ENDOSCOPIC TREATMENT OF ESOPHAGEAL ANASTOMOTIC STENOSES AND LEAKAGES

Boyko V.[1,3], Belozerov I.[2], Kudrevich O.[2], Novikov Y.[2], Savvi S.[1,3], Makarov V.[3], Hroma V.[1,3], Sarian I.[1], Korolevska A.[3], Bytyak S.[3], Zhidetskyi V.[1]

[1]SI "Zaycev V. T. Institute of General and Urgent Surgery of National Academy of Medical Science of Ukraine",
[2]Karazin V. N. Kharkiv National University
[3]Kharkiv National Medical University
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Abstract
Introduction. Endoscopic stenting of esophageal anastomosis due to anastomotic stenosis or leakage is increasingly being used as one of the most effective, minimally invasive and safe methods of treatment. **Materials and methods.** This research is based on the experience of treatment of 49 patients with gastric and esophageal cancer who previously were operated at the clinic and had complications such as esophageal anastomotic leakage and stenosis. Anastomotic leakage was observed in 21 cases: 9 patients were with gastroesophageal anastomosis, 12 patients were with esophagointestinal anastomosis. Stenosiss of esophageal anastomosis were observed in 38 cases: 20 patients were with gastroesophageal anastomosis, 18 patients were with esophagointestinal anastomosis. **Results.** All patients were undergone endoscopic stenting of esophageal anastomosis. The results of using this method of treatment were estimated. **Conclusions.** Stenting of the esophageal anastomosis by coated self-expanding stents is a method of choice in the treatment of patients with esophageal anastomotic leakage and stenosis.
Key words: *anastomotic leakage, anastomotic stenosis, esophageal resection, gastrectomy, stenting of esophageal anastomosis, subtotal proximal gastrectomy.*

1. Introduction

Gastroesophageal surgery currently remains one of the most technically challenging areas in the digestive tract surgery. It is associated with high rates of postoperative mortality, which ranges after gastrectomy and esophageal resection from 3.3 to 26.1% [1–3]. The gastroesophageal anastomotic leakage is observed in 2.2–5.91%, esophagointestinal anastomotic leakage – in 6.3–32.0% of patients [3–8]. Anastomotic stenoses are formed after gastrectomy, resections of the esophagus in 9–30% of patients [7–13]. Surgical treatment of esophageal anastomotic stenoses has 25% mortality [10]. In connection with this, in recent years, the priority has been given to the search of more effective minimally invasive methods of the treatment of esophageal anastomotic stenosis [9, 10, 14]. This has contributed to the creation of certain devices, the development and application of endoscopic technologies, which are currently leading in the treatment of the esophageal anastomotic stenoses [9–11, 15–16]. The used methods of recanalization of the esophageal lumen in the region of cicatricial anastomotic stenosis are the following laser, electro-, argon-plasma coagulation, balloon dilatation and bougienage [1, 2]. However, despite the fact that in most cases it is possible to expand the lumen in the constriction zone, it is necessary to perform repeated manipulations due to the impossibility of achieving a positive persistent effect in one session [10–11]. Endoscopic stenting of esophageal anastomosis is increasingly being used as one of the most effective, minimally invasive and safe methods of treatment [15–17]. Moreover, the use of this technique in case of esophageal anastomotic leakage often contributes

Corresponding Author:
Alla Korolevska, MD,Department of Surgery № 1,
Kharkiv National Medical University,
E-mail: korolevska@ukr.net

to saving of the patient's life [3–6, 14, 17]. For this purpose, self-expanding nitinol stents are used [15–16]. The advantage of these stents is also the presence of anti-migration mechanism in some models. Also, the reflux of gastric or intestinal contents into the esophagus is eliminated by the integrated anti-reflux valve [6, 15–17]. In addition, it is believed that the stenting of nitinol self-expanding stents is a sufficiently effective and safe procedure in treatment of post-operative complications in the esophageal anastomosis region such as anastomotic stenosis and anastomotic leakage [4–6, 14, 17, 18].

2. Purposes, subjects and methods

2.1. The purpose of the researche was to analyze the results of the application of stenting of the esophageal anastomoses in patients with esophageal anastomotic stenosiss and leakages.

2.2. Subjects and Methods

For the period from 2006 to 2019 we accumulated experience in the use of stents in treatment of post-operative complications in the esophageal anastomosis region such as anastomotic stenosis and anastomotic leakage. Stenting of anastomosis was performed for treatment of 38 patients with esophageal anastomotic stenosis and 21 patients with esophageal anastomotic leakage. 18 patients with cicatricial esophageal anastomotic stenosis previously underwent gastrectomy due to stomach cancer, 4 patients – subtotal proximal gastrectomy due to cancer of the cardiac part of the stomach, 10 patients – esophageal resection with Lewis esophagogastroplasty due to esophageal cancer, 6 patients – esophageal resection with Harlock esophagogastroplasty due to esophageal cancer. 11 patients with esophageal anastomotic leakage previously underwent gastrectomy due to stomach cancer, 4 patients – subtotal proximal gastrectomy due to cancer of the cardiac part of the stomach, 5 patients – esophageal resection with Lewis esophagogastroplasty due to esophageal cancer, 1 patient – combined gastrectomy with gastroplasty by the ileocecal segment.

The stents by M.I.Tech Co., Korea: – 29 and Boston Scientific Corp., USA: – 30 were used for the stenting of the esophagus.

At the initial stages, the stenting were performed by the X-ray control with angiographic mode. Patients took in a water soluble radiopaque solution for visualization of anastomotic leakage zone or to determine the beginning of cicatricial stenosis of anastomosis and its length. Radiopaque dermal labels were placed on the skin. Also endoscopic examination was performed. Then string-guide were introduced distally to the anastomosis. The endoscope was removed. After the conduction of the delivery device along the string by the X-ray control to the required level, the stent was released. After the final disclosure of the stent, X-ray and endoscopic controls were also performed. With the development of the technology the stenting procedure began to be performed only under visual endoscopic control followed by X-ray control after stent placement.

Conflict of interests

The authors of the article declare no conflict of interest.

3. Results

Successful stenting were performed in 100% of cases. Clinical effect was achieved in all patients. Immediately after stenting, patients could take the liquid with the subsequent returning to the recommended diet.

Then local complications of patients with esophageal anastomotic leakage were treated: local peritonitis as a result of anastomotic leakage was treated by antibacterial therapy and sanation of the abdominal cavity through the inserted drainages. Treatment of pleural empyema in the zone of leak due to the gastroesophageal anastomotic leakage after esophageal resection in addition to antibiotic therapy included irrigation and drainage of the pleural cavity with the transition to the puncture method under ultrasound monitoring after gradual delimitation of the inflammatory process.

4. Discussion

All patients with esophageal anastomotic leakage were discharged from the hospital without signs of anastomotic leakage in a satisfactory state.

All patients with esophageal anastomotic stenoses after stenting had good functional results. Immediately there was a significant reduction of dysphagia. In 3–5 days after stenting dysphagia disappeared completely.

After stenting 4 cases of stent migration were observed: in one case – proximal migration, 3 cases – distal migration. Reposition of the stents were performed with a positive result.

Such treatment results can be comparable with scientific reports of another researchers [6, 9, 10, 17, 18].

Assessment of patients' life quality and their treatment efficiency consisted in the evaluation of gastroenterological patients' treatment efficiency at the different time periods of treatment by objective and subjective parameters and their integral estimation by the method of evaluating the effectiveness of treatment of patients with gastrointestinal diseases [19, 20].

Assessment before stenting evidenced the lower life quality in all cases. At 10th day after stenting and later on the 20th and 30th day, all objective and subjective life quality parameters confirmed a higher treatment efficiency and better life quality in 34 (91,84%) patients. Lower life quality parameters in 4 (8,16%) cases were caused by post stenting complications [19].

Long-term complications in patients after stenting were absent. This is an evidence of substantially better long-term results of such treatment tactics.

Within the subsequent period after stenting in 1, 3, 6, 9, 12 months all life quality parameters reflected a better life of the patients [19].

Conclusions

1. Stenting of the esophageal anastomosis by coated self-expanding stents is a method of choice in the treatment of patients with esophageal anastomotic leakage and allows to avoid traumatic operations, especially for the weakened patients. Also it allows to save lives of the patients with these severe complications.

2. Stenting is a very effective miniinvasive method of treatment of the cicatricial esophageal anastomotic stenoses. Especially it is useful when other methods of treatment were unsuccessful (bougienage, balloon dilatation), that allows to restore the lumen of the gastrointestinal tract and improve the quality of life of the patients. Also it is an alternative to traumatic operations of correction of the esophageal anastomotic stenoses.

3. Endoscopic stenting of the esophageal anastomosis by coated self-expanding stents in patients with esophageal anastomotic stenosis or leakage contributes to the improvement of treatment results and life quality of operated patients.

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