Morphological state of the mucous membrane of the esophagus of patients with postresection manifestations of reflux esophagitis depending on the method of the formation of mechanical esophagus-gastric anastomosis

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The formation of mechanical gastrointestinal anastomosis after esophagectomy is often accompanied by the development in patients various degrees of reflux esophagitis. The aim of the study - to evaluate the pathogistological changes of the esophagus mucosa associated with gastro-esophageal reflux in patients with esophageal cancer and gastroesophageal junction cancer after surgical treatment, depending on the technique of forming the esophagus-gastric anastomosis. The study included 30 patients who developed a mechanical invagination of the esophagus-gastric anastomosis developed by the Ukrainian patent (study group) and 30 patients who formed the end-to-end mechanical circular esophagus-gastric anastomosis (comparison group). At 12 months of observation all patients were given fibroesophagogastroduodenoscopy. Endoscopic diagnosis of esophagitis was performed according to a modified Los Angeles classification. To assess the morphological state of the esophageal mucosa, the esophageal mucosal biopsy was performed on the site of anastomosis and morphologically evaluated the severity of the reflux esophagitis. Reflux-associated changes in squamous epithelium of the esophagus were evaluated according to the consensus recommendations of the Esohisto Project. Statistical data analysis was performed using the EZR v statistical analysis package. In a comparative analysis of frequency characteristics between different groups of patients, the 2 criterion was used; for tables 2 2 (in the case of a small number of patients (<5 cases), in the study subgroups) Fisher’s exact test was used. The differences in the results obtained were considered statistically significant at p<0.05, which ensures a 95% level of probability. It has been established that the frequency with which the microscopic signs of reflux esophagitis are fixed are almost 2 times lower in the group of patients who were formed mechanical invagination esophagus-gastric anastomosis in comparison with the mechanical circular (46.7% vs. 83.3%, p<0.05), since invagination simulates the reproduction of antireflux properties of the lost gastrointestinal transition. Endoscopically diagnosed cases of reflux esophagitis are additionally supplemented by microscopically detected from 5.9% of subjects in the study group to 28.6% of subjects (p<0.05) in the comparison group, which indicates a higher sensitivity histological diagnosis. The signs that are consistently associated with post-resection reflux esophagitis include hyperplasia of the basal layer at both the frequency (86.7% vs. 100%) and the severity of the severity (6.7% vs. 23.3%, p<0.05), as well as moderate prolongation of papillae (30.0% vs. 66.6%, p<0.01), according to which the best results were obtained in the group of patients that formed the invagination mechanical esophagus-gastric anastomosis. According to the Esohisto Project criteria, the frequency of both ”mild” and ”severe” esophagitis in the group of patients that formed the invagination mechanical esophagus-gastric anastomosis was lower compared to the group with mechanical circulatory esophagus-gastric anastomosis (36.7% and 10.0% vs. 63.3% and 20.0%, p<0.01, ...
Introduction

Analysis of the literature on these issues suggests that
that most surgeons around the world use mechanical
Techniques to form thoracic anastomosis [3, 4, 21].
However, along with convincing benefits, the use of
Stapling devices somewhat impairs the functional results of
operations due to the high level of development of late
Complications from anastomoses: inflammatory
Complications (anastomosis, reflux esophagitis) and
Benign strictures [7, 10, 15, 17, 22]. Therefore, the key to
success, as S.Y. Law [16] notes, is not only a thorough
Formation of anastomosis, but also the development of new
Methods aimed at improving the quality of intrathoracic
Anastomosis after esophagectomy in terms of reducing the
Level of development of late complications from the
Anastomosis [21].

Despite the fact that clinical symptoms, endoscopy and
pH monitoring are the most important diagnostic tools for
diagnosing reflux esophagitis, however, these tests may
give controversial conclusions [1]. Diagnostic difficulties are
greatest when symptoms of reflux occur without apparent
damage to the esophageal mucosa during normal
endoscopy [8]. Recent studies suggest that esophageal
Biopsy in such cases may play an additional role [27].
Currently published several reports on histological findings
in patients with reflux esophagitis, but similar changes were
found in patients without signs of reflux esophagitis [12].
That is, individual histological markers showed low
diagnostic value, which led to the application of histological
scores in the diagnosis of reflux esophagitis. Estimates that
take into account the combination of histological parameters
associated with extensive acid reflux revealed new
perspectives on the role of the esophagus biopsy [27]. That
is why research is promising to establish a correlation
between endoscopic findings and histological changes in the
esophagus [12].

The aim of the study - to evaluate the pathogistological
changes of the esophagus mucosa associated with gastro-
esophageal reflux in patients with esophageal cancer and
gastroesophageal, junction cancer after surgical treatment,
depending on the technique of forming the esophagus-
gastric anastomosis.

Materials and methods

Under observation were 60 patients with esophageal
cancer and gastroesophageal junction cancer who were on
examination and in-patient treatment at the department of
gastrointestinal surgery of the Shalimov's National Institute
of Surgery and Transplantation for the period from 2015 to
2018 with overall survival not less than a year. All patients
underwent proximal gastrectomy with subtotal
esophagectomy by accesses of Lewis, or Osawa-Garlock.
The study included 30 patients who were formed mechanical
invagination esophagus-gastric anastomosis that was
developed and protected by the Ukrainian patent [28] (study
group) and 30 patients who formed the circular mechanical
esophagus-gastric anastomosis end-to-side (comparison
group).

At 12 months of observation all patients performed
esophagogastroscopy. Endoscopic examination was
performed by video gastroscope Olympus GIF-H180. In
doubtful cases, the virtual chromoscopy of NBI was used.
Endoscopic diagnosis of esophagitis was performed
according to a modified Los Angeles classification. All
patients performed a biopsy of the mucous membrane of
the esophagus over the place of anastomosis. For
histological analysis of biopsy material after routine
placement, the dyes were stained with hematoxylin-eosin.
The preparations were studied on a light microscope of
Olympus BH-2 (lens x10, eyepiece x10; lens x40, eyepiece
x10). The photos were taken using the DIGITAL Camera for
Microscope ScienseLab DCM520 (USB 2.0) digital camera.

Esophageal mucus preparations of the study group and
the comparison group were analyzed for the presence of
histological signs of reflux esophagitis: hyperplasia of the
basal cell layer, papillary prolongation, expansion of
intercellular spaces and the presence of intraepithelial
eosinophils, neutrophils and mononuclear cells, since these
four features are considered the most informative elemental
lesions [23]. The combined assessment of microscopic
lesions in patients conducted under standardized criteria
established Esohisto project, introducing assessment of
severity for each parameter in the range of 0 to 2 [8, 26, 31].
In this case:
- basal layer thickness (basal cell layer in μm, expressed
as a fraction of the total thickness of the epithelium (x10) - 0
(absent)<15%, 1 - 15-30%, 2 - >30%;
- the length of the papillae (the length of the papillae in
μm, expressed as the percentage (%) of the thickness of the
general epithelium (x10) - 0 (absent)<50%, 1 - 50-75%, 2 -
>75%;
- expansion of intercellular spaces (identify as irregular
round dilations or diffuse widening of intercellular space
(x40), small intercellular space = diameter <1 lymphocyte,
large intercellular space = diameter ≥1 lymphocyte): 0
(absent or ≤5 small intercellular spaces), 1 (1 lymphocyte or
>6 small and ≤5 large intercellular spaces), 2 (>1 lymphocyte
or ≥6 large intercellular spaces);
- intraepithelial eosinophils (count the cells in the most
damaged field (x40)): 0 (absent) 1 - (1-2 cells), 2 (>2 cells);
- intraepithelial neutrophils (count the cells in the most

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damaged field (x40): 0 (absent) 1 - (1-2 cells), 2 (>2 cells);
- intraepithelial mononuclear cells (count the cells in the most damaged field (x40)): 0 (0-9 cells), 1 (10-30 cells), 2 (>30 cells).

The total figure severity estimates calculated by summing the severity of lesions divided by the estimated lesion types (exclude intraepithelial mononuclear cells and neutrophils, erosion/erosion healed). Scores 0-0.25 were considered normal, values ≥0.35 were positive for microscopic esophagitis, scores 0.5-0.75 were qualified for the diagnosis of "mild" esophagitis, and scores ≥1 for the diagnosis of "severe" esophagitis respectively [23, 31].

Statistical analysis of the data was performed using the statistical analysis package EZR v.1.35 (Saitama Medical Center, Jichi Medical University, Saitama, Japan), Graphic interface to R (The R Fund for Statistical Computing, Vienna, Austria). A comparative analysis of the frequency characteristics between different groups of patients using the criterion χ², for tables 2x2 (in the case of a small number of patients (<5 cases) in the study subgroups) used the Fisher exact test [9, 13]. Differences in the results obtained were statistically significant at p<0.05, which provides 95% probability level.

Results

At 12 months of follow up of operated patients, endoscopic changes in the esophageal mucosa were not detected in 24 (40%) patients: in 17 (56.7%) - in the study group and in 7 (23.3%) - in comparison groups; morphological confirmation of absence of signs of reflux esophagitis was obtained in 21 (35%) patients: in 16 (53.3%) and 5 (16.7%) patients respectively (Table 1).

Figure 1 illustrates the absence of signs of postreaction reflux esophagitis: the papillary length is only a small percentage (<50%) of the total thickness of the epithelium, the basal layer is only a small percentage (<15%) of the total thickness of the epithelium, intercellular spaces are not significantly dilated (<5 small). Intraepithelial eosinophils are absent.

Endoscopic signs of reflux esophagitis detected in 36 (60.0%) patients, 13 (43.3%) patients in the study group and 23 (76.7%) patients comparison groups. In addition to endoscopically identified patients with symptoms of reflux esophagitis identified individuals with histological changes and the lack of visible lesions endoscopically: the study group - 1 in the comparison group - 2 patients. Thus, morphologically confirmed reflux esophagitis was detected in 39 (65.0%) patients: in 14 (46.67%) patients in the study group and 25 (83.33%) patients in the comparison group (Table 1).

For histological characteristics of patients found violations of the esophageal mucosa varying degrees regardless of the method of forming esophagus-gastric anastomosis.

Postresection reflux-associated microscopic changes in the esophageal epithelium are given in Table 2.

Multilayer epithelium was detected in 26 (86.7%) persons in the study group and in 30 (100%) persons - groups of comparison, extension of the papillae - respectively in 14 (46.7%) and 25 (83.3%) persons, enlargement intercellular spaces and intraepithelial eosinophils were detected in 3 (10.0%) persons in the study group and in 6 (20.0%) persons in the comparison group (Table 2). That is, the most common reflux-associated histological signs, according to Table 2, include an increase in the thickness of the basal layer, which is 15-30% relative to the total thickness of the epithelium (1) and papilla extension, which is 50-75% relative to the total thickness of the epithelium (1). Less dilatation of small intercellular spaces (1) and the presence of intraepithelial eosinophil in one field (1) are observed. However, the degree of histological changes in the mucous membrane of the esophagus, according to which the study groups differed 3 times, ranged as 2 - were inherent in only hyperplasia of the basal layer. In assessing the degree of change as 1 - elongation of the papillae, according to which the study groups differed 2 times, as well as - dilatation of intercellular spaces and the presence of intraepithelial eosinophils, however, in the last two cases, the number of persons having such changes was insignificant (Table 2). Figure 2 illustrates the signs of postreaction reflux esophagitis, which is accompanied by an increase in the thickness of the basal layer, prolongation of the papillae (<75%), and the dilatation of the intercellular spaces.
Based on detected reflux-associated microscopic changes in the epithelium of the esophagus, the distribution of patients according to the degree of severity of histological changes in the mucous membrane was further analyzed (Table 3).

In the group in which patients were formed invagination mechanical esophagus-gastric anastomosis, reflux esophagitis was detected in 14 (46.7%) patients versus 25 (83.3%) in patients who had circular mechanical esophagus-gastric anastomosis (Table 1, 3). Histological "mild" esophagitis was found in 11 patients (36.7%) in the study group and in 19 patients (63.3%) of the comparison group, "severe" esophagitis - in 3 (10%) and 6 (20%) of patients respectively, the difference between the groups is statistically significant (p=0.03 according to the 2 criterion) (Table 3). At the same time, the vast majority of patients whose esophagitis were classified as "mild", were scored by 0.5 points in both groups. Among patients with esophagitis are classified as "severe", attracts comparison group in which the majority of patients met the 1.25 point scale characterization, while in the comparison group points evenly distributed (Table 3).

The results of the comparison of the severity of the reflux esophagitis associated with the endoscopic diagnosis of esophagitis, evaluated according to the Los Angeles classification and evaluated according to the histological criteria of the Esohisto Project, are presented in Table 4.

The reflux esophagitis according to the Los Angeles Classification of Grade A was found in 10 (33.3%) patients, grade B - in 3 (10.0%) patients in the study group and accordingly in 18 (60.0%) and 5 (16.7%) of the patients in the comparison group. At the same time, according to the histological criteria, Esohisto’s "mild" esophagitis was detected in 11 (36.7%) patients, and severe in 3 (10.0%) patients in the study group and 19 (63.3%), respectively, and 6 (20.0%) patients in the comparison group (Table 4). That is, endoscopically diagnosed cases of reflux esophagitis were

Table 2. Degree of severity of reflux esophagitis by microscopic diagnosis of Esohisto Project.

| Criterion                     | Severity | Research group, n (%) | Comparison Group, n (%) | Level of significance of difference between groups, p |
|-------------------------------|----------|-----------------------|-------------------------|-----------------------------------------------------|
| Hyperplasia of the basal layer| 0        | 4 (13.3) 24 (80.0)    | 0 (0.0) 23 (76.7)       | <0.05                                               |
|                               | 1        | 2 (6.7)               |                         |                                                     |
| Papillary elongation          | 0        | 16 (53.3) 9 (30.0)    | 5 (16.7) 20 (66.6)      | <0.01                                               |
|                               | 1        | (30.0)               |                         |                                                     |
| Expansion of intercellular spaces | 0   | 27 (90.0) 2 (6.7)     | 24 (80.0) 5 (16.7)      | >0.05                                               |
|                               | 1        | 1 (3.3)               |                         |                                                     |
| Intraepithelial eosinophils   | 0        | 27 (90.0) 2 (6.7)     | 24 (80.0) 5 (16.7)      | >0.05                                               |
|                               | 1        | 1 (3.3)               |                         |                                                     |

Table 3. Distribution of ballroom characteristics of patients and aggregate indicator of severity of histological changes of the mucous membrane.

Based on detected reflux-associated microscopic changes in the epithelium of the esophagus, the distribution of patients according to the degree of severity of histological changes in the mucous membrane was further analyzed (Table 3).

Fig. 2. A fragment of the esophageal mucosa over the place of esophago-gastric anastomosis with pathological changes. 1 - basal layer; 2 - elongated papillae; 3 - dilated intercellular spaces. Hematoxylin-eosin. Lens x10. Ocular x10.

Table 4. Compliance with the severity of the reflux esophagitis associated with the endoscopic diagnosis of esophagitis, evaluated according to the Los Angeles classification and evaluated according to the histological criteria of the Esohisto Project.

| Category                  | Research group, n (%) | Comparison Group, n (%) | Level of significance of difference between groups, p |
|---------------------------|-----------------------|-------------------------|-----------------------------------------------------|
| Los Angeles Classification |                       |                         |                                                     |
| N                         | 17 (56.7)             | 7 (23.3)                | <0.05                                               |
| LA-A                      | 10 (33.3)             | 18 (60.0)               |                                                     |
| LA-B                      | 3 (10.0)              | 5 (16.7)                |                                                     |
| LA-C                      | 0 (0.0)               | 0 (0.0)                 |                                                     |
| Detected changes in general | 13 (43.3)             | 23 (76.7)               | <0.05                                               |
| Esohisto Project          |                       |                         |                                                     |
| Mucus without changes     | 16 (53.3)             | 5 (16.7)                | <0.01                                               |
| "Mild" esophagitis        | 11 (36.7)             | 19 (63.3)               |                                                     |
| "Severe" esophagitis      | 3 (10.0)              | 6 (20.0)                | <0.01                                               |
| Detected changes in general | 14 (46.7)             | 25 (83.3)               |                                                     |
additionally supplemented by microscopically detected from 5.9% of the subjects in the study group to 28.6% of the subjects in the comparison group with the normal mucous membrane of the esophagus in the category N classification of Los Angeles (Table 4). It should be noted that in the invagination mechanical method of forming the esophagus-gastric anastomosis, the ratio of "mild"/"severe" esophagitis in the group was almost 4/1, and at the circular - 3/1. That is, regardless of the method of forming the esophagus-gastric anastomosis, the "mild" esophagitis was more often compared to "severe" (Table 4).

Fig. 3. A fragment of the esophageal mucosa over the place of esophago-gastric anastomosis with pathological changes that correspond to the "mild" reflux esophagitis. 1 - basal layer; 2 - elongated papillae; 3 - slightly enlarged intercellular spaces. Hematoxylin-eosin. Lens x10. Ocular x10.

Histology esophageal mucosa of patients that meets reflux esophagitis stage A, characterized by elongation of papillae, representing >75% of the total thickness of the epithelium, increased basal layer in thickness, representing >30% of the total thickness of the epithelium, intercellular spaces greatly expanded. Presence of intraepithelial eosinophils (Fig. 3).

Histology esophageal mucosa, corresponding to the degree of reflux esophagitis A is characterized by increased length of papillae, representing 50-75% of the total thickness of the epithelium. Basal layer is increased in thickness and is 15-30% of the total thickness of the epithelium. Intercellular spaces are slightly extended. There are no intra-epithelial eosinophils (Fig. 3).

Discussion

In normal esophageal lumen lays out a squamous epithelium, consisting of four layers: basal, parabasal, intermediate and superficial. Epitheliocytes are connected by adhesive, slit, dense and desmosomic contacts, that are located in the intermediate layer [24]. Reactive squamous epithelium changes in response to the action of acid, form the basis of histological diagnostics of reflux esophagitis.

Analyzing the obtained data, it should be noted that the endoscopically normal mucosa of the esophagus of patients after esophagectomy for 12 months of observation was almost 2.5 times more frequent (56.7% vs. 23.3%, p<0.05), and the frequency with which fixed the microscopic signs of reflux esophagitis, was almost 2 times lower (46.67% vs. 83.33%, p<0.05) in patients who were formed by invagination mechanical esophagus-gastric anastomosis in comparison with the circular mechanical esophagus-gastric anastomosis, since the invagination modeled the reproduction of antireflux properties of the lost of gastroesophageal junction (see Table. 1, 4).

It should be noted that in addition to endoscopically diagnosed, microscopic changes with signs of reflux esophagitis were found in 1 out of 17 (5.9%) subjects in the study group and in 2 out of 7 (28.6%) persons in the comparison group with normal mucous membrane esophagus according to the Los Angeles Class N classification, which indicates a higher (p<0.05) sensitivity to the histological diagnosis (see Table 4). About the absence of endoscopic visible lesions, but the presence of histological changes of squamous epithelium in non-aerosive reflux disease is reported by a number of researchers [8, 19, 29]. According to the histological study conducted by us, hyperplasia of the basal layer can be considered a feature that is consistently associated with post-resection reflux esophagitis both in frequency and severity. Normally, the basal layer of the esophagus consists of 2-6 layers of basal...
cells, which is<15% of the total thickness of the epithelium [2, 8, 26, 31]. The multilayer squamous epithelium was detected in the vast majority of patients in the study group (86.67%) and in all patients in the comparison group (100%). However, the number of patients with more severe severity (2) was 3 times less (p<0.05) among patients who were formed by invagination mechanical esophagus-gastric anastomosis in comparison with the circular mechanical esophagus-gastric anastomosis (Table 2). In healthy individuals, the papilla's length is less than 50% of the total thickness of the epithelium [23, 26, 31]. Papillary elongation, accounting for 50-75% and 75% relative to the total thickness of the epithelium was found in 14 (46.7%) patients in group study and 25 (83.3%) patients comparison group (difference between groups is statistically significant, p<0.01). In addition, the number of patients with a more moderate degree of severity (1) was 2 times lower (p<0.05) among patients who were formed by invagination mechanical esophagus-gastric anastomosis in comparison with the circular mechanical esophagus-gastric anastomosis, indicating its benefits (Table 2). The good diagnostic value of these two parameters in the GERD is indicated by M. Vieth [30]. According to some researchers, hyperplasia of the basal layer and extension of the stromal papillae represent a regenerative reaction to damage to the mucous membrane caused by reflux ("hyperregeneration") [6, 11, 18, 26]. However, for normal esophageal epithelium characterized by low regenerative property: moving cells from the basal layer to the surface proceeds 30 days [20]. Expansion of intercellular spaces and the presence of intraepithelial eosinophils occurred occasionally: 10.0% in the study group and 20.0% in the comparison group (p>0.05), with the number of patients with a more moderate degree of severity (1) was almost 2 times less (but did not achieve a significant difference) among patients who were formed by invagination mechanical esophagus-gastric anastomosis (Table 2). According to literature in the epithelium of the esophagus in patients with non-erosive reflux disease, expanded intercellular spaces are detected, the mean diameter of which in the distal esophagus is three times higher compared to control [5].

We found that the ratio of the frequency of "mild" and "severe" esophagitis does not depend on the method of forming esophagus-gastric anastomosis: the histologically "mild" esophagitis is found in 3 times more often than in the "severe". However, the frequency of both "mild" and "severe" esophagitis according to the criteria of Esohisto Project in the study group was 2 times lower compared with the comparison group (36.7% and 10.0% vs. 63.3% and 20.0%, respectively, p<0.01) (Table 4). In conclusion, it should be noted that recent studies have shown that histological evaluation based on a combination of histological parameters may be largely due to patient symptoms and esophageal acid exposure and thus can contribute not only to the diagnosis of non-erosive reflux disease, but and differential diagnosis between patients with non-erosive reflux disease and patients with functional heartburn [14, 25] and play a role in the comparative evaluation of various therapies [23]. Thus, the results of the study indicate that the formation invagination mechanical esophagus-gastric anastomosis significantly reduces histological signs of reflux esophagitis compared to the mechanical method of forming a circular mechanical esophagus-gastric anastomosis, and the use of histological severity ratings showed promising results when assessing the quality of new ways of forming esophagus-gastric anastomosis.

Conclusions

1. Histologically normal mucosa of the esophagus of patients after esophagectomy for 12 months of follow up was found more than 2 times more often in the group of patients who were formed mechanical invagination esophagus-gastric anastomosis compared with circular mechanical esophagus-gastric anastomosis (53.3% vs. 16.7%, p<0.05 in accordance).

2. According to the histological study, the frequency of reflux esophagitis is almost 2 times lower in the group of patients who were formed mechanical invagination esophagus-gastric anastomosis compared with circular mechanical esophagus-gastric anastomosis (48.7% vs. 83.3%, p<0.05), since invasion models the reproduction of antireflux properties of lost gastroesophageal junction.

3. The combination of histological parameters in patients with morphologically confirmed post-resection reflux esophagitis appears to be in the vast majority of cases, such as hyperplasia of the basal layer and elongation of the papillae of predominantly moderate severity, occasionally supplemented by the dilation of small intercellular spaces and single intraepithelial eosinophils.

4. Among patients with mechanical invagination esophagus-gastric anastomosis, the number of patients with hyperplasia of the basal layer of severe severity (2) was 3 times smaller (6.7% vs. 23.3%, p<0.05), and the number of patients with papillary elongation (30.0% vs. 66.6%, p<0.01), the expansion of intercellular spaces and the presence of intraepithelial eosinophils of moderate severity (1) (6.7% versus 16.7%, p>0.05) was in 2 times less, compared with patients who formed a circular mechanical esophagogastro-anastomosis, which confirms the advantages of mechanical invagination esophagus-gastric anastomosis.

5. The degree of severity of esophagitis evaluated according to the Esohisto Project criteria, the frequency of both "mild" and "severe" esophagitis in the group of patients who was formed mechanical invagination esophagus-gastric anastomosis was 2 times lower compared with the group with circular mechanical esophagus-gastric anastomosis (36.7% and 10.0% vs. 83.3% and 20.0%, p<0.01 respectively).

6. The histological diagnosis of reflux esophagitis in post-resection patients is more sensitive than endoscopic, since it allows individuals with a lack of endoscopic visible lesions of the esophagus mucosa to detect individuals with microscopic signs of reflux esophagitis.
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МОРФОЛОГИЧЕСКИЙ СТАН СЛИЗИСТОЙ ОБОЛОЧКИ СТРАВОХОДА ХВОРИХ С ПОСТРЕЗЕКЦИОННЫМИ ПРОЯВЛЕНИЯМИ РЕФЛЮКС-ЭЗОФАГИТА ЗАПЕРЕД В СПОСОБУ ФОРМИРОВАНИЯ МЕХАНИЧЕСКОГО СТРАВОХОДО-ЖЕЛУДОЧНОГО АНАСТОМОЗА

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Формирование механических стревоходо-желудочных анастомозов после эзофагэктомии нередко сопровождается развитием рефлюкс-эзофагита, связанного с раздражением слизистой оболочки желудка. Объектом исследования являлись 30 пациентов, которым был сформирован разработанный и защищенный патентом Украины механический инвагинационный эзофагогастроанастомоз (группа исследования) и 30 пациентов, которым был сформирован механический циркулярный эзофагогастроанастомоз (группа сравнения). На 12 месяцев наблюдения всем больным проведена фиброэзофагогастродуоденоскопия. Эндоскопическую диагностику осуществляли с использованием пакета статистического анализа EZR v.1.35 (Saitama Medical Center, Jichi Medical University, Saitama, Japan), графический интерфейс до R (The R Foundation for Statistical Computing, Vienna, Austria).

Ключевые слова: прогностическая резекция шлунка у резекции стревохода, эзофагогастроанастомоз, пострезекционные проявления рефлюкс-эзофагита, механический инвагинационный эзофагогастроанастомоз, частота явлений, оценка патопатологических изменений слизистой оболочки.

АВТОРСКАЯ КОММЕНТАРИЙ

Данные исследование показывают, что использование механического инвагинационного эзофагогастроанастомоза позволяет достоверно уменьшить частоту гистологических проявлений рефлюкс-эзофагита у больных, которым был сформирован таких анастомоз.

ЗАКЛЮЧЕНИЕ

Выводы: использование механического инвагинационного эзофагогастроанастомоза в качестве метода формирования стревоходо-желудочного анастомоза может быть рекомендовано в качестве метода лечения рефлюкс-эзофагита после эзофагэктомии в случаях, когда нет возможности использовать другие методы формирования анастомоза.

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анализе частотных характеристик между различными группами пациентов использовали критерий 2, для таблиц использован точный критерий Фишера. Различия полученных результатов считали статистически значимыми при р<0,05, что обеспечивает 95% уровень вероятности. Установлено, что частота, с которой фиксируются микроскопические признаки рефлюкс-эзофагита, почти в 2 раза ниже в группе больных, которым был сформирован механический инвагинационный эзофагоэктостомоз по сравнению с механическим циркулярным (46,7% против 83,3%, p<0,05), поскольку инвагинация моделирует воспроизведение антirezфлюкских свойств утраченного пищеводно-желудочного перехода. Эндоскопически диагностированные случаи рефлюкс-эзофагита дополнительно дополняются микроскопически обнаруженными от 5,9% лиц в группе исследования до 28,6% лиц (p<0,05) в группе сравнения, что свидетельствует о более высокой чувствительности гистологического диагноза. К признакам, которые устойчиво связаны с пострезекционным рефлюкс-эзофагитом отнесены гиперплазия базального слоя как по частоте (86,7% против 100%), так и по более тяжелой степени выраженности (6,7% против 23,3%, p<0,05), а также умеренное удлинение сосочков (30,0% против 66,6%, p<0,01), по которым лучшие результаты получены в группе больных, которым сформировали инвагинационный механический эзофагогастростомоз. По критериям Esohisto Project, частота как "мягкого", так и "тяжелого" эзофагита в группе больных, которым сформирован инвагинационный механический эзофагогастростомоз, была ниже по сравнению с группой с механическим циркулярным эзофагогастростомозом (36,7% и 10,0% против 63,3% и 20,0%, p<0,01 соответственно). Таким образом, формирование инвагинационного механического эзофагогастростомоза позволяет достоверно уменьшить частоту гистологических проявлений рефлюкс-эзофагита по сравнению со способом формирования циркулярного механического анастомоза.

Ключевые слова: проксимальная резекция желудка с резекцией пищевода, эзофагогастростомоз, пострезекционный рефлюкс-эзофагит, критерии Esohisto Project, гистология, гистопатология.