



# Postoperative abdominal wound dehiscence in children: How to manage it?

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## Introduction

Abdominal wound dehiscence is a severe complication of abdominal surgery in children. Its sudden presentation and requirement of surgical repair in the majority of cases underline the stressful character of this complication for both patients and parents. Reported incidences ranged from 0.4-1.2%, with mortality rates reported as high as 45% [1]. The risk factors for burst abdomen are either patient related or surgery related. Management of this serious complication is a relatively unexplored area in the field of surgery [2].

## Abstract

**Background/purpose:** Burst abdomen is a dehiscence of the layers of the abdominal wall, including the peritoneum, with exposure of the intestines. It usually occurs between the 6<sup>th</sup> and 12<sup>th</sup> day postoperative. With an incidence of 0.4-1.2% following major abdominal surgery and a high morbidity and mortality, burst abdomen is a challenge for the abdominal surgeon. While systemic factors are among the causes, surgical technique appears to play a major role as well. In this study, I presented a technique for closure of burst abdomen with a low recurrence rate.

**Patients and methods:** Fourteen patients, of both sexes, with burst abdomen following various abdominal surgeries were collected from pediatric surgery department, faculty of medicine, Ain shams university in the period between June 2014 and May 2016. Age ranged between five days and six years (mean 3 years, median 3.6 years). All the burst wounds were closed with interrupted multifilament absorbable sutures in a single muscular layer leaving the skin and subcutaneous tissue to be closed separately. The patients were followed up for one year after the closure to detect recurrence of the burst or development of incisional hernia.

**Results:** Recurrence occurred in one of the fourteen patients (7%). None of the patients developed incisional hernia during the follow up period.

**Conclusion:** Single muscular layer closure of the burst abdomen with interrupted multifilament absorbable sutures is a simple technique for managing this challenging surgical complication with a relatively low recurrence rate.

A great variety of suture materials and needles have been developed to provide an adequate closure of the fascia and thus the abdominal wall [3]. Therefore the discussion regarding the optimal technique of abdominal fascia closure continues and most surgeons practice according to their own experience [4].

In this study, I evaluated closing burst abdomen in single muscular layer with multifilament absorbable sutures applied in interrupted manner to see the rate of recurrence of the burst or the development of incisional hernia after closure.



## Patients and Methods

After approval of the internal review board, fourteen patients with burst abdomen following various abdominal surgeries were collected from pediatric surgery department, Faculty of medicine, Ain shams university in the period between June 2014 and May 2016. Age ranged between five days and six years (mean 3 years, median 3.6 years). The burst occurred 5-10 days after the primary closure (mean 7 days, median 6 days).

All the burst wounds were closed after debridement of obvious necrotic tissue with interrupted multifilament absorbable sutures in a single muscular layer leaving the skin and subcutaneous tissue to be closed separately, regardless of the incision done and the technique used in the primary closure (The technique used in the primary closure was closure with multifilament absorbable sutures applied in a continuous manner, in one layer in vertical midline incisions and in multiple layers in transverse incisions). We did not irrigate the subcutaneous tissue with saline or antibiotics.

The patients were followed up for one year after the closure to detect recurrence of the burst or development of incisional hernia.

## Results

Recurrence developed in one patient (7%). This patient had undergone ileostomy and multiple biopsies were taken for intestinal obstruction and suspected Hirschsprung's disease in the primary operation. The recurrence developed 5 days after the closure. The laboratory tests in the second burst revealed hypoalbuminemia which may be the cause of poor wound healing. The wound was closed, this time, by retention sutures, using non-absorbable material. The patient was fine and was discharged 6 days after the second closure.

In the remaining thirteen patients, none of them had recurrence. They were discharged 5-8 days after the closure.

None of the fourteen patients developed incisional hernia during the follow up period.

## Tables

**Table 1:** Summarizes the characteristics of the patients involved in the study.

Age of the patient	Operation done in the first time	Presence of wound infection	Presence of hypoalbuminemia	Recurrence of the burst	Development of incisional hernia
1 month	Stoma and multiple biopsies for suspected Hirschsprung's disease	No	No	No	No
3 months	Stoma and multiple biopsies for suspected Hirschsprung's disease	Yes	No	No	No
5 months	Stoma and multiple biopsies for suspected Hirschsprung's disease	No	No	Yes	No
2 months	Nissen fundoplication and gastrostomy for gastro-esophageal reflux disease	Yes	No	No	No
1 year	Nissen fundoplication and gastrostomy for gastro-esophageal reflux disease	Yes	No	No	No
5 months	Intestinal resection and reanastomosis for intussusception	Yes	No	No	No
8 months	Intestinal resection and reanastomosis for intussusception	No	No	No	No
10 months	Intestinal resection and reanastomosis for intussusception	Yes	No	No	No

## Discussion

Burst abdomen is a serious complication of abdominal surgery and some consider it as an acute postoperative hernia [5]. Multiple techniques have been developed for closing burst abdomen. Abbott et al. reported a 56% success rate when the burst wound was closed primarily with or without retention sutures [6]. Retention sutures are reported to be very painful for the patients and also have been frequently associated with local complications and the need for early removal [7].

Another technique is closing the burst abdomen with the aid of relaxing incisions. The surgeons did these incisions in the transversus abdominis muscle, the internal oblique muscle, the external oblique muscle and Scarpa's fascia. Although they reported no recurrence following this technique, the mortality rate was 12.5% [8].

Research for an effective technique to close a burst abdomen is continuing. Temporary closure using Bogota bag followed by primary closure after one month was tried. However, there was no data to compare this technique with other techniques of closure of burst abdomen [9].

The use of meshes in closure of burst abdomen was also studied over the past years. Non-absorbable meshes such as polypropylene were associated with enterocutaneous fistula formation and intestinal adhesions. Absorbable meshes such as polyglactin were associated with less complications than non-absorbable ones but the material can tear resulting in repeat evisceration and the need for reoperation [10,11].

The technique used in this study was simple. The recurrence rate associated with its use was relatively low (7%). It could be applied for the burst wound regardless of the presence of wound infection or the technique used in the primary closure.

However, the number of the patients is small and further studies comparing this technique with other techniques for closing the burst abdomen is necessary to prove its efficacy.

6 months	Abdominal assisted transanal pull through for Hirschsprung's disease	No	No	No	No
1 year	Abdominal assisted transanal pull through for Hirschsprung's disease	Yes	No	No	No
2 weeks	Congenital diaphragmatic hernia repair	Yes	No	No	No
4 years	Appendectomy and peritoneal toilet for complicated appendicitis	Yes	No	No	No
6 years	Appendectomy and peritoneal toilet for complicated appendicitis	Yes	No	No	No
5 days	Bishop-Koop ileostomy for meconium ileus	Yes	No	No	No

### Conclusion

Multifilament absorbable interrupted sutures applied in a single muscular layer was a simple technique for closing burst abdomen in children with a relatively low recurrence rate.

### Consent

The work has been approved by our ethical committee and subjects gave informed consent to the work.

### References

1. Cigdem MK, Onen A, Otcu S, Duran H. postoperative abdominal evisceration in children: Possible risk factors. *Pediatr Surg Int.* 2006; 22: 677-680.
2. Van Ramshorst GH, Eker HH, Harlaar JJ, Nijens KJ, Jeekel J, Lange JF. Therapeutic alternatives for burst abdomen. *Surg technol int.* 2010; 19: 111-119.
3. Hodqson NC, Malthaner RA, Ostbye T. The search for an ideal method of abdominal fascial closure: a meta-analysis. *Ann Surg.* 2000; 231: 436-442.
4. Hoer J, Stumpf M, Rosch R, Klinge U, Schumpelick V. Prevention of incisional hernia. *Chirurg.* 2002; 73: 881-887.
5. Webster C, Neumayer L, Smout R, Horn S, Daley J, Henderson W, et al. Prognostic models of abdominal wound dehiscence after laparotomy. *J Surg Res.* 2003; 109: 130-137.
6. Abbott DE, Dumanian GA, Halverson AL. Management of laparotomy wound dehiscence. *Am Surg.* 2007; 73: 1224-1227.
7. Rink AD, Goldschmidt D, Dietrich J, Nagelschmidt M, Vestweber KH. Negative side-effects of retention sutures for abdominal wound closure. a prospective randomized study. *Eur J Surg.* 2000; 166: 932-937.
8. Esmat ME. A new technique in closure of burst abdomen: TI, TIE and TIES incisions. *World J Surg.* 2006; 30: 1063-1073.
9. Sukumar N, Shaharin S Razman J, Jasmi AY. Bogota bag in the treatment of abdominal wound dehiscence. *Med J Malaysia.* 2004; 59: 281-283.
10. Van't Riet M, de Vos van Steenwijk PJ, Bonjer HJ, Steyerberg EW, Jeekel J. Mesh repair for postoperative wound dehiscence in the presence of infection: is absorbable mesh safer than non-absorbable mesh? *Hernia.* 2007; 11: 409-413.
11. Schachtrupp A, Fackeldey V, Klinge U, Hoer J, Tittel A, Toens C, et al. Temporary closure of the abdominal wall (laparostomy). *Hernia.* 2002; 6: 155-162.