

PERITONEOSTOMY WITH ADOPTION OF NEGATIVE PRESSURE THERAPY: A CASE REPORT

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Abstract: Introduction: The management of traumatized patients or those with severe intra-abdominal infections presented a difficult problem to solve: the primary closure without tension of the abdominal cavity. On the other hand, advances in patient care brought significant gains in survival, with the increase and improvement of peritonetostomies. Peritoneostomy consists of an operative strategy, in which the abdominal cavity is left open and the planes of the abdominal wall are not completely approximated, allowing a regular inspection of the condition of the loops and drainage of intra-cavity content, reducing the need for transfer of the patient to the operating room, minimizing the cumulative risks of multiple transports and anesthesia. **Goal:** The purpose of this study is to analyze the use of negative pressure (vacuum) therapy as a proposal for temporary coverage and control of peritonitis in patients undergoing damage control laparotomy, based on the use of negative pressure therapy, associated or not with polypropylene screen with scheduled washes every 72 hours, or demand as indicated by the patient's clinical condition. **Technique:** Isolation of the intestinal loops from the edges of the wall that are involved by a sterile multiperforated polyethylene film with scissors or a scalpel blade between the abdominal viscera and the anterior parietal peritoneum, surgical compresses on the sheet with two suction drains and covered with an iodine-impregnated polyester adhesive plastic bonded to the skin including a wide margin of surrounding skin. The drains are then connected to a suction device that can provide 100-150 mmHg of continuous negative pressure. **Clinical case:** A 65-year-old male patient came to the emergency room with abdominal pain in a band with sweating and fever that had not been measured and hematochezia, with a 3-day course. On physical examination, he was pale, with a

distended and painful abdomen on diffuse palpation, with signs of peritoneal irritation. An abdominal X-ray was performed, which showed bilateral pneumoperitoneum. He underwent exploratory laparotomy, identifying a distal rectal laceration and a distal Hartmann hemicolectomy with burial of the rectal stump in two planes and an end colostomy. In the postoperative period, he evolved with surgical wound infection by multidrug-resistant bacteria, and was then submitted to laparotomy revision: peritoneostomy with Bogotá bag fixation. Due to the accumulation of secretion in the abdominal cavity, it was necessary to perform a vacuum dressing as a therapeutic resource.

Conclusion: The vacuum dressing proved to be a good option for temporary coverage of peritoneostomies, allowing faster closure of the abdominal wound, reducing the number of reoperations and promoting protection of loops against bacterial contamination.

Keywords: Barker technique; Negative Pressure Therapy; peritoneostomy; Temporary abdominal closure; vacuum dressing.

INTRODUCTION

Numerous surgical procedures require access to the abdominal cavity, with variations in the location and dimension of the incision, depending on the region to be accessed. Thus, laparotomy is a procedure widely used in surgical centers, whether for investigative purposes, as is the case of exploratory laparotomy, surgical correction or in cases where laparoscopy, although less invasive, is not indicated (ALMEIDA et. al., 2007).

Initially, the surgical principles in the approach to abdominal trauma were based on anatomical repairs aimed at primary and definitive organic repair. In the last decade, with advances in the care of trauma patients or with severe intra-abdominal infections, greater importance has been given to

correcting physiological problems, leading to the concept of damage control surgery with special emphasis on keeping the abdomen open through peritoneostomy.

Performing a peritoneostomy has been advocated since 1979, with the aim of allowing wide exploration and easier washing of the abdominal cavity. However, it was during World War II, in 1940, with the numerous cases of abdominal wounds, that this conduct was introduced in the literature by the then British physician Ogilvie. In that period, war wounds were not subject to primary closure, and the use of gauze pads impregnated with Vaseline on exposed viscera was described. Ogilvie has already advocated the same technique in the staged treatment of infected abdominal wounds, leaving the abdomen open after the initial operation, in order to close it only after 1 to 4 days.

In the 1990s, changes occurred and the introduction of new techniques based on the pre-existing ones, to deal with the complications associated with the open abdomen. These means included plastic bags (Bogotá Technique), Velcro adhesive sheets, absorbable mesh and the technique using a polypropylene mesh, which was sutured to the fascia wall with suction drains.

In 1995, Brock and Barker introduced the technique that used vacuum dressings for temporary closure of the abdominal cavity and has since been called “vacum-pack” (VP) or Barker’s technique.

This technique is a good option for temporary coverage of peritoneostomies, allowing faster closure of the abdominal wound, reducing the number of reoperations and promoting protection of loops against bacterial contamination. It is widely used in places with few financial resources as a great alternative for temporary abdominal closure, in patients who undergo trauma damage control, due to its feasibility of using materials

that are common in hospital centers and that have low prices.

CASE DESCRIPTION

Male patient, 65 years old, attended the emergency room at Hospital Nossa Senhora de Lourdes complaining of abdominal pain in a band, associated with sweating, non-thermometered fever and hematochezia, with a 3-day evolution. Chronic alcoholic, smoker, in a situation of social vulnerability, heart disease, with high blood pressure, using Hydrochlorothiazide, Losartan and ASA.

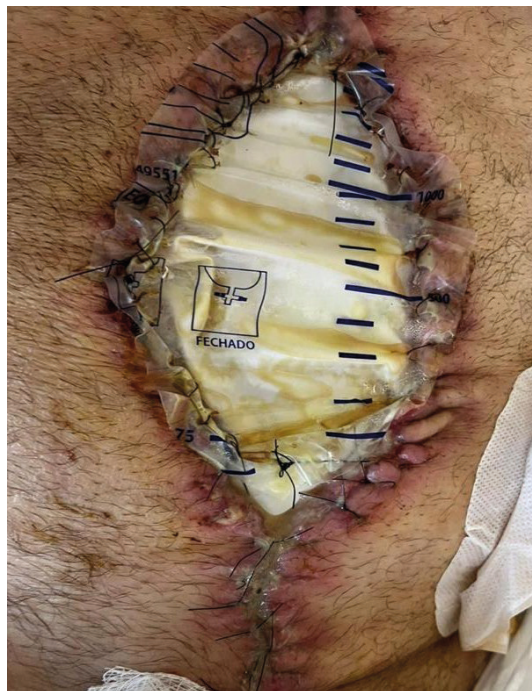
On physical examination, he was in a regular general condition, emaciated, pale, acyanotic, anicteric, with painful faces, a distended and painful abdomen on diffuse palpation with signs of peritoneal irritation. An abdominal X-ray was performed, which showed bilateral pneumoperitoneum. Diagnostic hypothesis of perforating acute abdomen.

The patient was hospitalized with adequate analgesic support and other preoperative segments for exploratory laparotomy. In which a distal rectal laceration was identified, the diagnostic hypothesis of perforating acute abdomen was confirmed, and a Hartmann's distal hemicolectomy was performed with burial of the rectal stump in two planes and end colostomy.

In the postoperative period, while still hospitalized, the patient had a surgical wound with areas of skin dehiscence, with drainage of serous secretion, somewhat purulent. A culture collection was carried out, which showed a result with multiresistant bacteria.

As a result of the patient's general condition, history of alcohol abuse, malnutrition and surgical wound infection, and with the aim of reducing intra-abdominal pressure, a new approach was performed, in which the patient underwent revision of the laparotomy; peritoneostomy with Bogotá bag fixation. Seven days after the last surgical procedure,

due to the accumulation of a large amount of intra-abdominal secretion, the Bogotá bag was removed and a vacuum dressing was made using continuous aspiration.



(Figure 1: Bogotá Stock Exchange.)

Source: personal collection.



(Figure 2: vacuum bandage.)

Source: personal collection.

On the fifth postoperative day of the third revision laparotomy, he underwent a new approach, due to abundant secretion, purulent in appearance, with necrosis of the surgical edges. Frozen abdomen was found, with no access to the cavity. Only washing over the fibrosis membrane and skin closure was performed. Admitted to the ICU hemodynamically stable, alert and in contact. He maintained clinical stability, being discharged from the ICU in good general condition.



(Figure 3: Resuture of the abdominal wall.)

Source: personal collection.

DISCUSSION

Numerous surgical procedures require access to the abdominal cavity, so laparotomy is a widely used procedure in surgical centers, whether for investigative purposes, as is the case with exploratory laparotomy, surgical correction or in cases where laparoscopy, although less invasive, is not indicated. (ALMEIDA et al., 2007).

Upon completion of a laparotomy, the abdomen is closed by suturing the aponeurosis. But in some situations, you need to leave the abdomen open. This is a measure to minimize the risk of death related to intra-abdominal hemorrhage, prevention or treatment of intra-abdominal hypertension and treatment of intra-abdominal sepsis (RODRIGUES JUNIOR, NOVO, AROUCA, et. al., 2014).

Added to this, the scarcity of resources in Brazilian public health and the growing number of complex wounds in the intra-hospital site motivated the development of new methods for the application of the vacuum sealing technique. This demand to produce new types of dressings, using negative pressure, is an attempt to provide a good therapeutic resource that aims at a good prognosis for the patient and that is, at the same time, accessible in financial terms with the use of widely available materials and that fit within the severe budget constraints in public service hospitals (LIMA, et. al. 2017).

Despite both clinical and surgical advances in the prevention and treatment of infections, abdominal sepsis is a major cause of mortality, especially in intensive care units. Severe abdominal sepsis is due to complications of appendicitis, cholecystitis, peritonitis due to progression of infection into the peritoneal cavity, and worsening peritonitis causing abscess formation in the intra-abdominal region.

When traumatic or non-traumatic sepsis occurs, the infectious process must be minimized, so techniques that keep the abdomen open, such as those by Barker and Bogotá, are the most indicated. (IÑAGUAZOS S. and ASTUDILLO A., 2009).

The use of the dressing under negative pressure stimulates an increase in tissue perfusion, in addition to reducing the tension on the edges of the wound. Minimizes the risk of necrosis while promoting wound

contraction by bringing the edges closer together. This allows for faster wound closure, shorter hospital stays and fewer reoperations. This dressing allows control of peritoneal fluid loss, wound debridement, reduction of bacterial contamination, removal of interstitial fluid and reduction of visceral edema. Because it does not require sutures, the vacuum dressing avoids trauma to the abdominal wall tissues and reduces the technical difficulty of temporarily closing the defect during surgical reinterventions (YANG ET AL., 2015).

Originally, the continuous pressure therapy technique aimed at using a sterile plastic film as an interface between polyurethane foam and the intestinal loops, which are important because, in addition to protecting and containing the viscera, they prevent their adherence to the peritoneum of the intestine. abdominal wall, making subsequent closure difficult. However, due to the unavailability of polyurethane foams, as well as the scarcity of own equipment available in the Hospital, where the surgery was performed, it was decided to use sterile compresses as an interface material, as an alternative, due to their availability and low cost. associate.

The use of compresses showed satisfactory results, similar to those found with polyurethane sponges. After removing the vacuum dressing, the wound looked good and fibrotic tissue formed, concluding the correct closure of the abdominal cavity. Choosing, at this moment, to associate approximation points on the aponeurosis.

The most common complications of this type of technique include infection, bleeding and enterocutaneous fistulas. In most cases, the infection is limited to the surgical wound, but cases of intracavitary infections have been

reported. The fistulas found in most reports in the literature are not directly related to the placement of the vacuum dressing, but to the presence of pancreatic trauma and the presence of dehiscence of the intestinal anastomoses. The occurrence of fistulas, however, is more common when a loop is exposed to the foam, being minimized with the protection of the intestinal contents by the plastic film (SIMÃO et. al. 2013).

CONCLUSION

The negative pressure technique represents a great advance in the care of patients in the setting of both trauma and severe intra-abdominal infections, allowing for a significant gain in survival, better evolution of the condition and enabling easy access in the re-approach, in addition to enabling the definitive closure of the abdominal cavity. Therefore, an indispensable treatment in hospitals and health centers, as it proves to be highly effective.

Unfortunately, in the current scenario of Brazilian public health, commercial kits for negative pressure dressings on the market are inaccessible due to their high cost, added to the small public budget. Therefore, it is clear that the rereading of the vacuum technique is an effective alternative, so that a certain democratization occurs with regard to the use of the technique, without this being limited, only, to a group of patients who are able to pay with high-cost therapy.

Its benefit becomes even more evident considering the low cost and the use of widely available and accessible materials, such as the use of compresses. These factors, which can be decisive in the treatment of a patient in the context of the Brazilian public health system.

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