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Results of Gastroesophageal Collector Total Dissociation in Patients with Portal Hypertension

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ABSTRACT: The purpose of research was to study long-term results of the modified technique of gastroesophageal collector total dissociation (GECTD) in patients with portal hypertension. Materials and methods. Currently a modified version of the operation has been performed in 73 patients with the portal hypertension (PH) syndrome. In 36 patients the cause of PH was liver cirrhosis, 30 patients were diagnosed with extrahepatic form of PH, mixed form of PH was determined in 8 patients. The age of patients ranged from 13 to 65 years, thus the median was 31.6 ± 1.7 years. Patients randomizing by gender was as follows: men - 44, women - 29. In 53 cases patients were admitted in a planned order, and 20 patients were delivered urgently with the clinical picture of gastroesophageal bleeding. Results and discussion remote period was followed up in 46 patients with primary procedure and in 66 patients with a modified technique of GECTD. Rebleeding was observed in 15.2% of patients, 6.5% on the background of anastomositis. Gastrostasis occurrence was detected in 3 of 46 patients. Liver failure occurred in 23.9% of patients, 15.2% patients died on the background of these complications. In the group with a modified procedure bleeding was observed in 6.0% cases. Bleedings from erosion in the area of ligature transection were stopped conservatively. Mortality in long-term period of observation was 7.6% (5 patients). Overall mortality for the near and distant periods in the comparison groups was 22.2% and 16.4%, respectively. Conclusion –dissociation of gastroesophageal venous reservoir by ligature transection on synthetic prosthesis, unlike previously proposed methods of GECTD allows not only to ease technique of operation, but also provides prevention of early postoperative complications associated with traumatism of previous methods, as well as the stomach gross functional disorders in the long term period.

Author Keywords: Liver Cirrhosis, Portal Hypertension, Dissociative Operations, Technique of Ligature Transection, Bleeding from Esophageal Varices

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INTRODUCTION

Among all gastrointestinal hemorrhages from esophageal varices in patients suffering from liver cirrhosis (LC) with portal hypertension (PH) are distinguished by specific severity of clinical presentations, serious complications and high probability of lethal outcome. Without indications to radical cure of LC – liver transplantation, the basic direction of surgical treatment for such patients is of portal pool vessels reconstruction [1-3]. But there are particular indications for portosystemic shunting and it is a big patients group among those in which such intervention is impossible because of some reasons and it is required to perform another type of surgical treatment. Among mentioned portoasigos dissociation surgeries remain as a method of choice. The main advantages of them are maintenance of constant liver portal perfusion, absence of post-shunting encephalopathy and wider facilities at performing in emergency surgery of esophageal bleedings [4-6]. Besides there is strategic deficiency in emergency and planned dissociative operation types and a lack of stable late fates. So, after a year or less active restoration of varices with increasing risk of bleeding recurrence has place [7-9]. The worked-out and adopted into practice original techs of gastroesophageal collector total dissociation (GECTD) in RSCS named after acad. V.Vakhidov, have high hemostatic efficiency and are directed on elimination of known surgeries

defects. The analysis of long-term results of these surgeries with the estimation of their prophylaxis efficiency of esophageal bleedings and patients survivability presents particular interest.

Original method of GECTD with ligature transection of subcardinal part of stomach with following forming of gastrogastal collateral anastomosis has been initially worked out (such surgeries has been performed in 63 patients from 1998 to 2007). Surgery stages have included: stomach mobilization through greater stomach transaction by ligature type at the subcardinal part level; forming of gastrogastal collateral anastomosis above the ligature. Such type of surgery has two variants of performing: using ligatures or steplers. By gaining an experience we came to conclusion that a ligature type is more preferable [7, 10].

Analysis of long-term results (from 3 months to 10 years) of performed dissociative operations has been carried out in 46 patients. Rebleeding has been registered in 10.9% patients, and in 6,5% cases on the background of anastomositis. Occurrence of gastrostasis have been revealed in 5 of 46 patients. Control endoscopy 3 months after surgery has revealed stomach recanalization in the area of ligature transection with forming of two ways for food passage – recanalized natural one and through gastrogastal anastomosis. 19.6% patients died on the background of complications. Mentioned facts allowed to suppose a probability of performing ligature transection of stomach subcardinal part on wireframe base with the saving of natural way for food passage without gastrogastal anastomosis.

MATERIAL AND METHODS

GECTD modified method (F.G. Nazirov's operation) was adopted in clinical practice in 2008 [10]. Distinctive feature of new method was that dissociation is achieved because of use intraluminal prosthesis installed during the surgery.

Method is carried out as follows: approach – upper-midline laparotomy. Proximal devascularization of stomach up to esophagus abdominal part through greater and lesser curvature is carried out. Organ blood flow is saved through right gastric and two gastroepiploic arteries. The left gastric artery is ligated and transected. All short vessels of stomach are also ligated and transected (Figure 1). Then transversal gastrotomy is carried out in medium part of stomach body along anterior wall and through a formed hole synthetic prosthesis is introduced into stomach lumen and is located in the lumen of stomach subcardinal part. Above the prosthesis introduced into stomach lumen, over serous membrane ligature is put in which divides stomach to upper 1/3 and lower 2/3 parts. Ligature is tightened over the prosthesis and at the same time the prosthesis is fixed by surgeon's finger introduced into its lumen. So, the prosthesis location and ligature's tension is controlled. Then repeated ligature is put in over the first one. Corrugation of the prosthesis provides ligatures' fixation preventing their displacement (Figure 2). Nasogastric probe is passed through the prosthesis with the aim of decompression in the postoperative period. Gastrotomic hole is sutured by double-row suture. A number of sero-serous sutures are also pit in over stomach ligature. Pyloroplasty is carried out additionally.

Endoscopic investigation is performed after 1-1.5 month and the prosthesis is removed out of stomach lumen. By this time put in ligatures over it are penetrated into stomach lumen and venous reservoir is dissociated.

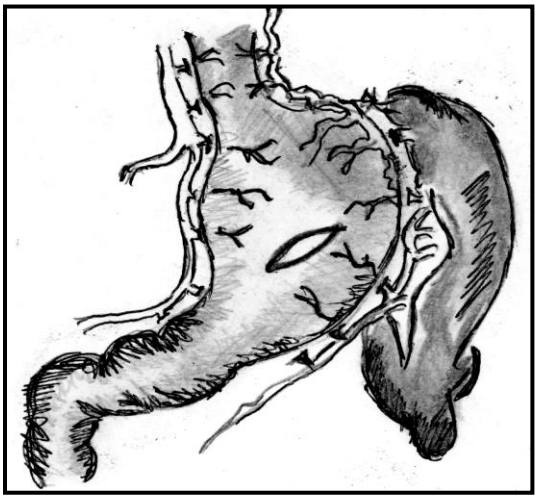

Figure 1. Stage of stomach and esophagus abdominal part devascularization with gastrotomy.

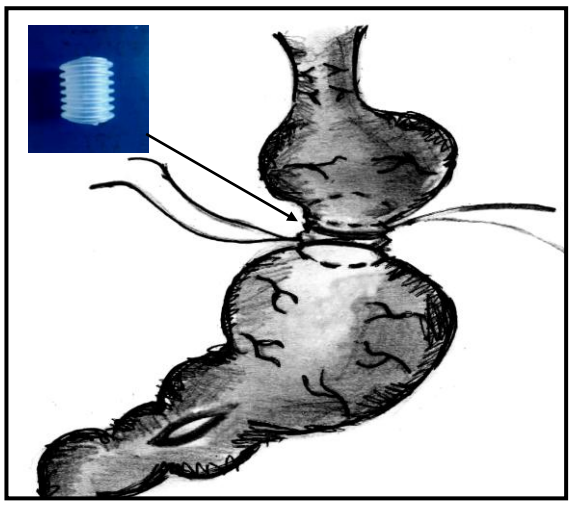

Figure 2. Stage of ligature transection on the ring- prosthesis.

Currently operation has been performed in 73 patients with PH syndrome. In 36 patients the cause of PH was LC, in 30 patients it has been diagnosed a hepatic form of PH and in 8 cases a combined form of PH has been determined. Patients age has been varied from 13 to 65 years, thus the median was 31.6 ± 1.7 years. Patients randomizing by gender was as follows: men - 44, women – 29. In 53 cases patients were admitted in a planned order, and 20 patients were delivered urgently with the clinical picture of gastroesophageal bleeding. Patients were underwent both general (clinical and biochemical blood tests, ECG, chest X-ray) and special (liver radioisotopic investigation, angiographic) investigation methods.

The grade of esophageal varices is estimated by Shertsinger's classification [11]. The second grade of esophageal varices has been revealed in all patients. All patients had esophagogastric bleeding in anamnesis and 40 (54.8%) of them - many times. In 13 cases patients additionally have been undergone splenectomy. In 8 (11.0%) patients at admission diabetes mellitus has been revealed.

RESULTS

At the nearest postoperative period the most frequent complication of earlier worked out dissociative methods were cardiofundal anastomosis insufficiency (11.7% - at planned surgeries and 21.1% - at emergency interventions). Unlike them, an offered new method is carried out through small gastrotomic hole and such complications has not been observed. From other side in more 11.1% patients anastomositis development has been noted which significantly increased the risk of bleeding development from anastomosis zones. Hepatic failure and encephalopathy have been noted in 15 (23.8%) patients. General lethality in the nearest period made up 11.1% (7 patients).

Modified ligature transection allowed to level completely the risk of anastomosis failure and to reduce a frequency of hepatic failure and lethality (Table 1). Radiologic-contrast investigation 10 days after surgery showed that prosthesis is freely passable; stomach evacuation functions failure has not been observed. One month after surgery at control endoscopic investigation a synthetic cylinder was removed without technical difficulties. Regress of esophageal varices has been noted in all cases.

Table 1. Comparative frequency of early postoperative complications in patients with GECTD by different methods

Complications	Original method	Modified method
Anastomosis failure	7 (11.1%)	--
Stomach wall necrosis in ligature transection area	2 (3.2%)	2 (2.7%)
Hepatic failure	15 (23.8%)	12 (16.4%)
Lethality	7 (11.1%)	7 (9.6%)

The analysis showed that predisposing factor to stomach wall evident ischemia development with necrosis probability in ligature area and above prosthesis is because of presence of concomitant diabetes in patients. Performing stomach devascularization with following ligature transection on the background of diabetic angiopathy significantly disturbs organ's trophics and it was a cause of necrosis. At the absence of diabetes mellitus we did not observe such type of complications. In comparative aspect the risk of stomach necrosis in the area of transection at diabetes mellitus presence increased up to 25% (in 2 from 8 patients with diabetis). This fact has influenced to technical aspects of performing dissociative operations in patients with decompensated stage of diabetes. Currently a surgery is limited only by stomach devascularization with additional ligation of left gastric vein as basic afflux to gastroesophageal venous reservoir at PH.

Remote period has been observed in 46 patients with primary procedure and in 66 patients with a modified technique of GECTD. Rebleeding was observed in 15.2% of patients, and 6.5% on the background of anastomositis. Gastrostasis occurrence was detected in 3 of 46 patients. The phenomena of liver failure occurred in 23.9% of patients. 15.2% patients died on the background of these complications (Table 2). In the group with a modified procedure bleeding was observed in 6.0% cases. Two patients with bleeding from esophagus lower one third were successfully underwent sclerotherapy and there was not noted a following recurrence. Bleedings from erosion in the area of ligature transection were stopped conservatively. Mortality in long-term period of observation was 7.6% (5 patients). Overall mortality for the near and distant periods in the comparison groups was 22.2% and 16.4%, respectively.

Table 2. Comparative frequency of complications after GECTD in remote period

Complications	Original method	Modified method
Bleeding from esophageal varices	4 (8.7%)	2 (3.0%)
Bleeding from anastomosis area (anastomositis) or ligature transection	3 (6.5%)	2 (3.0%)
Gastrostasis	3 (6.5%)	1 (1.5%)
Hepatic failure	11 (23.9%)	8 (12.1%)
Mortality	7 (15.2%)	5 (7.6%)
Overall mortality in 12 months period	14 (22.2%)	12 (16.4%)

Advantages of GECTD modified method are: refusal from performing cardiofundus anastomosis – natural tract trough stomach by means of prosthesis fixed in cardinal part is saved; reduction of surgery duration due to performing gastrotomy without cardiofundal anastomosis; decrease of the risk of gastrotomic hole failure development – the length of gastrotomy is 3 cm, absence of cardiofundal anastomosis; broad intramural zone of stomach cardinal part veins dissociation – external application of two ligatures above prosthesis introduced into stomach cardinal part creates the length of sclerosis up to 1 cm.

Analysis of patients survivability with LC and PH after GECTD showed that the lowest index has been revealed in the groups with large nodular cirrhotic transformation (survivability median – 24 months), in patients with bleeding in anamnesis (survivability median – 36 months) and with decompensation by edematous ascitic syndrome before operative intervention (survivability median – 12 months). Investigation has shown performing GECTD to patients with LC and high portal pressure increases the risk of hemorrhagic complications development in early and late postoperative period and respectively decreases survivability indexes till 1 year observation to 62%, 3 years – up to 47% and it is connected not only with hypertension but also with forced technical aspects of surgery (ligature transection and gastrogastra-anastomosis) on the background of portal gastropathy.

Performing GECTD to patients with LC on the background of edematic-ascitic syndrome decreases survivability indexes in the period of observation till 1 year up to 48%, 3 years – up to 43% and it is connected with progressing of two main factors in remote period – portal hypertension and increasing hepatic failure with functional decompensation of hepatocytes.

GECTD in patients without vascular and edematic-ascitic decompensation of LC with PH increases survivability indexes in the period of observation till 1 year up to 87%, 3 years – up to 67% and 5 years up to 58%. In other cases on the background of progressing above mentioned complications, it is reasonable to perform different types of intersystem vascular bypass as basic type of intervention directed to portal system decompression.

CONCLUSIONS

Dissociation of gastroesophageal venous reservoir by ligature transection on synthetic prosthesis previously implanted in stomach unlike previously proposed methods of GECTD allows not only to ease the technique of operation, but also provides prevention of early postoperative complications associated with traumatism of previous methods, as well as the stomach gross functional disorders in the long term period.

Advanced original tech of GECTD is the most perspective operative method in emergency surgery and in planned operative interventions in patients with PH syndrome undergone repeated operative treatment or it can be alternative to portosystemic shunting method, at impossibility of performing the last one. Our investigation shows that described technique had showed it reliability and efficiency.

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Competing interests

The authors declare that they have no competing interests.

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