PHARYNGO-ILEO-COLANASTOMOSIS WITH MICROVASCULAR BLOOD SUPPLY AUGMENTATION FOR ESOPHAGO-GASTRIC REPLACEMENT DUE TO ESOPHAGO-GASTRIC NECROSIS AFTER CAUSTIC INGESTION

Faringo-ileo-colo-anastomose com suprimento sanguíneo microvascular para substituição esofagogástrica por necrose esofagogástrica após ingestão cáustica

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ABSTRACT – Background: Complete esophago-gastric necrosis after caustic ingestion is a challenging surgical scenario for reconstruction of the upper digestive transit. Aim: To present a surgical technique for reconstruction of the upper digestive tract after total esophagectomy and gastrectomy due to esophageal and gastric necrosis Method: The transit was re-established by means of a pharyngo-ileo-colic interposition with microsurgical arterial and venous anastomosis for augmentation of blood supply. Colo-duodeno-anastomosis and ileo-transverse colic anastomosis were performed for complete digestive transit reconstruction. Result: This procedure was applied in a case of 41 years male attempted suicide by ingesting alkali caustic liquid (concentrated sodium hydroxide). Total necrosis of the esophagus and stomach occurred, which required initially total esophago-gastrectomy, closure at the level of the crico-pharyngeal sphincter and jejunostomy for enteral feeding with a highly deteriorated quality of life. The procedure was performed later and there were no major early and late postoperative complications and normal nutritional conditions were re-established. Conclusion: The procedure is feasible and must be managed by multidisciplinary team in order to re-establish a normal quality of life.

INTRODUCTION

The reconstruction of the upper gastrointestinal transit is a surgical challenge. After previous failed surgery and total disconnection of the digestive tract, colon interposition is used associated with high morbidity (50-70%)[2,3]. An additional difficulty occurs when there is no cervical esophagus available for reconstruction in patients with caustic ingestion.

The aim of this study is to present a surgical technique to be used for reconstruction of the upper digestive transit with micro-vascular blood supply augmentation

METHOD

This paper was conducted ethically in accordance with the World Medical Association Declaration of Helsinki.

In doing the procedure the patient must be attended by a multi-professional team,
composed of gastrointestinal and micro-vascular surgeons, nutriologists, anesthesiologists, speech therapists, physiotherapists, endoscopists, and psychiatric support.

Surgical technique

A midline laparotomy, complete supra-infra mesocolic adhesiolysis is initially performed. Right colon and distal ileum are mobilized. Vascular pedicles are identified preserving right and middle colic vessels and ileal mesenteric vascular arcades in order to be used later for microvascular anastomosis. Sequential surgical steps are: 1) ileo-ceco-apendico-colic trunk division and ligation at its origin and division of distal ileum at 20 cm before ileocecal valve; 2) transverse colon division left to the middle colic vessels with a lineal stapler violet cartridge (Medtronic®, Figure 1); 3) retrosternal tunnelization for isoperistaltic ileocolon ascensus towards cervical region; 4) simultaneously, a left cervicotomy, dissection and identification of thyroid vessels, internal jugular vein and external carotid artery; 5) vascular pedicles are prepared; 6) ileum and right colon are rotated and ascended through the retrosternal tunnel toward the pharynx. Pharyngo-ileo anastomosis latero-lateral with Monocryl® 3/0 interrupted manual sutures, tutored with a bougie 36F, and an ileo-ileo anastomosis in Tomoda fashion with Monocryl® 3/0 running suture are performed by digestive surgeons (Figure 1).

Augmentation of the arterial blood supply is obtained by arterial arcade pedicle of ileum to the superior thyroid artery and venous arcade pedicle to the lower thyroid vein with microvascular anastomosis with Ethylon® 9/0 running suture. The procedure is completed with a manual 2-layer latero-lateral colo-duodenal anastomosis using Monocryl 3/0 and finally the ileo-transverse mechanic anastomosis with a Medtronic® stapler white cartridge 60 mm is performed. A fine latex drain close to the duodenal anastomosis is exteriorized in the right upper abdominal quadrant and left in place. A cervical Penrose drain is placed.

RESULT

This procedure was applied in a case of 41 years male attempted suicide by ingesting alkali caustic liquid (concentrated sodium hydroxide). Total necrosis of the esophagus and stomach occurred, which required a total esophago-gastrectomy, closure at the level of the crico-pharyngeal sphincter and jejunostomy for enteral feeding. During the following three years, he presented a highly deteriorated quality of life, poor nutritional management and remained under psychiatric support (GIQLI score =73). The patient was evaluated confirming aphagia, emaciation (BMI=18.9) with severe protein calorie malnutrition, sarcopenia, (serum albumin=2.9), vitamin deficiency and anemia. Normal cardiopulmonary physical examination was observed.

Barium sulphate swallow shows absence of passage of contrast distal to the pyriform sinus (Figure 2A and B), and endoscopy confirm radiological findings (Figure 2C and D). Barium enema and colonoscopy showed no pathological findings. CT angiography to assess the vascular supply of neck vessels, right colon and distal ileum demonstrated excellent pedicles and vascular arcades, with no pathological findings.

Postoperative outcome

Upper gastrointestinal bleeding with no hemodynamic repercussion or hemoglobin fall were observed most likely due to suture line bleeding of colo-duodenal anastomosis medically managed. No other complications were observed. The patient received initially total intravenous parenteral nutrition and enteral nutrition through jejunostomy. Oral water-soluble contrast medium swallow was indicated on the 7th postoperative day which showed a mild stricture of the pharyngo-ileo anastomosis, upper digestive endoscopy and dilatation with a Savary-Guillard 36F bougie were performed, obtaining very good transit to the...
ileo-colic segment (Figure 3A), endoscopy, Figure 3B Barium swallow). After swallowing rehabilitation, oral ingestion was initiated. The patient was discharged on the 17th postoperative day with oral and complementary enteral nutrition by jejunostomy. At the first post-operative month, he achieved complete oral nutrition and the jejunostomy was withdrawn.

FIGURE 3 – Postoperative control demonstrating absence of anastomotic stricture: A) postoperative endoscopy; B) barium swallow

Follow-up
At the one year follow-up, the patient continues with normal oral intake and supplementary vitamin treatment. An adequate nutritional status and a significantly improved quality of life were obtained, from a preoperative GIQLI score of 73 to a postoperative score of 122.

DISCUSSION
There are occasions in which cervical esophagus is not even available and the anastomosis should be performed at the pharyngeal level being not possible to use the stomach and therefore a segment of colon is used. For this procedure, preferences have been described for different colic segments. The final decision on which segment to employ depends on the preference and experience of each surgical team. In order to evaluate the type of colic graft to perform, a preoperative study with AngioTC 3-D of the abdomen and pelvis is very useful, which has 97.1% anatomical diagnostic accuracy of the mesenteric and colic vascular blood supply. The rate of complications reported include necrosis of the flap (0-14%), anastomotic leaks (0-50%), anastomotic stenosis (0-32%), respiratory complications (10-42%), postoperative mortality (0-16.7%)

REFERENCES
1. Bakshi A, Sugarbaker D, Burt B. Alternative conduits for esophageal replacement. Ann Cardiothorac Surg. 2017;6:137–143.
2. Barkley C, Orringer MB, Iannettoni MD, Yee J. Challenges in reversing esophageal discontinuity operations. Ann. Thorac. Surg. 2003;76:989-94
3. Braghetto I, Cardemil G, Csendes A, Venturelli A, Herrera M, Korn O, Sepulveda S, Rojas J. Digestive tract reconstitution after failed esophago-gastro/esophago-colon anastomosis. ABCD Arq Bras Cir Dig. 2013;26:7-12.
4. Briel W, Tamhankar AP, Hagen JA, DeMeester SR, Johansson J, Choustoulakis E, Peters JH, Bremner CG, DeMeester TR. Prevalence and risk factors for ischemia, leak, and stricture of esophageal anastomosis: gastric pull-up versus colon interposition. J Am Coll Surg. 2004;198:336-41.
5. Dickinson KJ, Blackmon SH. Management of Conduit Necrosis Following Esophagectomy. Thorac Surg Clin. 2015;25:461-70.
6. Kesler KA, Pillai ST, Birdas TJ, Riegier KM, Okerewe IC, Ceppa D, Socs J, Stames SL. “Supercharged” isoperistaltic colon interposition for long-segment esophageal reconstruction. Ann Thorac Surg. 2013;95:1162-8
7. Marks JL, Hofstetter WL. Esophageal reconstruction with alternative conduits. Surg Clin North Am. 2012;92:1287-97.
8. Nesgaard JM, Stimec BV, Bakka AO, Edwin B, Ignjatovic D. RCC study group Navigating the mesentery: part II. Vascular abnormalities and a review of the literature. Colorectal Dis. 2017;19:656-66.