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New Method of Esophago-Gastroanastomosis after Esophagectomy

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Abstract

The article presents a comparison of the results of postoperative treatment of patients with esophageal cancer who performed the Lewis operation with the formation of two variants of mechanical esophagogastro anastomosis: classic mechanical esophagogastroanastomosis and invaginated mechanical esophagogastroanastomosis. The effectiveness of invaginated mechanical anastomosis in reducing the number of complications such as anastomosis leakage and esophagus post-operative strictures has been proved.

Keywords: Esophagogastroanastomosis; Esophagectomy; Anastomosis leakage

Introduction

Medical science has introduced a lot of innovations and advanced equipment since the first esophagectomy was performed, nevertheless surgeons still continue to discuss benefits of certain methods and suggest changes to them because mortality and post-operative complications after esophagus resection remain high [1]. The choice of the surgical approach, anastomosis location and its variety, conduit location and its variety, the volume of lympho dissection and the use of minimally invasive and automated surgery present the most important and complex issues for surgeons. Esophagus reconstruction after esophagectomy together with the reliability of the esophagus-gastric anastomosis (EGA) constitute some of the most important problems in the surgery of the esophagus, because anastomosis leakage is one of the main reasons of lethal surgery [2].

Mechanical suturing carried out with suturing staplers which are constantly updated is becoming more and more popular in the surgery of the esophagus. There are findings that prove that mechanical anastomoses make surgery shorter though they are more expensive than those performed by hand [3]. As far as an astomosis leakage is concerned stapler equipment brings better results compared to the hand method. The studies show that mechanical (stapler) method of forming EGA which is associated with a shorter surgery lowers the frequency of anastomosis leakages; however it increases the risk of post-operative anastomosis strictures [4]. At the same time there is evidence that higher risks of the anastomosis strictures are linked to the end-to-side way of forming EGA while the side-to-side method reduces the risk of strictures during mechanical suturing [5].=

Thus, the data available demonstrate that alongside benefits mechanical suturing somewhat impairs the result of surgery by a high risk of developing late complications on the part of anastomosis: inflammatory complications (anastomositis, reflux-esophagitis) and cicatrice strictures.

Material and Methods

The research included 40 patients who were given Lewis surgery for malignant tumors of esophagus in Shalimov's National Institute of Surgery and Transplantation (control group comprised 20 patients who were given Lewis surgery involving classical mechanical EGA; research group comprised 20 patients who were given Lewis surgery involving invaginated mechanical EGA). In the control group they formed end-to-side classical mechanical EGA within Lewis surgery through a circular suturing tool.

The research group applied end-to-side invaginated mechanical EGA within Lewis surgery through a circular suturing tool. The technique that was worked out involves the removal of the affected area of the esophagus after which invaginated EGA

is done by means of forming lateral edges of anastomosis with outer and inner sutures. Lateral edges of anastomosis cover 4-5cm which requires 3 seromuscular sutures on both sides with the inner row of sutures being done with the help of suturing circular stapler. After this side sutures on the lateral edges of anastomosis get tied up thus bringing posterior surfaces of esophagus and stomach closer to each other. Esophagus invagination is completed with three sero-serous sutures on the front wall of the stomach (Image 1).

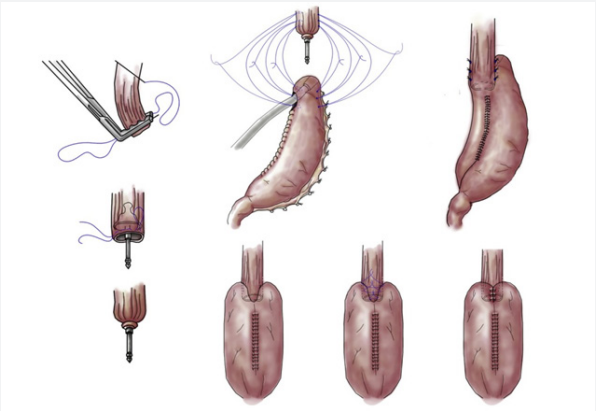

Image 1: Esophagus invagination is completed with three sero-serous sutures on the front wall of the stomach.

The objects for estimation included post-operative mortality as well as the number of post-operative anastomosis complications: the number of EGA leakages in the early post-operative period and the number of post operative strictures in the EGA area three months after the surgery. Data processing was done by means of Statistic - licensed application programs for Windows. Differences were considered valid if $p<0,05$.

Results and Discussion

Patients belonging to both groups were comparable according to their age, sex, weight, height and surgery duration (Table 1). Average age of patients in research and control groups is 52,07±11,62 i 51,23±12,65 correspondingly. In both groups male patients predominated which agrees with the global statistics concerning esophagus cancer morbidity rate. Research group did not register a single case of EGA leakage while one patient in control group ($p<0,05$). Had the leakage which was stopped by means of "Endovac" system. There were 2 cases of esophagus post-operative strictures which developed 3 months after the surgery in the research group which was less than in the control group which saw 6 cases of strictures of EGA ($p<0,05$). Neither of the groups had any cases of post-operative mortality (Table 2). All this allows us to conclude that invaginated mechanical EGA within Lewis surgery reduces post-operative complications of anastomosis in patients with esophagectomy.

Table 1: Demographic profile of patients from control and research groups.

N	Characteristics	Research Group	Control Group	P
1	Age	52,07±11,62	51,23±12,65	0,2
2	Sex (male/female)	19/1	18/2	0,6
4	Weight (kg)	76,30±14,35	74,02±12,65	0,2
5	Height (cm)	168,90±12,04	172,00±13,52	0,1
6	Surgery duration (min.)	184,00±42,00	172,40±50,00	0,5

Table 2: Mortality and post-operative complications in the research and control groups.

N	Complications	Research Group	Control Group	P
1	Leakage of EGA	0	1	0,02
2	Stricture of EGA	2	6	0,01
3	Post-operative mortality	0	0	

Conclusion

i. The study found that invaginated mechanical EGA within Lewis surgery reduces EGA leakages as well as EGA cicatrice strictures.

ii. Invaginated mechanical EGA compared to classical mechanical EGA proved to be more reliable and effective for reducing post-operative complications.

Conflict of Interest

No economic interest or any conflict of interest.

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