

Intestinal Extrusion by the Hole of Colostomy

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Abstract— Intestinal extrusion developed at the site of a stoma is a rare occurrence, associated with an elevated morbidity-mortality. The clinical symptoms frequently occur between the sixth and seventh postoperative days. The risk factors most commonly related to extrusion are: increased intra-abdominal pressure, cancer of the digestive tract, emergency surgery and stomas in the surgical incision. The authors report the case of male patients, with adenocarcinoma of the median rectus with acute obstructive abdomen, submitted to loop transversotomy with the objective of decompression. The patients presented intestinal extrusion through the peri-colostomic abdominal orifice. This occurred on the tenth post-operative day with a severe picture of Syndrome of Systemic Inflammatory Response and pneumonia. The association of some initiating factors, such as the emergency surgery, the neoplastic colorectal malignancy, the increase of intra-abdominal pressure and the technical error in tailoring the colostomy were determining factors for the development of this peri-colostomic complication.

Index Terms— Dehiscence, Evisceration, Extrusion, Colostomy, Surgical Site, Surgical Complications.

I. INTRODUCTION

The incidence of complications that occur at the colostomy site are variable, and the most frequently occurring during the immediate postoperative period are necrosis, dehiscence of the colostomous fixation, retraction, hemorrhage, cellulitis, and abscess [1,4], without a difference in their appearance after a period of 30 days. The complications occur in about 39% within this time period [5].

The local factors that influence the incidence of complications include the topography of the stoma, and involvement of the abdominus rectus muscle, the preoperative marking, the diameter of the stoma, the transposition in the intraperitoneal or extra-peritoneal plane with fixation to the fascia, the aponeurotic closure,

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emergency surgery and the type of stoma [6], in addition to the major frequency associated with obesity and the female gender [7].

Because of the low frequency of this complication, but its association with an elevated morbidity, the authors feel it is interesting to report it, discussing the predisposing factors and the therapeutic option adopted.

II. THE CASE

An 82 year old male patient admitted with acute obstructive abdomen, without a definitive cause, was submitted to loop transversotomy for decompression. During the intra-operative stage of the exploratory laparotomy, adenocarcinoma of the upper rectum was detected. He also presented co-morbidity of Congestive Heart Failure associated with Systemic Arterial Hypertension and Diabetes Mellitus which were compensated at the time. On the tenth postoperative day, with the colostomy functioning, he remained in the Intensive Care Unit due to the clinical outcome of Acute Inflammatory Response Syndrome, with pneumonia and acute renal failure requiring mechanical respiratory support. Due to partial entero-cutaneous dehiscence he presented extrusion of the ileum through the abdominal colostomy (Fig 1), lateral to fixation of the colostomous tube.

An emergency surgery was performed and he was submitted to a surgical approach through the colostomy itself correcting the diameter of the aponeurotic peritoneal orifice, reducing it by a simple suture, with interrupted non-absorbable nylon sutures, without requiring intestinal resection. The colostomy regained its function on the second postoperative day, however, the patient's clinical condition worsened, and he died on the seventh day after the second surgery.



Fig 1: Extrusion of the Ileum Through the Abdominal Colostomy.

III. DISCUSSION

Evisceration is described as removal of organs as a result of the partial or complete separation of the operative incision which has been closed by several layers [8]. Intestinal extrusion developing at the site of a stoma is a rare occurrence with few reports mentioned in the literature [9,10]. It is a complication with elevated morbidity-mortality whose incidence fluctuates between 2 and 3.5 % [11]. The general morbidity of colostomy can vary from 20% to 30%, and the mortality is around 1% [9].

The acute dehiscence of the surgical incision, also termed evisceration has an adult incidence varying between 0.4 and 3.0 % [12], which can present a clinical manifestation because of a series of factors, culminating in inefficient healing [13]. Total evisceration occurs due to a complete rupture of the aponeurosis, whereas, in the partial ruptura it is restricted to the skin and subcutaneous cellular tissue [14]. The varying mechanical forces exerted across anatomically different celiotomy incisions such as midline vs. transverse therefore may affect repair fibroblast activation, provisional matrix assembly and collagen deposition and ultimately the temporal recovery of laparotomy wound tensile strength [15].

Its clinical manifestation frequently occurs between the sixth and seventh postoperative day [16,17]. An interval of approximately 30 days is considered to be the most critical, since at this time, the tension in the surgical wound is maintained predominantly by the material of the surgical synthesis constituting the principal factor responsible for maintaining adequate healing [18].

The risk factors most frequently related to evisceration are: anemia, increased intra-abdominal pressure (due to ascitis, cough, adynamic ileum, acute retention of urine and vomiting), inadequate healing, cancer of the digestive tract, emergency surgery, vitamin or zinc deficiencies, malnutrition, diabetes mellitus, age over 65 years, multiple organ failure, fever, digestive fistulas, systemic arterial hipertensión, hypoproteinemia, jaundice, shock, infection of the operative wound, peritonitis, drainage orifices or stomas in the surgical incision, reoperation, surgical time of over three hours, inadequate suture material, uremia, corticotherapy, chemotherapy and/or radiotherapy, mechanical ventilation and technical error, among others [11,16-20]. To prevent these risk factors the surgeon should try to correct these triggering effects besides utilizing adequate incisions, handling tissues delicately and obeying tissue planes when closing the surgical incisions [13,16,20,21].

When tailoring a colostomy we should follow some basic concepts such as: its location should be distant from the surgical incision; prior marking; the size of the orifice whose extension should be close to two or three digits (about four centimeters); adequate and tension-free intestinal mobilization; and with good blood circulation [1]. In cases of low intestinal obstruction, the approach to the abdominal cavity is usually realized in the right superior quadrant picturing realization of a colostomy, far from bony protuberances, whose transverse skin incision should extend circa eight centimeters [9]. With the diameter of the aponeurotic-cutaneous orifice defined, the muscular

approach should be via the trans-rectal approach. The colic segment to be exteriorized should be determined when the peritoneal cavity is opened and after realization of the colotomy, the colon is fixed to the skin at the level of the mucocutaneous junction using non-absorbable sutures, such as prolene 3-0 or 4-0, or absorbable ones such as catgut 2-0 [22-24].

In these report we notice the presence of some triggering effects such as: emergency surgery, malignant neoplastic colo-rectal disease, the increase in intra-abdominal pressure determined by decompensation of Chronic Obstructive Pulmonary Disease; associated with technical error in the tailoring of the colostomy, since the size of the orifice of the stoma remained with its diameter notably superior to the necessity for colic exteriorization, attributed to the large distension of the transverse colon noted at the time of the acute episode of the intestinal obstruction. In the surgical approach to intestinal evisceration, the surgical management can be defined by realization of the exploratory laparotomy associated to the creation of a new stoma or by the restricted intervention to the colostomy site [25].

Faced with the patient's general clinical condition the assisting medical team regarded that a more aggressive approach, (such as: laparotomy associated with colectomy and a new colostomy), would greatly increase the morbidity-mortality in the present situation, having opted for the approach restricted to the site, which determined an adequate correction of the morphology and functionality of the colostomy in the case.

IV. CONFLICT OF INTERESTS

The all authors have declared that no any potential conflict of interests in this report of case.

REFERENCES

- [1] Hoffman MS, Barton DPJ, Gates J, Roberts WS, Fiorica JV, Finan MA, Cavanagh D. Complications of colostomy performed on gynecologic cancer patients. *Gynecol Oncol.* 1992;44:231-4.
- [2] Londono-Schimmer EE, Leong APK, Phillips RKS. Life table analysis of stomal complications following colostomy. *Dis. Colon Rectum.* 1994;37:916-20.
- [3] Nour S, Beck J, Stringer MD. Colostomy complications: infants and children. *Ann R Coll Surg Engl.* 1996;78:526-30.
- [4] Park JJ, Del Pino A, Orsay CP, Nelson RL, Pearl RK, Cintron JR, Abcarian H. Stoma complications. *Dis Colon Rectum.* 1999;42:1575-80.
- [5] Duchesne J C, Wang Y Z, Weintraub S L, Boyle M, Hunt J P. Stoma complications: a multivariate analysis. *Am Surg.* 2002;68(11):961-6.
- [6] Szczepkowski M, Gil G, Kobus A. Parastomal hernia repair - Bielański Hospital experience. *Acta Chir Iugosl.* 2006;53(2):99-102.
- [7] Cottam J, Richards K, Hasted A, Blackman A. Results of a nationwide prospective audit of stoma complications within 3 weeks of surgery. *Colorectal Dis.* 2007;9(9):834-8.
- [8] Vedat B, Aziz S, Cetin K. Evisceration of gallbladder at the site of a Pezzer drain: a case report. *Cases Journal.* 2009, 2:8601.
- [9] Hines JR, Harris GD. Colostomy and colostomy closure. *Surg Clin North Am.* 1977;57(6):1379-92.
- [10] Corsi, PR, Lanterno, G, Pereira, C S B; Rasslan, S. *Rev. Bras. Colo-Proctol.* 1991;11(3): 98-100.
- [11] Salvador A, Villalba F, Galindo P, Enguix MJ, Iglesias R, Mir J, et al. La evisceración como complicación de la cirugía abdominal. *Cir Esp.* 2003;74 Supl 1:86.
- [12] Col C, Soran A, Col M. Can postoperative abdominal wound dehiscence be predicted? *Tokai J Exp Clin Med.* 1998;23:123-7.
- [13] Rodríguez-Hermosa J I, Codina-Cazador A, Ruiz B, Roig J, Gironès J, Pujadas M, Pont J, Aldeguer X, Acero D. Factores de riesgo de

- dehiscencia aguda de la pared abdominal tras laparotomía en adultos. *Cir Esp.* 2005;77(5):280-6.
- [14] Álvarez J. Evisceración. En: Álvarez J, Porrero J L, Dávila D, editores. *Cirugía de la pared abdominal.* Madrid: Arán Ediciones;2002.p.55-60.
- [15] Fagniez PL, Hay JM, Lacaine F, Thomsen C. Abdominal midline incision closure. A multicentric randomized prospective trial of 3135 patients, comparing continuous vs interrupted polyglycolic acid sutures. *Arch Surg.* 1985;120:1351-3.
- [16] Carlson MA. Acute wound failure. *Surgical Clinics of North America* June;1997 77(3):607-36
- [17] Wissing J, Van Vroonhoven TJ, Schattenkerk ME, Veen HF, Ponsen RJ, Jeekel J. Fascia closure after midline laparotomy: results of a randomized trial. *Br J Surg.* 1987;74:738-41.
- [18] Carter D. The surgeon as a risk factor. *BMJ.* 2003;326:832-3.
- [19] Docobo-Durantez F, Sacristán-Pérez C, Flor-Civera B, Liedó-Matoses S, Kreisler E, Biondo S. Estudio clínico aleatorizado entre sutura de polidioxanona y de nylon en el cierre de laparotomía en pacientes de riesgo. *Cir Esp.* 2006;79(5):305-9.
- [20] Portilla F, Flikier B, Espinosa E, Utreta A, Rada R, Vega J, Cisneros N, Maldonado V H. Estudio aleatorizado sobre la utilización de mallas reabsorbibles para la prevención de la evisceración en la cirugía colorrectal. *Cir Esp.*2008;83(1):12-7.
- [21] Riou JP, Cohen JR, Johnson H Jr. Factors influencing wound dehiscence. *Am J Surg.* 1992;163:324-30.
- [22] 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;109:130-7.
- [23] Bouillot JL, Aouad K. Traitement chirurgical des complications des colostomies. In: *Encyclopedie Médico-Chirurgicale. Techniques chirurgicales - Appareil digestif, 40-545, Paris: Techniques; 2002. 12p.*
- [24] Keighley MRB. Estomas: in Keighley MRB, Pemberton JH, Fazio VW, Parc R. *Atlas de Cirurgia Colorretal.* Ed Revinter; Rio de Janeiro; 1999,61-91.
- [25] Gallot D. Traitement chirurgical des complications des colostomies. In: *Encyclopedie Médico-Chirurgicale. Techniques chirurgicales-Appareil digestif, 40-545, Paris: Techniques; 1990. 10p.*