

Extensive Intestinal Resection after Mesenteric Thrombosis

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Abstract

Mesenteric thrombosis (MT) is a life threatening condition that requires emergency surgery. The basic surgical procedure is resection of the necrotic segments of the bowel. Resection is considered “massive” when 200 cm or more of the intestine is removed, this has a catastrophic impact on patient’s life and bad prognosis. We present the case and clinical images of a patient who underwent massive intestinal resection due to mesenteric thrombosis that was left 60 cm of small bowel with preservation of the ileocecal valve and colon in whom an unusual surgical procedure over the ischemic duodenum had to be done. Two years after this event he has good clinical evolution with oral feeding.

Keywords: Mesenteric Thrombosis; Short Bowel Syndrome; Extensive Intestinal Resection

Abbreviations

MT: Mesenteric thrombosis; CT: Computed Tomography; ICV: Ileocecal Valve

Introduction

Extensive resection of the bowel secondary to MT has an extremely negative impact on patient’s life and bad prognosis that can lead to death [1]. However, some cases have been reported of patients who have evolved adequately despite having undergone extensive intestinal resection, with close follow-up and multidisciplinary medical treatment. From the surgical point of view, some surgical procedures has to be done to improve patient prognosis and patient’s life. Imaging studies are of great help for the evaluation and assessing bowel and anastomoses, however due to post surgical distortion of the anatomy, these studies can be difficult to interpret, especially if the specific surgical procedure performed is not known, as in this case in which uncommon surgical procedures had to be done.

Clinical Case

A 64-year-old male patient without previous uneventful medical history, was transferred from another hospital where he underwent urgent exploratory laparotomy for acute abdomen secondary to mesenteric thrombosis, and wide intestinal resection was performed due to extensive necrosis of all jejunum and a large part of the ileum with proximal and distal stump closure with unfavorable postoperative evolution. For this reason he was transferred to our hospital. On admission 12 hours later, the patient was disoriented, dehydrated and lung hypoventilation. His vital signs upon admission were: Pulse: 120, TA: 132/76, FR, 24, T 37.3, weight: 77, height: 1.75, BMI: 25. His laboratory studies, hemoglobin 17.2, hematocrit 46.7, leucocytes 19100, platelets 17,100, band 4, glucose 212, BUN 21, creatinine 1.4, pH 7.32. His physical examination showed distended abdomen with midline surgical wound, with generalized pain, rebound and no peristalsis. It was decided to perform revision surgery, finding necrosis of the 4th portion of the duodenum, and 100 cm of terminal ileum (Figure 1). Resection of the affected segments was performed (Figure 2), the duodenal ischemic stump was invaginated over the duodenum first (Figure 3) and then the edges closed with sero muscular sutures over normal tissue. The distal ileum was left closed, remaining only 60 cm of it, preserving ileocecal valve and all colon which seemed viable. Gastrostomy were performed and a Foley catheter was advanced to the

third duodenal portion was left to protect the closure of the stump and to suction the gastric, bile and pancreatic secretions. The patient was transferred to the intensive care unit and he was managed with IV fluids, antibiotics and total parenteral nutrition until stabilization. During his internment he was found to have a protein S deficiency which was presumed probable cause of the thrombosis, and he was started on low molecular weight heparin. 6 weeks after, he was completely recovered from the initial event. Because of the bad prognosis due to the massive resection and the expected short bowel syndrome, treatment alternatives were discussed with the patient and it was decided to reconnect the remaining distal ileum to the 3rd portion of the duodenum, since that was the most viable portion for the anastomosis, given the remaining length of the ileum and the loss of the 4th portion of the duodenum (Figure 4). Surgery was performed and subsequent evolution was adequate, being discharged with oral and peripheral parenteral nutrition with close nutritionist guidance to complete his nutritional requirements, reducing the parenteral nutrition gradually until he was able to maintain adequate oral nutritional support to be discontinued 6th months after the last intervention, continuing to date only with special fragmented oral nutrition, with oral nutritional supplements and oral anticoagulant. His BMI two years after his intervention is 22.6 Kg/m², without nutritional deficits of any kind.



Figure 1: Necrosis of the stump of 4th duodenal portion.



Figure 2: Resected necrotic intestine.

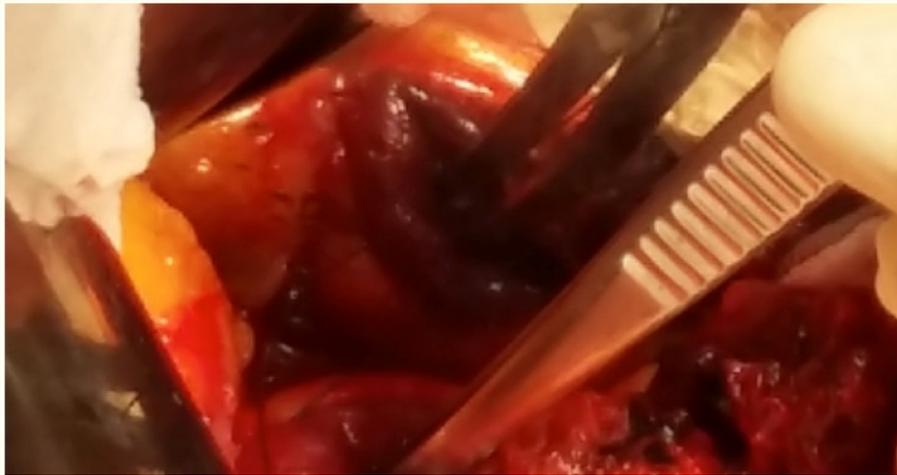


Figure 3: *Invagination of duodenal Stump.*



Figure 4: *Contrasted X ray surgical image with remaining 60cm of distal ileum anastomosed to the third duodenal portion.*

Discussion

MT is a rare, life-threatening entity that mainly affects patients older than 70 years, caused by different etiologies that result in acute intestinal blood hypoperfusion. The damage to the bowel will depend on the extent of the vascular obstruction. In the present case, protein S deficiency as a prothrombotic disease, was probably the cause of the intestinal thrombosis in this previously healthy man.

Surgical intervention should be done as soon as possible to restore intestinal circulation, resect the necrotic intestinal segments and perform the most appropriate procedures according to the case [2]. Most of the times a second intervention is necessary to review the segments with ischemia that require resection due to the extension of the necrosis, since up to 53% of the cases an additional resection is needed [3], or as in this case, in addition to the resection to carry out additional procedures with the patient in better conditions. This patient underwent additional resection of necrotic intestinal bowel. The duodenum represent a big challenge because its particular function and anatomy. In this case part of the fourth duodenal portion seemed necrotic, so we decided to do an unusual and until as far as we know not yet described procedure, invaginating the necrotic-ischemic segment and to close the duodenal stump over health duodenal tissue, with the intention that necrotic-ischemic segment shatter by itself without compromising the closure. In addition to leave a gastrostomy with a Foley catheter advanced to the third duodenal portion to suction all gastric and duodenal contents in order to favor the healing of the duodenal stump as it happened.

Massive resection of the bowel is defined as resection equal or greater than 200 cm. it has a high rate of morbidity and mortality, which increases considerably if it is resected more than 70% and the ICV cannot be spared [4,5]. Some of the case reports like the one of Pasquale., et al. [6] mention that in order to have a more favorable prognosis in this type of patients there must be at least a 50 cm remnant of the intestine with preservation of the ICV, however there are exceptional cases such as the reported by Mansueto on a patient left when newborn with only 11 cm of viable bowel without the ICV in good clinical and nutritional condition 21 years after the resection, but patients with short bowel syndrome usually need permanent total parenteral nutrition to survive and fight chronic intestinal failure [6]. We know that with time the remaining bowel specially distal ileum adapts and improve the capacity to absorb nutriments and colon can in addition increase its ability to absorb some nutrients. Early enteral nutrition after gut resection enhances its adaptation, and sometimes recombinant analogue GLP2 tedglutide or other drugs are needed [7]. This patient because his previous healthy condition, preservation of distal ileum and ICV, and early enteral nutrition was started, lives well in spite of having only 60 cm of distal ileus connected to the third portion of the duodenum with fragmented oral feeding and oral supplements two years after the event.

Imaging studies for postoperative revision are important, TC with contrast medium in conjunction with the esophagogastro-duodenal series can give a good idea of both the viability of the intestinal loops and patency of the anastomoses performed. Although these studies are of great help, because post-surgical distortion of the anatomy can be confusing to the clinicians, so good communication between surgeons, radiologists, clinicians and the multidisciplinary team is of great importance to give these patients the best opportunity to survive and to live with good quality of life.

Conclusion

Mesenteric thrombosis (MT) is a life threatening condition. This patient underwent massive intestinal resection due to mesenteric thrombosis that was left 60 cm of small bowel with preservation of the ileocecal valve and colon in whom an unusual surgical procedure invaginating the ischemic duodenum stump, had to be done. Two years after the final surgery anastomosing the distal ileum to the third portion of the duodenum he is in good clinical condition with special fragmented oral feeding.

Conflict of Interests

The authors involved in this investigation declare that there is not conflict of interest.

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