

Conference paper

Analysis of Reconstructions Cardioesophageal Junction of the Teres Ligament in Treatment Hiatal Hernias

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1 Introduction

An overview of gastroesophageal reflux disease (GERD) treatment is one of the leading problem of modern gastroenterology. The incidence of GERD patients having dyspeptic symptoms during the performing endoscopy of the upper gastrointestinal tract is from 20 to 60% [2]. After Barrett fundamental works for the study of the reflux mechanisms, a special role in the pathogenesis was assigned hiatal hernia, as the displacement of cardioesophageal transition zone above the diaphragm breaks physiologic antireflux mechanism [3]. According to recent research, the proportion of patients with hiatal hernia in the structure of GERD patients, is very considerable, and reaches under the different data from 60 to 84% [4]. It should be noted that patients with hiatal hernia and reflux esophagitis higher risk of complications associated with persistent course of GERD, such as peptic ulcers and esophageal stricture, Barrett's esophagus and esophageal carcinoma [5].

Despite significant advances in the treatment of hiatal hernias, the question of choice of medical tactics is still cause for debate. Currently, the main methods of treatment remain surgical. Surgical treatment pursues a number of objectives: the restoration of the physiological situation cardioesophageal transition, eliminating expansion phrenic esophageal ring and the formation of the antireflux mechanism. Deficiencies widespread Nissen operation, in particular, expressed dysphagia and frequent postoperative recurrence of reflux esophagitis, the formation of recurrent hiatal hernia, bloating- syndrome have a negative impact on the quality of life of patients [1, 6, 7]. This fact forces us to

seek alternative means and methods of treatment of hiatal hernia. One of minimally invasive and effective way is to cardiopeksy (Teres-plastic), described in the works of Rampal and Narbona [8, 9]. The operation is as follows: the mobilization is carried out round ligament of the liver, at its free end-taped closed with stitches. During access to the esophagus through the mobilization of the left lobe of the liver, and its diverting outwards. Abdominal esophagus and cardia after separation, are reduced into the abdominal cavity. Over the esophagus forms a tunnel through which is carried round ligament of the liver. At the final stage of the operation is carried out fixing the round ligament of the liver to the anterior wall of the stomach, retreating 2-3 cm. From the lesser curvature. Thus, the acute angle formed branch block, cardiac section of the stomach and abdominal esophagus segment recorded in the abdominal cavity [10]. At the same time, due to the elastic properties of the preserved organ displacement within the physiological, while breathing, a change in body position. Cardiopeksy with round ligament of the liver is technically simple, requires a broad mobilization of the stomach on the big and small curvature, which reduces the risk of iatrogenic damage to the spleen and blood vessels.

The aim of our study was to analyze the effectiveness of surgical treatment of patients with hiatal hernia, when applying cardiopeksy (Teres-plastic) by the method of Rampal-Narbona.

2 Experimental

The study included a group of patients from 27 people with hiatal hernia, operated from 2002 to 2012 in the clinic of Hospital surgery of SSMU. In this group, there were 10 men (37%) and 17 women (63%). The age of patients ranged from 33 to 76 years. The median age was $54,51 \pm 2,21$ years.

The preoperative examination included: general clinical routine tests, ultrasound of the abdomen, esophagogastroduodenoscopy, contrast X-ray of the esophagus, stomach and duodenum with barium suspension. Upper endoscopy was performed endoscopes «Karl Storz» (Germany), transabdominal ultrasonography was performed using a scanner «SSA-550A» company «Toshiba» (Japan), using multifrequency transducers 3,0-7,5 MHz. X-ray examination was carried out with the help of «Apollo» X-ray diagnostic complex Villa SistemiMedicali company (Italy). Statistical analysis was carried out on the basis of a computer with a processor Intel Core i5 3230-M, with the Windows 8.1 operating system, using SPSS 20.0 software (IBM). Comparison of pre- and postoperatively test was performed using the Mac Nimar.

In accordance with the Petrovsky classification, 55.5% of cases diagnosed axial cardiac, 37% of cases of the axial cardiofundal, in 7.5% of cases of paraesophageal hiatal hernia. In 14.8% of cases of hiatal hernia combined with primary esophageal shortening. Preoperative examination results are shown in the Tables 1 and 2.

Table 1. Results of preoperative endoscopic examinations

The degree of esophagitis (By Savary - Miller)	n	%
o Art. (No sign of esophagitis)	4	14,8
I st.	18	66,6
II st.	2	7,4
III st.	1	3,7
IV st. (Barrett's esophagus)	2	7,4
Cardia insufficiency (endoscopy)		
Cardia completely closes	2	7,4
Cardia is not completely closes	25	92,6
Prolapse of the gastric mucosa		
Prolapse "yes"	24	88,9
Prolapse "no"	3	11,1

Table 2. Results of preoperative fluoroscopic examinations

Symptoms of gastroesophageal reflux	n	%
"no"	2	7,4
to a horizontal position	18	66,6
to upright	7	25,9
Thickening of the folds Of mucous cardioesophageal transition		
"yes"	20	74,1
"no"	7	25,9

All patients underwent surgery under general anesthesia in the amount cardiopeksy by Rampal-Narbona from supramedian laparotomy. Round ligament of liver, abdominal esophagus and cardia mobilized using the LigaSure device (Valleylab). In the presence of adhesions between the diaphragm and esophagus, carried out their dissection. In accordance with standard techniques Rampal-Narbona, for the esophagus was performed lig.tereshepatis and individual interrupted sutures fixed to the round ligament serous-muscular layer of the front wall of the stomach (Fig. 1, 2). In order to control esophageal patency and decompression in the early postoperative period, adjusted intraoperative nasogastric tube. It should be noted that due to the anatomical variability of individual constitutional features of some patients in these cases performing Teres-plastic is not possible. We observed 2 cases intraoperatively when cardiopeksy was not performed due to individual anatomical features of lig.teres. One patient asthenic physique round ligament has the form of a thin strand, and its mechanical strength remained in doubt. The second patient length of the round ligament proved insufficient for cardiopeksy. Both patients underwent Nissensurgery, patients in the study were not included.

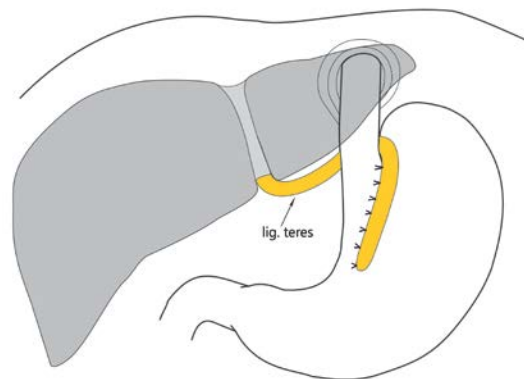


Fig. 1. Teres-cardiopeksy. The round ligament of the liver carried out for the esophagus and fixed to the front wall of the stomach

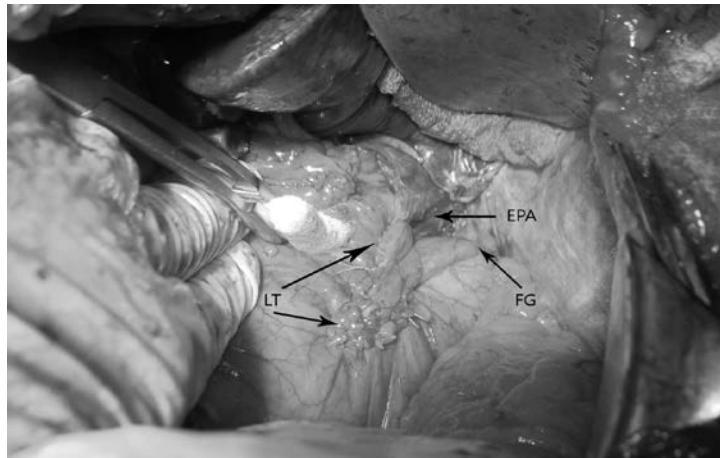


Fig. 2. The final stage of the operation. LT - round ligament of the liver, EPA - abdominal part of the esophagus, FG - the bottom of the stomach

3 Results and discussion

Deaths were reported. Dysphagia was observed in 4 (14.8%) cases, and expressed in the difficulty of passage of solid food. By the end of 16 days in all cases of dysphagia was stopped on the background of the gradual expansion of the diet and medical treatment. In 2 (7.4%) cases in the postoperative period was observed diarrhea, do not require additional drug therapy. In 1 (3.7%) case of postoperative course was complicated by nonmassive pulmonary embolism in 2 (7.4%) in-hospital lobar pneumonia in patients over 60 years, due to higher activation in the postoperative period and the presence of comorbidity before surgery.

Patients re-examination carried out in the period from 10 to 18 months after surgery. The result of re-survey are presented in Table 3 and 4.

In 1 patient (3.7%) relapsed hiatal hernia, requiring re-intervention in the reconstruction volume Nissen fundoplication. In 3 (11.1%) cases we observed a recurrence of reflux esophagitis, with no signs of recurrence of hiatal hernia. This is symptomatic clinically manifested pain, heartburn was observed in 1 (3.7%) case. In 2 (7.4%) patients with Barrett metaplasia foci were observed in the size and progression of the severity of dysplasia, indicating intact closing function of the cardia in terms of supervision. Fluoroscopy shows SAVE closing function of the cardia in 24 (88.9%) cases (Fig. 3). In patients with cardia failure and recurrence of reflux esophagitis, throw a contrast agent in orthostatic position was noted in 1 (3.7%) case. In 2 patients (7.4%) radiographic reflux was detected only in a horizontal position.

Table 3. Results of endoscopic examination after 10-18 months after operation

The degree of esophagitis	n	%
(By Savary - Miller)	22*	81,5
o Art. (No sign of esophagitis)	3	11,1
I st.	0	0
Article II.	0	0
III Art.	2	7,4
Article IV. (Barrett's esophagus)		
Lack of cardia (endoscopy)	24*	88,9
Cardia closes completely	3	11,1
Cardia is not completely closes		
Prolapse of the gastric mucosa	3	11,1
- Have prolapse	24*	88,9

* P <0,05 in comparison with the figures before the operation

Table 4. Results of fluoroscopic examinations by 10-18 months after operation

Symptoms of GERD (fluoroscopically)		
«no»	24*	88,9
to a horizontal position	2	7,4
to upright	1	3,7
Thickening of the folds of mucous cardioesophageal transition		
«yes»	4	14,8
«no»	23*	85,2

* P <0,05 in comparison with the figures before the operation



Fig. 3. X-ray picture of the patient P. 18 months after surgery. The arrow indicates a transition zone cardioesophageal

4 Summary

Application cardiopeksy round ligament of the liver with hiatal hernia allows you to perform a task to restore the antireflux barrier by reconstructing an acute angle branch block and prevent migration cardioesophageal transition into the mediastinum through the esophageal aperture ring. Due to the lack of rigid fixation, the elastic properties of the round ligament, the operation does not interfere with the physiological acts, and does not lead to severe and persistent dysphagia. However, Rampal-Narbona operation can not be recommended for patients who, due to anatomical and constitutional features, the mechanical properties of the liver round ligament tissue remains in doubt. In view of the possibility of recurrence of hiatal hernia and GERD, you should determine the indications for cardiopeksy strictly individually and after an adequate clinical examination. Further development on the reconstruction cardioesophageal transfer operations seem to us to eliminate the drawbacks of a standard methodology Rampal-Narbona. A promising direction we consider the possibility of strengthening the liver round ligament allomaterial that needs detailed study.

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