



Use of vacuum peritoneostomy as an alternative to the silo in the treatment of gastroschisis



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ABSTRACT

The vacuum peritoneostomy in patient with gastroschisis is as an alternative to the silo and has the objective of improving the isolation of the lesion, keeping the child dry and with possibility of measurement of loss of fluid, obtaining satisfactory results in the control of edema and inflammatory activity and allowing fast closure of the cavity, introduction of enteral diet and early hospital discharge. This paper is a three cases report of newborn patients with gastroschisis submitted to vacuum peritoneostomy with good evolution.

1. Introduction

Gastroschisis is a congenital anomaly with protrusion of the intestine through a failure in the abdominal wall. Generally this defect varies of 0.5–5 cm, and surgical correction is indicated the earliest possible due to risk of morbidity and mortality [1,2]. The silo helps to close the abdominal cavity in the case of visceros-abdominal disproportion [3]. With this technic aponeurosis is fixed in the abdominal wall, and allows the gradual return of the viscera to the abdominal cavity, taking in average of 6–7 days to allow the definitive closure [3]. In this period patient must be in assisted ventilation, with risks of infection [3].

Vacuum peritoneostomy has been used as an alternative in the temporary closure of abdominal tragedies for about 15 years [2,4–8]. The mechanism of action of this technic is proposed as direct effects and secondary effects of the vacuum [4]. As primary effects is possible list the wound shrinkage or macrodeformation, microdeformation at the foam-wound surface interface, fluid removal and stabilization of the wound environment [4]. Secondary effects suggests alteration in the biology of wound healing including angiogenesis, neurogenesis, granulation tissue formation, cellular proliferation, differentiation, and migration [4].

This technic allows a faster closer of the abdominal wall and less clinical complication [3,5–8]. In the literature, the indication of this technic in gastroschisis patients shows an effectively closure of the wall defect.

We present the use of vacuum peritoneostomy as an alternative to the silo as a temporary closure of the abdominal cavity in the gastroschisis.

2. Case reports

2.1. Case 1

Female newborn, cesarean delivery at 38 weeks of gestational age and 2520 g. The diagnosis of gastroschisis was made with ultrasonography at thirteen weeks of pregnancy. After the initial clinical evaluation by the pediatric team, patient was taken to operation room, where a perforation was identified in the anterior wall of the stomach, associated with important bowel edema and serosa injury (Fig. 1).

After stomach suture, the attempt to reduce the viscera cursed to hemodynamic repercussions and deterioration of ventilation. The utilization of the vacuum peritoneostomy was performed, and the patient used the vacuum during 60 h (Fig. 2).

A significant reduction of edema in the bowel was observed, with possibility of reduction without complications and closure of the cavity with the use of umbilical patch. The diet was initiated on the tenth day of life and seven day of post operator of abdominal wall definitive closure. There was a good progression of diet without interurrences and hospital discharge was made with 29 days of life. The patient returned in the ambulatory in 60 day of life with perfect evolution

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¹ The conception and design of the study, or acquisition of data, and interpretation of data.

² Drafting the article or revising it critically for important intellectual content.

³ Final approval of the version to be submitted.



Fig. 1. Patient with important bowel edema and serosa injury.



Fig. 3. Patient with 60 days after birth.

(Fig. 3).

2.2. Case 2

Male newborn, cesarean delivery at 36 weeks of gestational age and 2565 g. Diagnosis of gastroschisis was made with ultrasonography at fourteen and 5/7 weeks of pregnancy.

After initial care by the pediatric team, the patient was taken to operation room. During the surgery we identified a perforation in large gastric curvature. After gastric suture and intention to reduce the viscera, there was a hemodynamic deterioration. Because of this complication, the vacuum peritoneostomy for abdominal wall closure was indicated (Fig. 4).

A reoperation was made after 60 h and observed improvement of the edema in the bowel, allowing reduction without respiratory complications and closure of the cavity. Patient started a diet in the day seven after the definitive closure of the abdominal wall, with progression without interurrences and hospital discharge was made with 22 days of life.

2.3. Case 3

Female newborn, cesarean delivery at 36 weeks of gestational age and 2320 g. The diagnosis of gastroschisis was made by ultrasonography at twenty and 2/7 weeks of pregnancy. After initial care by the pediatric team, the patient was taken to operation room.

Opted for the vacuum peritoneostomy because the small bowel incompatibility in the abdominal cavity and performed a reoperation after 70 h (Fig. 5). Observed improvement of the edema in the intestinal bowel and was possible the intestinal reduction without complications with good closure of the cavity.

Patient started diet on the eight day after the definitive closure of the abdominal wall, with slower diet progression and hospital discharge at 36 days of life.

3. Discussion

Vacuum peritoneostomy has been used as an alternative to accelerate the healing of complex wounds, help in the temporary closure of abdominal tragedies and improve the response to cutaneous grafts for about 15 years [2,4–10].

Despite the good results in the adult population, there are few reports in the pediatric and neonatal population [2,6,8,11–13]. In the pediatric field the reports shows a safety and effectiveness use

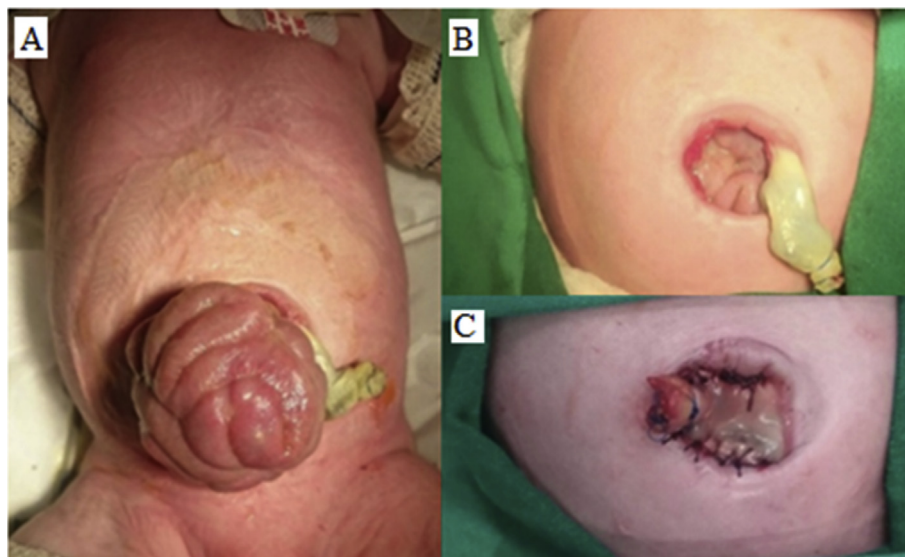


Fig. 2. A: Patient after 60 h of vacuum peritoneostomy; B: Reduction of edema and inflammatory process in the bowel; C: Reduction and closure of the abdominal cavity.

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