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Case Report

Catastrophic appendicitis operation, successful repair in tertiary limited resources hospital: A case report

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ABSTRACT

Introduction: Acute appendicitis is one of the most common surgical diseases. Perforated appendicitis resulting in catastrophic complication because of a burst abdomen with necrotizing fasciitis of the abdominal wall is exceedingly a rare case.

Presentation of case: A 13-year-old girl with perforated appendicitis who had undergone laparotomy had to experience a burst abdomen with necrotizing fasciitis of the abdominal wall. The patient has temporarily closed the abdominal cavity with a urine bag (modified Bogota bag). After 23 times replacement of the Bogota bag and the condition of the sepsis and nutrition had improved, the abdominal wall reconstruction was performed by carrying out two random rotational flaps to close the abdominal defect. One year later, the patient came for ileocolostomy closure; then the patient was sent home with uneventful condition.

Discussion: Perforated appendicitis is a type of acute appendicitis with a low morbidity rate. Compared to other complications, burst abdomen and necrotizing fasciitis (NF) in perforated appendicitis are exceptionally rare events. Surgery with sepsis and recurrent intra-abdominal abscesses as a result of previous surgery are the causes of burst abdomen. The use of abdominal drainage has also been shown to cause NF. Both of these conditions will increase the cost and length of stay, and reduce the quality of life. The rotational flap procedure is the procedure of choice for a large burst abdomen.

Conclusion: Surgeons should and have to perform a meticulous operation to prevent catastrophic complication and to increase the quality of life.

1. Introduction

Acute appendicitis is one of the most common surgical diseases. The associated mortality of this disease is estimated at 0–1.3%, but it increases six-fold if perforation occurs [1]. Abdominal wound dehiscence (burst abdomen, fascial dehiscence) is a severe post-operative complication, with mortality rates reported as high as 45%. The incidence, as described in the literature, ranges from 0.4% to 3.5% [2]. Frequently, a burst abdomen occurs because of the nature of the disease. Urgent need for operative intervention may preclude satisfactory preoperative preparation of the patient, improper postoperative management, wound infection, and poor surgical technique [3].

In this case report, we report a catastrophic complication of perforated appendicitis in children. This case report has adjusted the content to SCARE **2020** criteria [4].

2. Presentation of Case

A well-nourished 13-year-old girl from a rural area, with whole abdominal guarding, experienced fever and abdominal distension for 1 week before being referred by a family physician to a hospital. The patient was diagnosed with perforated appendicitis and an emergency appendectomy laparotomy was performed by a general surgeon in a rural hospital. Intraoperative findings detected 200 cc of pus, perforated appendix at the base of the appendix, and a lot of intestinal adhesion. Appendectomy and adhesiolysis were performed by the surgeon. Five days after the operation, an abdominal guarding and feces came out from the surgical wound. The surgeon decided to do a relaparotomy. In the second operation, multiple perforations were found at the terminal ileum due to the previous adhesiolysis at a distance of 20 cm and 15 cm from the ileocaecal valve; therefore, ileum resection, abdominal drainage with a used gastric tube, and double-barrel ileostomy were

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performed. Five days later, feces came out again from the surgical wound, then the patient was sent to the referral hospital in Banda Aceh (Fig. 1A). The patient was in sepsis condition and we performed a pre-operative Early Goal Direct Therapy (EGDT) procedure. The senior pediatric surgeon performed a redo laparotomy and found multiple perforations in the proximal stump ileostomy and caecum which were likely to occur due to the previous surgery of the intestinal adhesion. Besides, fasciitis necroticans was found in the right waist to the right inguinal which is caused by fecal spillage to the subcutis due to the use of intra-abdominal drainage (Fig. 1B). Redo ileostomy and colostomy mucous fistula were performed. The fascia and muscles of the laparotomy wound are fragile, so the abdomen is temporarily closed with a urine bag (modified Bogota sac) (Fig. 1C).

Every 3 days, we replaced the urine bag in the operating room to clean the abdominal cavity for 21 times until the condition of the sepsis and the abdominal tissue is optimal for reconstruction. Provision of meropenem and metronidazole antibiotics was done intravenously (no antibiotic allergy). Total parenteral nutrition was given for 14 days, followed by giving ceftriaxone according to the results of blood culture. After 14 days, the patient's condition began to stabilize, and the administration of oral diet was done gradually to optimal body weight for reconstructive surgery (the patient lost 10 kg of weight). The abdominal wall reconstruction procedure was performed by senior plastic and pediatric surgeons by performing 2 random rotational flaps from the upper right abdominal and left inguinal to close the abdominal defect (Fig. 2A). Before the flap was sutured, we used a partial absorbable surgical mesh to close the abdominal fascia defect. The defect caused by the rotational flap was covered with skin grafts from both thighs. The reconstruction operation was carried out in two stages because there were infections of the surgical wound from the inguinal flap, and ischemia of the rotational abdominal flap. The total length of stay was 90 days and the patient returned home in good condition.

One year later, the patient came to our hospital for ileocolostomy closure (Fig. 2B). Minimal bowel adhesion and size of ileostomy proximal 4 cm and distal 2 cm were obtained. The end to end Nixon anastomosis procedures were performed. Patients fasted for 1 day, and then the oral administration of the diet was done gradually until free diet. The patient returned home on the seventh day in good condition (Fig. 2C). The patient is currently in college with good performance.

3. Discussion

Appendicitis is one of the most common abdominal surgical emergencies which is usually managed by doing an appendectomy. Perforated appendicitis is a type of acute appendicitis with a morbidity rate of 15.8%. Compared to other complications, necrotizing fasciitis (NF) is an exceptionally rare event. Although the incidence is relatively low, NF is a life-threatening soft tissue infection associated with high mortality (6%–76%) [5]. It is nearly always associated with the perforation of a retrocaecal appendix due to delayed diagnosis and treatment. There are two orifices that have been described: the inferior lumbar triangle (known as the Petit triangle) and the superior lumbar triangle (known as the Grynfeltt-Lesshaft triangle). As these two triangles void of muscular layers are the areas of relative weakness in the abdominal wall, unusual traumatic lumbar hernias are known to develop through them [6]. Our patient has a unique aetiology, we suggest it from the spillage of the abdominal drain (NGT tube) to subcutaneous layers. Usually, in a rural hospital, the general surgeon uses a gastric tube and make another hole to maximize the drain of the fluid collection for abdomen. We found there are two holes in the fat layer, and a lot of feces were spillage to that layer. This is following the two studies which concluded that the abdominal drainage after an emergency open appendectomy delays hospital discharge and may increase the rates of wound infection and morbidity for patients with complicated appendicitis [7,8].

Burst abdomen is a severe postoperative complication experienced by Surgeons and Gynecologist. It commonly occurs among patients on the 6th-8th day after the operation. There might be different factors related to the occurrence of burst abdomen such as suture material and technique, postoperative coughing and vomiting, distension, wound infection, obesity, hypoproteinemia, anemia, and immunocompromised conditions [2]. Because the patient had undergone two surgeries and experienced sepsis, the muscle and fascia tissue were fragile and difficult to close. So we decided to do a temporary closure of the abdomen with a modified Bogota bag with a plastic urine bag. The disadvantage of using a urine bag is the occurrence of contamination and a continuous process of infection, so we have to perform a routine wash of the abdominal cavity every 3 days to treat sepsis in the patient. Due to the abundant soft tissue and laxity of the abdominal wall, most of the burst abdomen are amenable to local soft tissue closure. However, when the abdominal wall defects are accompanied by a lack of soft tissue, the surgeon faces a more complex subset of reconstructions [9]. We choose the two rotational flap due to the large of the abdominal defect. The right upper abdominal flap was performed due to the large of tissue needed, while the inguinal flap was chosen to close the small remaining defect at the inferior. Before closing the abdominal defect, we partially put absorbable surgical mesh to prevent ventral hernia. The retrospective study concluded that the combined reconstruction of the complicated abdominal defect with flap and mesh has decreased the incidence of ventral hernia [10].

In conclusion, the catastrophic complication is usually low and very rare, associated with a high mortality rate. The surgeon should and have to perform meticulous operation to prevent catastrophic complication and to increase the quality of life.

Ethical approval

The informed consent form was declared that patient data or samples

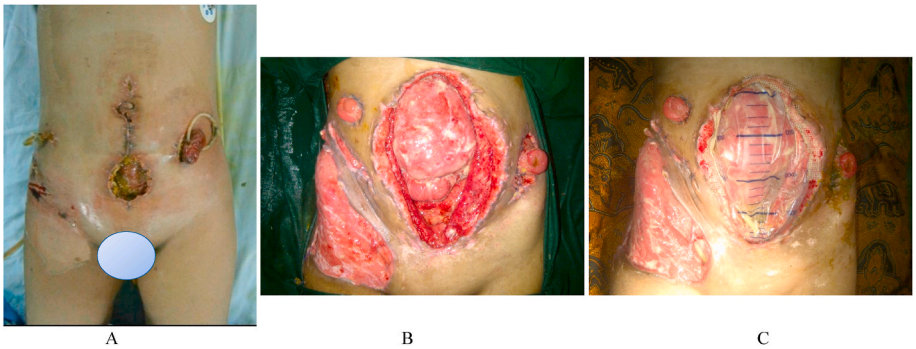

Fig. 1. A. The clinical picture in the referral hospital in Banda Aceh, ileostomy in the left abdominal and abdominal drain in the right flank, B. After the first operation, wide fasciitis necroticans in the right flank and pelvis, divided ileocolostomy and defect in the abdominal wall, C. Temporary closure of the abdomen with the urine bag.

A B C

Fig. 2. A. Six days after the first reconstruction. Random rotational flap (blue arrow), defect from rotational flap and fasciitis necroticans in the left inguinal were closed with skin graft from both thighs (yellow star), infection of skin graft (red star), and ischemia edge from rotational flap proximal. B. The condition one year later, before stoma closure. C. The condition 2 weeks after stoma closure, there is a minor superficial wound infection from laparotomy site. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

will be used for educational or research purposes. Our institutional review board also do not provide an ethical approval in the form of case report.

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Author contribution

Dian Adi Syahputra conceived the study, write the manuscript draft and final draft.

Muntadhar and Muhammad Jailani revision the final draft.

All authors played a role in conducting surgery and patient care, with Dian Adi Syahputra as the care leader.

Trial registry number

1. Name of the registry: not applicable.
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Guarantor

Dian Adi Syahputra is the sole guarantor of this submitted article.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Declaration of competing interest

No potential conflicts of interest were declared.

Patient consent

Patient consent provided by the patient and the patient's Father.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.amsu.2020.12.034.

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