Case Report

Treatment of late complication of colon interposition for corrosive esophageal burns

Bo Deng[1], Qun-You Tan[2], Ru-Wen Wang[3], Yun-Ping Zhao[4], Yao-Guang Jiang[5], Tai-Qian Gong[6], Jing-Hai Zhou[7]

ABSTRACT

Colon redundancy and adhesional obstruction after colonic interposition for corrosive esophageal burns, leading to poor quality of life and malnutrition in young adults, often require surgical revision. Herein, we present our lessons and experiences regarding managements of the late and untoward complications which occurred in the postoperative 15th year following the initial colon interposition. And we review the literatures in the discussion. Prolonged surgical follow-up and appropriate management of coloplasty dysfunction are important for long-term success after colon interposition for corrosive esophageal burns.

KEY WORDS: Colon interposition, Corrosive esophageal burns, Late complication.

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INTRODUCTION

The swallowing of strong acid or base can result in corrosive esophageal burns. Alimentary tract reconstruction is necessary for the treatment of scar stricture after burns. Thus far, colon interposition is one of the most frequently used methods to reconstruct alimentary tract following corrosive esophageal burns.[1,2] However, the clinical outcomes usually are not satisfactory and the incidence of postoperative complications is very high due to poor body nutrition and complicated operative procedures.[3,4] Our previously retrospective study[5] suggested that aspirated pneumonia, interposition colon necrosis and abdominal wound dehiscence are the deadliest complications. Moreover, leak and stricture of the anastomosis is the most frequent complication after colon interposition.

However, problems with the colon graft may present many years after surgery.[6,7] Herein, we present our lessons and experiences regarding managements of the late and untoward complications which occurred in the postoperative 15th year following the initial colon interposition. And we review the literatures in the discussion.

CASE REPORT

In November 1993, when the female patient was 3-year-old, she ingested alkali accidentally. In December 1993, dysphagia occurred and she was admitted into our institute. Barium swallow indicated that there was severe stenosis in the esophageal upper segment. In May 1994, anastomosis between the colon interposition and the cervical part of the esophagus was performed as follows: A superior belly median incision with an anterior border incision of the left sternocleidomastoid was performed. The upper end of left colon prepared to be

1. Bo Deng,
2. Qun-You Tan,
3. Ru-Wen Wang,
4. Yun-Ping Zhao,
5. Yao-Guang Jiang,
6. Tai-Qian Gong,
7. Jing-Hai Zhou,

1-7: Thoracic Surgery Department, Institute of Surgery Research, Daping Hospital, Third Military Medical University, Chongqing City, 400042, P.R.China.

Correspondence:

Ru-Wen Wang,
Thoracic Surgery Department, Institute of Surgery Research, Daping Hospital, Third Military Medical University, Changjiang Branch St, 10#, Yuzhong District, Chongqing City, 400042, P.R.China.
E-mail: superdb@163.com

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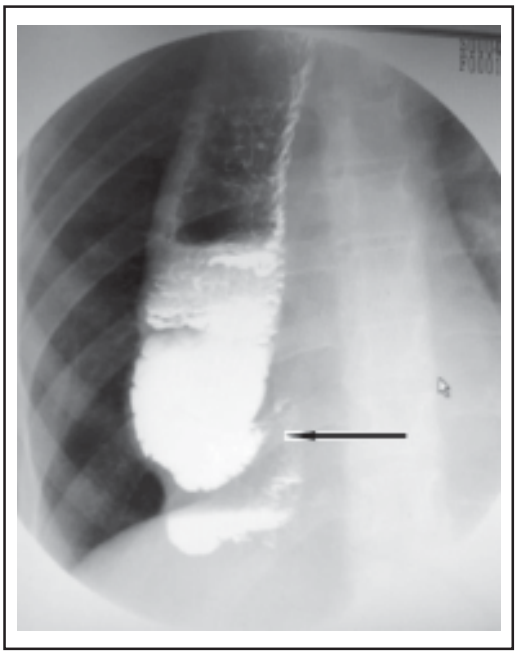

Fig-1A: Barium swallow indicated that there was an adhesional obstruction on the level of esophageal hiatus (July 2008). ***Note:*** Stenosis around esophageal hiatus.

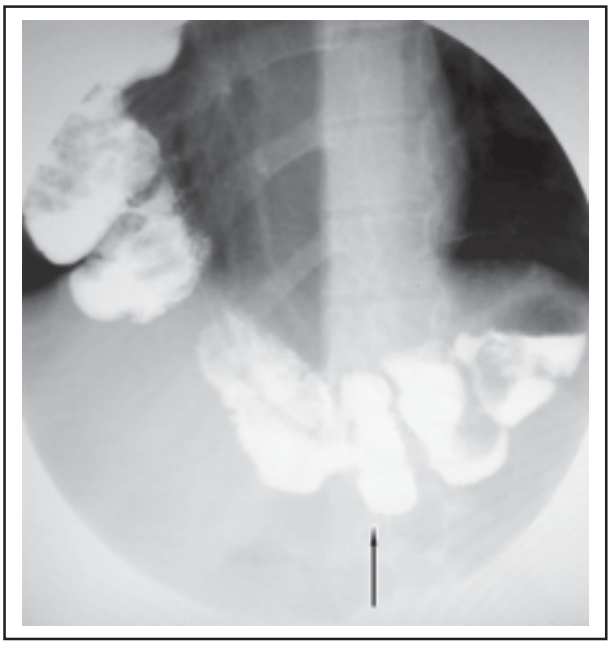

Fig-1B: Barium swallow indicated all the barium deposited in the redundant colon. (July 2008). ***Note:*** Redundant graft.

transplanted (25cm) was brought retrosternally to get anastomosed with the cervical esophagus. And the distal anastomosis made lower down on the stomach. However, the esophagus was not removed because the procedures are estimated to be difficult and dangerous for the patient. Postoperative barium swallow indicated that the canal was reconstructed successfully. The patient was discharged for rehabilitation in postoperative 15th days.

From 1994 to 2007, the patient had an intermittent abdominal and chest pain. However, the patient had no growth arrest and was in normal height and weight percentiles compared to her age cohorts.

In July 2008, she (18 years old) was admitted into our institute due to progressive and aggravated dysphagia in the recent year. Radiographically, there was an instinct adhesional obstruction on the level of esophageal hiatus Fig-1A. Therefore, the patient underwent adhesiolysis to solve the local obstruction via superior belly median incision. However, postoperative barium swallow showed that another downstream "bottleneck" presented redundantly Fig-1B. As a result, the patient underwent gastrocolonal anastomosis again via superior belly median incision: A side to side stapled anastomosis, originally according to method of Orringer[8], was performed between paries anterior gastricus and the pendulous part of colon interposition. Finally, a bypass from colon interposition to stomach had been constructed surgically Fig-2. The patient was discharged for rehabilitation in the postoperative 15th days. And follow up until now shows that the patient is healthy.

DISCUSSION

Postoperative symptoms including dysphagia, pyrosis, regurgitation, pain, weight loss, and episodic aspiration presents commonly following esophageal reconstruction.[9] Fortunately, these symptoms can be managed through dietary, behavior modification and additional medications for acid suppression or promote gastric emptying. With respect to the untoward

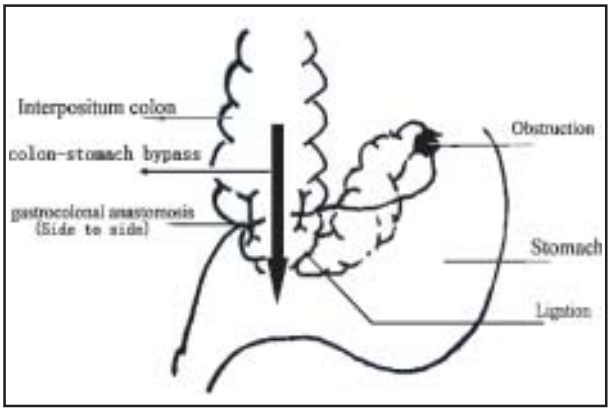

Fig-2: Schematic diagram of a bypass from colon interposition to stomach had been constructed surgically with the side-to-side stapled anastomosis.

long-term sequelae required surgical revision, Jeyasingham et al[10] retrospectively studied 365 patients and presented as follows: (1) Oesophago colic stricture. (2a) Cervical colonic pouch. (2b) Dilatation proximal to thoracic inlet obstruction. (3) Supra-aortic redundancy. (4) Supraaortic diaphragmatic redundancy. (5) Diaphragmatic hiatal obstruction. (6) Sub-diaphragmatic redundancy. (7) Colo-gastric stricture. Among them, Graft redundancy (4% to 5%), anastomotic stricture (27% to 30%), and adhesional obstruction was the most frequent sequelae.[11] Colon redundancy and adhesional obstruction occurred in the case even 15 years after colon interposition. And we tailored the surgical procedures to the case including adhesiolysis and refashion the alimentary conduct.

Colon redundancy can be attribute to technical error during the operation (i.e. leaving redundancy in the interposition graft), intrathoracic herniation of colon, or differential colon growth.[6,7] Besides, the similar growth pace of interposed colon in childhood can also lead to redundancy.[12] Additionally, we presume colon dysfunction due to ablation of intestinal nerve (denervation) can be another important reason, which was proved by animal experiment (data not shown). Anyway, proper attentions and decisions to the length of colon segment intraoperatively are important to prevent intrathoracic redundancy.[13] The thoracic redundant loop may be completely resected with a colo-colonic anastomosis, or partially resected by excising the anti-mesenteric border with a linear stapler to narrow the lumen.[14] With regard to the abdominal redundant loop, we think gastrocolonal bypass by side to side stapled anastomosis is supposed to be a convenient and effective alternative. With respect to those cases in whom the anastomosis between the lower pouch of the redundant colon and the adjacent gastric can not be performed due to the contraction of gastric body, jejunocolonal anastomosis by Rox-en-Y bypass is probably an alternative. Anyway, extrinsic sites of obstruction or adhesions should be corrected. A feeding jejunostomy tube should be inserted to allow early postoperative enteral feeding, as a lifeline for patients whose symptoms persist after surgery.[14]

Recently, a study[15] reviewed late Morbidity after Colon Interposition for corrosive esophageal Injury in 223 patients, and found late complications occurred in half of the patients after colonic interposition for corrosive injuries and accounted for half of the functional failures. Revision surgery for coloplasty dysfunction can offer an overall 70% success rate. As a result, prolonged surgical follow-up and appropriate management of coloplasty dysfunction are important for long-term success after colon interposition for corrosive esophageal burns.

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