COLONIC TUBE ESOPHAGOPLASTY WITH NECROSIS OF THE GRAFT A CASE REPORT

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Abstract

Colonic tube esophagoplasty is a well known technique used for esophageal replacement. In a hand of a skilled surgeon this alternative for esophageal substitution has proven effective and a good substitute but not without problems. This case report illustrates a possible serious complication of colonic tube esophagoplasty and the solution find to resolve it.

Key words: colonic tube esophagoplasty, graft necrosis.

Introduction

The need for esophagoplasty continues to decrease over the last years. Each replacement organ used for the operation for esophageal replacement has proved effective and a good substitute but not without problems. The most common used techniques for esophageal substitution are gastric tube interposition in an isoperistaltic or antiperistaltic fashion, colonic interposition, gastric transposition, or jejunal interposition graft. Though nothing can truly replace the original esophagus these substitutes for the esophagus have stood the test of time as a viable alternative and many patients have had their substitute for almost 50 years and some for more than 50 years. Gastric tube and colonic tube esophagoplasty are delicate techniques, with precise steps; any mistake in performing these steps could cause massive damage to the patient(3).

Case report

A 1 year 7 month boy was hospitalized in Intensive care unit of Pediatric surgery Department of Hospital for Children "Sf Maria" Iasi, after massive caustic ingestion (home made soap). After specific treatment the child developed progressive severe dysphagia, which required a Stamm gastrostomy for alimentation and repeated sessions of endoscopic dilatation. The barium swallow showed a full-length ischemic stricture of the entire 2/3 distal esophagus, so 5 month after the caustic ingestion, in February 1999, we decided to perform a colic tube esophagoplasty.

In the operating room, the patient was placed in the supine position with a small sand bag under the shoulder with the neck extended and turned to the right side. A tube is placed through the nose into the esophagus to allow easy dissection. A careful dissection and then isolation of the cervical esophagus was done. The abdomen was then opened through a midline incision, mobilization of the colon was done, and the graft was chosen on the territory supplied by the upper left colic artery with the length measured from the site of the antrum to the esophagostomy site. After choosing the colonic graft, inspection of the upper left colic artery pulsations was done. Then the middle colic and marginal vessels are clamped by bulldogs, and the colon is left inside the abdomen (to verify adequate circulation.

Esophagectomy was done by cutting the left triangular ligament of the liver followed by dissection of the esophagus encircling it with a tape (fig. 1). After freeing the esophagus from all its attachments, the esophageal hiatus is explored by dissection with the help of retractors inside the hiatus. With blunt and sharp dissection, the esophagus was freed as high as possible as, higher than the pulmonary ligaments. Care is taken to avoid entering the pleura. The cervical and abdominal teams simultaneously do blunt finger dissection of the esophagus; until the dissection was complete (fingers of both surgeons touch each other). The esophagectomy then is done by cutting the esophagus at the cardia with closure of the gastric end. The esophagus then is passed upward by traction from the cervical team with a long silk sutured to the esophageal end. The silk is sutured to the proximal end of the colon and pulled through the posterior mediastinum and out of the cervical incision.

The colon was re-evaluated and resected after verification of its vascularity and length. The graft was washed with diluted iodine solution and passed behind the stomach in an isoperistaltic manner. To facilitate passage through the chest, a silk suture is applied to the proximal end of the colon and pulled through the cervical incision until the colon is in place, in the posterior mediastinum. Redundant parts are resected. A single layer, end-to-side or end-to-end, esophago-colic anastomosis is done. The incision is closed after a drain is placed in the mediastinum and another near the cervical anastomosis.

The initial post operatory course was favorable, but at 5 days the child developed fever, disphagia, pus and necrotic tissue leakage through mediastinal drainage and signs of severe sepsis. The thoracic X-ray showed image of a large mediastinum, suggestive for a mediastinal collection. With massive large spectrum antibiotherapy, good drainage the evolution was favorable but with progressive total dysphagia. One month later the barium meal revealed a full length ischemic stricture of the colic graft owing to inadequate blood supply.

Fig.1. Esophagiectomy.

The decision to perform another esophagoplasty was made 1 year later. The abdomen was entered through the previous midline incision. The previous colonic graft was closed distally with a stapler. One attempt was made to take off the former graft, but the adhesions due to necrosis were too hard, with great risk of lesions of pleura or great vessels, so the colic graft was left in place. The greater curvature of the stomach was measured to assure an adequate length to reach the neck(1,2). A new tube was fashioned from the greater curvature of the stomach. The left gastroepiploic artery was divided near the splenic artery, and the short gastric vessels were ligated and divided. The gastrocolic omentum was divided, and its vessels were ligated as far as possible from the gastroepiploic arch. A transsection of the great curvature of the stomach was made 4 cm proximal to the pylorus, taking care to avoid any damage to the right gastroepiploic vessels. A silicone tube (20F) was inserted in the stomach through the opening and placed along the greater curvature from the antrum to the fundus. The new esophagus was fashioned using a duble layer anastomosis. The defects of the stomach were closed with continuous hand sutures. An adequate length of isoperistaltic gastric tube was so obtained. The distal end of the GT was anastomosed to the fundus of the stomach A tunnel is made by blunt dissection dividing the endothoracic fascia very close to the sternum, to place the new tube in a retrosternal manner.

Early postoperative follow-up was uneventful. Oral feeding was started on the 10th postoperative day, and he was discharged on the 14th postoperative day. He has tolerated early normal diets.

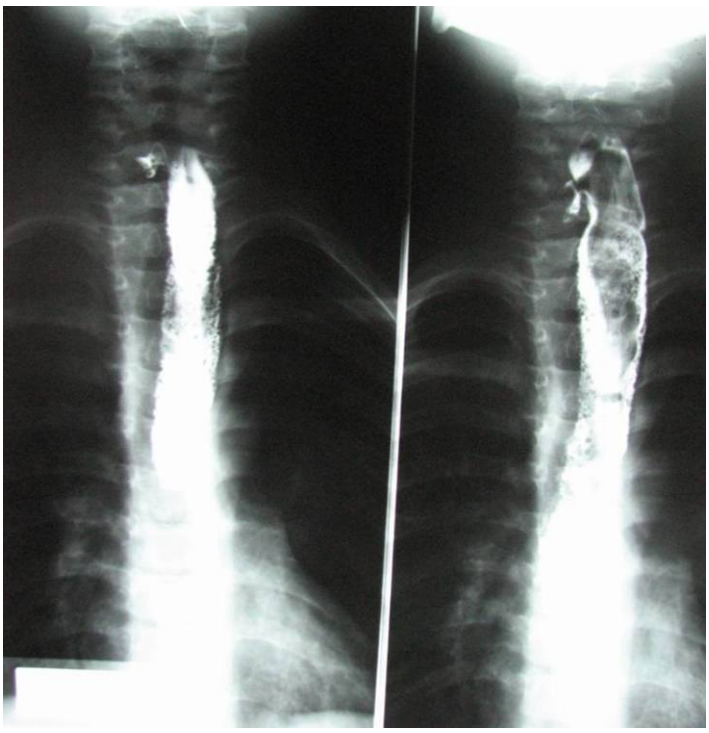

Fig.2. Barium meal – suprastenotic diverticula.

After two month a cervical fistula occurs and the children came back to the hospital. With total gastrostomy alimentation, antibiotherapy the fistula closed, bun barium meal reveals a stenotic area in the cervical anastomosis with suprastenotic diverticula (fig.2).

Because of repeated pneumonia, nocturnal cough, early postprandial vomiting and of partial dysphagia associated with gain lost, in 2003, three year from the second esophagoplasty we performed the surgical cure of the cervical stenosis with the excision of esophageal diverticula, placed at the fifth cervical vertebra. The outcome was good, with no dysphagia, the child growth and development were normal. Oral radiographic contrast studies have been performed at 1 and 3years of follow-up; neither anastomotic stricture nor diverticula were found.

Discussions

The most frequently possible complications in colonic tube replacement are necrosis of the graft, redundancy of the colonic tube, leakage and stenosis of the esophago-colic anastomosis(4,5).

The necrosis of the graft is the most serious complication of colonic tube esophagoplasty that can lead to severe mediastinitis, sepsis and even death. To avoid this type of complication we must have a careful identification of the blood supply and using a double blood supply from the left colic and the marginal paracolic arcade. Also the graft must be closely analyzed in the cervical area before the esocolic anastomosis is made. We must be extremely careful not to twist the vascular pedicle during his passage behind the stomach hand through the, mediastinum. With the same importance as to prevent is to recognize the necrosis of the graft, any leakage on the mediastinal tube, associated with fever and radiologic signs of mediastinal collection must be considered a sign of graft necrosis. Once the diagnostic is made the oral intake must be stopped, with antibiotherapy, fluid resuscitation. If the outcome is not good, the fever and general signs worsen immediate intervention should be considered with total excision of the necrotic tissue. In any case a new method of esophagoplasty must be performed several months after(6).

Leakage and stenosis of the esophago-colic anastomosis is avoided by careful dissection of the esophagus avoiding injury to the blood supply and wide anastomosis. The incidence of leakage should be extremely low as the proximal esophagus is healthy. Once a cervical fistula occurs, the healing of it will leave behind a cervical stenosis that will require further dilatation or surgical correction.

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