developed incisional hernia, though the follow up was rather incomplete, as a lot of the patients did not turn up for review in surgical OPD. Period of hospital stay was less than 20 days for 27 cases while more than 20 days for 23.

IV. Discussion

There is no single cause that can account for all wound disruptions, as a rule, combination of factors are responsible. The present study is to reassess the contribution of each of these factors in its causation. The study

was carried out on 50 cases of post-operative abdominal wound disruptions of various grades out of 1200 emergency laparotomies in the Upgraded Department of Surgery, Darbhanga Medical College & Hospital, Laheriasarai, Bihar from September 2014 to November 2015.

The incidence of disruption in this study was 4.167 i.e. 50 cases out of 1200 laparotomies, which is a little higher as compared to various studies mentioned in western literature. The relatively high incidence in the present series may be attributed to poor nutritional condition of the people at large in this part of the country. More so such patients reach this hospital after lapse of initial critical stage of surgical emergency condition, thus making such patients more vulnerable to electrolyte imbalance and nutritionally poor state of health. Higher incidence is because of the fact that the pre-operative condition of the patient undergoing emergency surgery is poor. There is very short time to correct anaemia, hypoproteinaemia and fluid-electrolyte balance pre-operatively.

In the present series, maximum number of wound dehiscence was observed in patients of 5th and 6th decades. Mann et al (1962), H. Clay Alexander et al (1966), John Spiliotis et al (2009) reported that dehiscence is more common in 5th and 6th decades which is in conformity with this series. Grove (1982) found that age affects epithelialization and maturation of scar, as well as gain of tensile strength.

In the present series, the male and female ratio for the incidence of wound dehiscence was 3.56:1, which is in conformity with other series, like G. Efron (1965) - 2.2:1, Halasz (1968) - 2:1. However, Hampton (1963) reported the sex ratio to be 3:1. Dehiscence is thus more common in males. The physical influence of hard manual labour, the excessive use of nicotine and alcohol are bound to have their own deleterious effect upon the general physical health of men, making them poor surgical risk. On the other hand, the greater elasticity of abdominal wall in female and the thoracic character of respiration in them causes less strain upon the abdominal incision and probably make wound dehiscence less likely. Manassa EH, (2003), in his retrospective studies, found that the rate of wound dehiscence showed a statistical difference between smokers and non smokers ($P < 0.01$); 47.9% of the smokers showed wound healing problem and almost 60% smokers were male as in our series.

The incidence of dehiscence was 62% in low income group, 32% in middle and 6% in higher income group. The majority of patients who were operated in D.M.C.H., Laheriasarai, Bihar belonged to lower income group. Most of them had either anaemia or hypoproteinaemia or both which in turn became a factor for dehiscence.

In present series, maximum number of dehiscence occurred after operations on stomach and duodenum as well as on the small intestine (Obstruction, perforation, trauma). The higher incidence in the present series of peptic ulcer complications, ileus and typhoid perforation along with abdominal trauma can be explained by the fact that these cases are very common in our part and come to surgical emergency in different physical states, of course malignancy has really picked up momentum due to over consciousness in this part of general population, which was not being picked up earlier.

Dehiscence of wound was commonest following paramedian incisions, the incidence being 72 percent. The next commonest incision which disrupted was midline infraumbilical (18%). The fibres of posterior rectus sheath are directed transversely. Hence the sutures are likely to split it, when an attempt is made to suture a paramedian incision. Likewise the elastic fibres of skin run transversely for the most part and if often requires considerable pull on the skin sutures to approximate the vertical incision. Moreover, position that the patient assumes after operation favors the closure of transverse incision. Costal movements too increase tension upon the vertical wounds.

In the present series layered closure was done in 94 percent and mass closure in 6 percent of cases. Retention sutures were used in 34 percent of cases. Irvin T.T. (1977) studied layered closure with retention suture and mass closure of abdominal incision and found equal rate of dehiscence and hernia. Wallace D. et al (1980) held the view that mass closure to be superior to layered closure in prevention of wound dehiscence. Chromic catgut was the principal suture material used, though vicryl was used quite frequently in emergency cases, but the use of prolene was limited only in few certain cases. The tensile strength of catgut is lost much faster than it is absorbed and little tensile strength is left after 8-9 days. Moreover Knot holding capacity of catgut continues to be unreliable (Hermann et al, 1970).

Drainage was applied in 72 percent of cases, almost always through a separate stab wound. Guiney et al (1966) stated that dehiscence is commoner in cases that have been drained through the wound. Similar observations were made by Leaper (1989). If drainage is applied through the main incision, removal of drain leaves a weak spot through which a part of omentum may prolapsed, and predispose to disruption. Disruptions occurred both in presence and absence of retention sutures.

In majority of dehiscence patients (82%), when the stitches were removed either on 7th or 8th day post-operatively, the margin of wound fall apart. In another group (14%), the dressing of the patient became soaked with pink-serosanguinous discharge before the 7th day. This serosanguinous discharge was almost pathognomonic of dehiscence.

The relationship between hypoproteinaemia and wound dehiscence has been observed by various workers, as in our study. Anaemia and hypoproteinemia thus are the main contributory factors which are prevalent in our part, and reflects the poor nutritional standard of population due to low socio-economic condition and prevalence of gastrointestinal tract helminthes infestations. The main food in this part of the country is cereals, thus low intake of proteins and vitamins.

Various factors like cough, vomiting, paralytic ileus, hiccup in the post-operative phase are responsible for increased postoperative intra-abdominal pressure and associated with definite increase in the incidence of wound dehiscence (Efron 1965, Everett H 1974, Baggish et al 1973). In present series, cough was found in 56% of cases, abdominal distention in 58%, vomiting in 24% and hiccup in 6% of cases. Halasz (1968) reported vomiting and distention in 53 percent of cases and hiccup in 8% of cases. Greenburg A.G. et al (1979) and Gurleyik G (2001) emphasized on gastrointestinal distention and pre-existing pulmonary disease. Thus, it appears that increased intra-abdominal pressure produces strain on the suture line and ultimately causes dehiscence, which has been in conformity with this series.

In the present series, 12 percent of cases had blood urea above 60 mg%, because mostly cases were in 5th and 6th decades with electrolyte imbalance. Nayman (1966) and Zografos (2006) observed that uraemia does affect wound healing which can be prevented by adequate dialysis (Mc Dermott, 1971). Wound healing is also affected adversely by jaundice. Appearance of fibroblasts and collagen synthesis is retarded in cases of obstructive jaundice (Bayor and Ellis, 1976). Jaundiced patients have a significantly higher incidence of wound dehiscence and incisional hernia compared with non-icteric patients undergoing emergency laparotomy (Ellis and Heddle 1977, Gurleyik G 2001).

It has been reported in various studies that steroids only in high doses adversely affects wound healing by impaired wound contraction and improper fibroblast and collagen formation. In this present study 5 patients with disrupted wound had steroid threats. From the above account it is quite evident that a number of factors acted together in the causation of wound dehiscence.

The incidence of malignant pathology was observed in 10% in the present series. An increase in the dehiscence of abdominal wound was found by Reitamo and Moller (1972) and Irvin and Goligher (1975). Gurleyik G (2001) found that malignancy may delay wound healing indirectly by producing systemic effects of cachexia, as patients with advanced malignancy are usually suffering from hypoproteinaemia, anaemia, dehydration and weight loss.

In the present series, majority of patients (38%) had purulent discharge while 36% had serous discharge. Serosanguinous discharge was almost pathognomonic of dehiscence which is in conformity with other series (Hempton, 1963; G. Efron, 1965; Everett 1974; Ellis 1990; Parmar G et al, 2008).

Wound infection was present in majority of dehiscence cases, with 86 percent of cases showing positive culture. Irvin T.T. et al (1977) observed that wound infection was associated with tenfold increase in incidence of dehiscence or herniation. Y.P. Naithani (1981) reported that wound infection was the most important denominator after suture material. Smoking and co morbidity such as diabetes, cardiovascular disease and lung disease were associated with surgery site infection and dehiscence of tissue and wound (Hill G.E., 2003 May).

Dehiscence occurring between 7th and 10th days was found in 78 percent of cases. Most literatures report dehiscence from the 7th day onwards (Efron 1965, Ellis 1990, Butsenko et al 1990). This can be accounted by the fact that stitches are removed during this period. There is a period when the loss of strength by the suture and gain in strength by the wound is very delicate, and therefore, highest number of wound dehiscence which is in conformity with other series as stated above.

Attention towards suture materials showed that the majority (73.3%) were intact but pulled through the tissue. Everett (1974) also held the view that majority of wound failures are due to the sutures cutting through the tissue. In 16.7% it was found to be broken or with slipped knot, while in 10% it was completely dissolved. Management was basically done in 3 different ways.

- (a) Packing and strapping
- (b) Temporary packing and strapping followed by resuture
- (c) Immediate resuture.

The first two methods are restricted to patients who are not suitable for immediate resuture, like (i) patient in shock (ii) Gross adhesion of gut and omentum with or without gastrointestinal fistula (iii) Gross local infection. Dressing along with abdominal support followed by secondary suture and deep tension suture was carried out in 64% of cases of partial wound dehiscence (Dehiscence without evisceration).

Immediate re-suture of the disrupted wound was carried out in 30% of cases which were cases of complete wound dehiscence (dehiscence with evisceration). It is mandatory when burst abdomen with prolapse of intestine occur. (Everett H 1974), Irvin (1981), Ellis (1990), Riou et al (1992) and others hold this view. However, in 4% of case of complete dehiscence, immediate resuture could not be done as the patients could not

be resuscitated from shock and they died without any definitive treatment. One patient of partial dehiscence died before secondary suture, due to severe infection and septicemia.

The mortality was 14% and incidence of incisional hernia was 18% though subsequent follow up was rather incomplete. 26% of cases were completely cured. Some of the patients were advised to wear abdominal corset which gave them a sense of security and most of them did not turn up for surgery. G. Efron (1965) reported a mortality of 24 percent and incisional hernia of 20% (White H. et al 1977). Leaper D.T. et al (1977) reviewed closure with vicryl and found the incidence of incisional hernia only to be 3-4 percent. No redisruption was noted in this series. Many authors also have similar experiences like Banerjee et al (1983), Rion et al (1992).

V. Conclusion

Anaemia and hypoproteinaemia was found to play a significant role both alone or in combination with malnutrition. Other factors were steroid therapy, obesity, diabetes, uremia, jaundice, chest infection and smoking. Supraumbilical midline or paramedian vertical incisions were more prone to dehiscence, though no incision was immune. It may occur with any suture and with any method of closure though the incidence was lowest with the use of monofilament non absorbable sutures (Prolene) and the use of mass closure technique for vertical incisions. Rise of intra-abdominal pressure can cause increased strain upon the wound & lead to dehiscence. Wound infection is another factor. Serosanguinous discharge was found to be the most pathognomonic sign.

References

- [1]. Mann LS, Spinazzola AJ (1962): J. A. M. A., 180:1021.
- [2]. John Spiliotis, K. T. (2009). Wound dehiscence: is still a problem in the 21th century: a retrospective study. World Journal of Emergency Surgery, 4 (12).
- [3]. Efron G (1965): Lancet, 1:1287-90.
- [4]. Hampton JR (1963): Br Med J., 2: 1032.
- [5]. Manassa EH et al: Plast Reconstr Surg. 2003 may; 111(6): 2082-7; Discussion 2088-9.
- [6]. Irvin TT, Stodd CJ, et al (1977): Br Med J., 2:351.
- [7]. Leaper DJ (1989): "Progress in Surgery", 5:19-30.
- [8]. Guiney EJ, Morris PJ and Donaldson GA (1966): Arch. Surg., 92:47.
- [9]. Efron G (1965): Lancet, 1:1287-90.
- [10]. Everett WG (1974): Ann R Coll Surg Engl., 55:31-6.
- [11]. Baggish MS, Lee WK (1975): Obstet Gynecol., 46:530.
- [12]. Gurleyik G.: Ulus Travma Derg. 2001 Apr; 7(2): 96-9.
- [13]. Greenburg AG, S IK RP, et al (1979): Arch Surg., 114:143.
- [14]. Zografos, K. A. (2006). A concomitant review of the effects of diabetes mellitus and hypothyroidism in wound healing. World journal of Gastroenterology, 12 (17), 2721-2729.
- [15]. Ellis H, Heddle R (1977): Br. J Surg., 64:733.
- [16]. Gurleyik G.: Ulus Travma Derg. 2001 Apr; 7(2): 96-9.
- [17]. Reitamo J, Moller C (1972): Acta Chir Scand., 138:170.
- [18]. Goligher JC, Irvin TT, et al (1975): Am J Surg., 131-130.
- [19]. Hill GE, Fraley WH, Griffith KE, Foresther JE, Minnei JP J Trauma 2003 May; 54(5) 908-14.
- [20]. Butsenko VN, Antoniuk SM, et al (1990): Klin Khir., 4:1-4.
- [21]. Efron G (1965): Lancet, 1:1287-90.
- [22]. Ellis H (1990): "Maingots Abdominal Operations" – Vol. 1, 9th Ed. (Ed S. Schwartz) Appleton and Lange – Norwalk pg. 203-12.
- [23]. Everett WG (1974): Ann R Coll Surg Engl., 55:31-6.
- [24]. Riou JP, Cohen JR, Johnson H (1992): Am J Surg., 163(3.) :324-30.
- [25]. Leaper DJ, Evans M, Pollock AV (1977): Br J Surg., 64:603-6.
- [26]. Banerjee SR, Daoud I, Russel JC, Becker DR (1983): Curr Surg., 40:432-4.

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