

NEEDLE-CATHETER JEJUNOSTOMY IN GASTRIC CANCER SURGERY

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ABSTRACT

Relevance: The European Society for Parenteral and Enteral Nutrition recommends enteral feeding as a preferred route of administration of nutrients. Still, nasogastric intubation after operations on the digestive system is accompanied by discomfort in the stomach, an increase in the frequency of wound infection, insolency of anastomotic sutures, pulmonary complications, and length of hospitalization.

The study aimed to assess the possibilities of catheter jejunostomy for postoperative enteral feeding of patients with gastric cancer.

Methods: This study is based on clinical evaluation and surgical treatment results of 71 patients who received enteral nutrition following gastrectomy and gastric resection due to malignancy. Enteral nutrition was administered via a nasojejunal tube in 36 patients (control group) and through a percutaneous catheter enterostomy in 35 patients (experimental group). The principles of enteral nutrition were standardized across both groups.

Results: The studies have shown that using various enteral nutrition products in the control and main groups affected patients' quality of life differently. During the entire follow-up period, the greatest discomfort in both groups was associated with transnasal probes. At the same time, the quality of life in the control group was the lowest. In the main group, during the entire follow-up period, the effect of catheter enterostomies on patients' quality of life was minimal, while 14 (40%) patients did not experience any discomfort. This indicates that patients tolerate this method of providing enteral nutrition well. There were no requests to remove the enterostome or cases of self-removal during the entire observation period. In addition, no complications from either the abdominal cavity or the anterior abdominal wall were noted in the main group during the period of its functioning, as well as after its extrac-tion.

Conclusion: Catheter jejunostomy provides the possibility of reliable enteral nutrition for patients with gastric cancer after surgical treatment for a long time. The advantages of this treatment method are high safety and good patient tolerance.

Keywords: catheter, jejunostomy, gastric cancer, surgical treatment, enteral nutrition.

Introduction: According to the recommendations of the European Society, the choice between parenteral and enteral nutrition comes down to the advantages of the enteral route of nutrient administration [1].

Enteral nutrition is the most physiological and appropriate. The entry of food compounds into the liver through the portal vein system promotes more physiological regulation of protein synthesis and metabolism in the liver and other internal organs. Some biochemical processes in the intestinal wall, such as transamination, do not occur with parenteral nutrition. Parenteral nutrition leads to an increase in the volume of circulating blood and, accordingly, an increase in the load on the heart, which is accompanied by additional energy expenditure.

Enteral nutrition provides the following clinical effects: 1) activation of motility and regeneration of the mucous membrane; 2) early activation of the absorption function of the lower intestine; 3) nutrient substrates activate intestinal hormones, which in turn support absorption at the level of various cells; 4) prevents excessive contamination of the AIZ with microbes; 5) is a preventive measure for acute erosive and ulcerative diseases; 6) stops the catabolic direction of metabolism; 7) helps improve immunity [2].

According to modern concepts, the intestine is not only responsible for digestion and absorption. The mu-

cous membrane of the small and large intestines does not require nutrients. It has been proven that intraluminal administration of small amounts of food has a pronounced trophic effect on enterocytes, allowing them to maintain their functional activity. This activity ensures endocrine, immune, metabolic, and barrier functions, which are prerequisites for the patient's speedy recovery. Preclinical studies show that parenteral nutrition can cause atrophic damage to the intestinal mucosa. The study revealed a decrease in the thickness of the muscular layer of the mucosa and pronounced atrophy of the small intestine's villi after total parenteral nutrition compared with enteral nutrition [3].

Prolonged use of nasogastric tubes can cause significant discomfort in patients and is associated with the risk of perforation of the nose, throat, esophagus, stomach, and intestines [4]. The negative psychoemotional impact of transnasal intubation often leads to patients unconsciously removing the tube on their own, including during sleep. Rigid fixation of the tube to the wings of the nose using suture material leads to significant cosmetic defects of the face and is not recommended for wide use. A serious complication of a nasointestinal tube is the development of an acute ulcer of the stomach and duodenum, accompanied by severe bleeding. A foreign

body in the esophagus or oropharynx and the lack of a hermetic closure of the esophageal sphincter create favorable conditions for pathogenic microorganisms to migrate into the trachea and bronchi. Given the mentioned advantages of enteral nutrition, it is necessary to determine whether the method we propose – catheter jejunostomy – is the most physiologically effective. Ulcers and bleeding do not complicate catheter jejunostomy; it prevents food from entering the bronchi, preserves the intestine's anatomical and physiological state, and does not lead to villus atrophy. This is one of the most accurate methods, especially for patients after surgery for gastric cancer.

The study aimed to assess the possibilities of catheter jejunostomy for postoperative enteral feeding of patients with gastric cancer.

Materials and methods: The work is based on the results of the examination and surgical treatment of 71 patients who underwent enteral nutrition after gastrectomy and gastric resection for cancer. Of these, 49 (69%)

were men, and 21 (31%) were women aged 37 to 77. Stages I and II a, b - 10 (14%), III - 61 (86%). In 6 (8.4%) patients, the first bile duct was located in the cardioesophageal region, in 12 (16.9%) - in the cardiac region of the stomach, in 30 (42.2%) - in the body of the stomach, in 23 (32.3%) - in the antral region. Gastrectomy with lymph node dissection (LND) was performed in 39 patients (54.5%), proximal gastrectomy with resection of the lower third of the esophagus using thoraco-laparotomy approach in combination with LND – in 7 patients (9.8%), proximal resection with LND – in 7 patients (9.8%), proximal resection with LND – in 8 patients (11.2%), distal resection with LND – in 17 patients (23.9%). In the control group (n=36), the patients received nutrients via a nasojejunal tube, and in the main group (n=35), a percutaneous catheter enterostomy was installed. The principles of enteral nutrition were the same in both groups.

Patients in the main and control groups were relatively comparable in gender, age, the underlying disease, and the type of surgical intervention (Table 1).

Table 1 – Distribution of patients by surgical methods performed

Operations	Control group (n=36)	Main group (n=35)	Total (n=71)
Gastrectomy	19 (52.7%)	20 (57.1%)	39 (54.5%)
Proximal gastrectomy	4 (11.1%)	4 (11.4%)	8 (11.2%)
Proximal gastrectomy performed by combined approach	4 (11.1%)	3 (8.5%)	7 (9.8%)
Distal gastrectomy	9 (25%)	8 (22.8%)	17 (23.9%)
Total	36 (100%)	35 (100%)	71 (100%)

After the main stage of the surgery, a 1.7 mm diameter catheter was inserted into the antimesenteric wall of the small intestine at a distance of 25-30 cm from the Treitz ligament. A jejunostomy was applied 30 cm from the intestinal anastomosis during gastric resection. For early enteral nutrition, a catheter jejunostomy was used 6 hours after the operation. The enteral infusion was gradually increased to 500 mL on Day 1 and 2 L on Day 10. Thus, oral food intake was completely excluded for up to 10 days. The catheter was removed on Day 14 after insertion, and no additional surgical intervention was required for its removal. After removing the fixing skin suture, the catheter was removed from the intestinal lumen, and the channel closed on its own on Day 1.

In the control group, a gastrointestinal tube was used for enteral nutrition. The distal part of the tube was passed through the duodenum as distally as possible to the initial loop of the small intestine or the interintestinal anastomosis through the gastrointestinal anastomosis.

Patients were treated and monitored in the intensive care unit in the early postoperative period. After their condition stabilized, they were transferred to surgical wards.

We used a visual analog scale to compare the impact of a nasogastric tube and catheter enterostomy on patients' quality of life. A score of 0 corresponded to no discomfort and a score of 5 to obvious suffering and a constant desire to remove the tube or enterostomy. Patients

were examined on Days 1, 3, 5, and 7 after surgery once they had completed their resuscitation. When assessing the quality of life, patients in the control group described the degree of discomfort caused by a nasojejunal tube. In contrast, patients in the main group described the discomfort caused by a decompression tube and a catheter enterostomy.

Results: The study showed different effects of various enteral nutrition methods on patients' quality of life in the control and main groups (Figure 1). The difference between this study and a similar study conducted in 2018 is the larger number of patients included. In this regard, the obtained results have also changed significantly. The results showed that this method, i.e., catheter jejunostomy, is still considered the most effective for patients after gastrectomy [5].

Discussion: The greatest discomfort in both groups was associated with using transnasal tubes throughout the observation period. The control group had the lowest quality of life. Discomfort from the tube increased from 3.2 points on Day 1 after surgery to 4.3 points on Day 5. The nasojejunal tube significantly complicates nasal breathing and affects the receptors of the oropharynx's nasal passages, nasopharynx, and mucous membrane. In the main group, the maximum discomfort from the presence of the tube was recorded at 2.5 points on Day 3 after laparotomy.

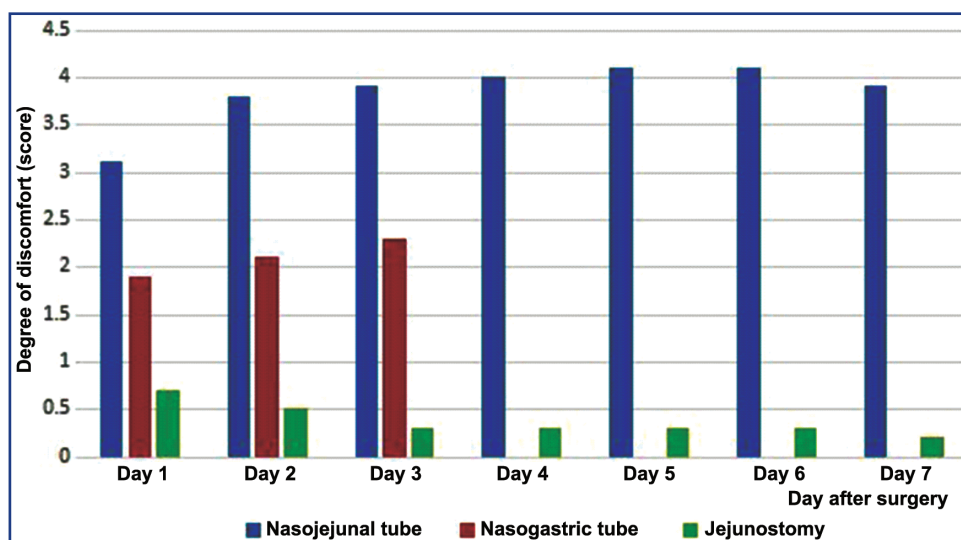


Figure 1 – Quality of life of patients after surgery

Figure 1 demonstrates an increasing negative psychoemotional impact of transnasal tubes with an increasing observation period. In the control group, 20 (55.5%) patients required tube removal on Day 3 after surgery and 27 (75%) on Day 5. Also, 9 (25%) patients could not tolerate the tube for 3-5 days after surgery, so they removed it themselves. In all cases, the motive for such behavior was discomfort, assessed on a 5-point numerical scale. In the main group, requests for tube removal were recorded in 3 of 14 patients (21.4%) on Day 3 after surgery, which coincided with the time of its removal for medical reasons.

In the main group, the impact of catheter enterostomy on patients' quality of life was minimal throughout the entire observation period: 14 (40%) patients did not report any discomfort. The presented indicators demonstrate the tolerability of providing enteral nutrition in patients. During the entire observation period, there were no requests for enterostomy removal and no cases of spontaneous removal. In addition, in the main group, there were no complications from the abdominal cavity and anterior abdominal wall during the jejunostomy operation and after its removal. According to the data presented in the article "Symptomatic surgical interventions for widespread gastric cancer," postoperative complications in such interventions are observed in 5-40% of cases, and postoperative mortality ranges from 4% to 32% [6]. These data emphasize the importance of choosing this nutrition method in the postoperative period, where catheter jejunostomy can significantly reduce the risk of complications and improve patient quality of life.

When assessing the effect of long-term transnasal tube placement on the risk of pneumonia, it was found that this type of postoperative complication was observed in 5 (13.8%) patients in the control group. The development of postoperative pneumonia is associated with impaired respiratory processes and mucus accumu-

lation around the tube. In the main group, nosocomial pneumonia was detected only in 2 (5.7%) patients. The difference in pneumonia frequency between patients in the control and main groups was significant ($p < 0.05$). The data obtained demonstrate the undeniable advantages of catheter enterostomy compared to transnasal tubes regarding the frequency of pulmonary complications.

Conclusion: Thus, catheter jejunostomy provides patients with gastric cancer with the possibility of reliable enteral nutrition after surgical treatment for a long time. The method allows the restoration of peristalsis 2-3 days earlier. It improves the immediate results of surgical treatment for gastric cancer by eliminating protein-energy deficiency, normalizing intestinal structure and metabolism, preventing bacterial translocation, and dystrophic and atrophic changes in the intestinal mucosa. This treatment method's benefits include high safety and good patient tolerability.

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АННОТАЦИЯ

КАТЕТЕРНАЯ ЕЮНОСТОМИЯ ПРИ ХИРУРГИЧЕСКОМ ЛЕЧЕНИИ БОЛЬНЫХ РАКОМ ЖЕЛУДКА

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Актуальность: Европейское общество парентерального и энтерального питания рекомендует энтеральное питание в качестве предпочтительного пути введения питательных веществ. Однако назогастральная интубация после операций на пищеварительной системе сопровождается дискомфортом в желудке, увеличением частоты раневой инфекции, несостоятельностью швов анастомоза, легочными осложнениями и длительностью госпитализации.

Цель исследования – изучение возможностей использования катетерной еюностомии для энтерального питания у больных с раком желудка в послеоперационном периоде.

Методы: Работа основана на результатах обследования и хирургического лечения 71 больных, которым проводилось энтеральное питание после гастрэктомии и резекции желудка по поводу рака. У 36 из них (контрольная группа) для введения нутриентов использовали назоюнальный зонд, у 35 (основная) – через кожную катетерную энтеростому. Принципы проведения энтерального питания были едиными в обеих группах.

Результаты. Проведенные исследования показали, что в контрольной и основной группах использование различных средств энтерального питания по-разному влияло на качество жизни больных. За весь период наблюдения в обеих группах наибольший дискомфорт был сопряжен с трансназальными зондами. При этом в контрольной группе качество жизни было самым низким. В основной группе за весь период наблюдения влияние катетерных энтеростом на качество жизни пациентов было минимальным, при этом 14 (40%) больных не отметили какого-либо дискомфорта. Это свидетельствует о хорошей переносимости больными данного способа обеспечения энтерального питания. Запросов на удаление энтеростомы а также случаев ее самостоятельного удаления за весь период наблюдений зафиксировано не было. Кроме того, в основной группе в период функционирования еюностомы, а также после ее извлечения не было отмечено ни одного осложнения со стороны как брюшной полости, так и передней брюшной стенки.

Заключение: Катетерная еюностомия обеспечивает возможность надежного энтерального питания больных раком желудка после хирургического лечения в течение длительного времени. Преимуществами данного метода лечения служат высокая безопасность, хорошая переносимость его больными.

Ключевые слова: катетер, еюностомия, рак желудка, хирургическое лечение, энтеральное питание.

АНДАТПА

АСҚАЗАННЫҢ ҚАТЕРЛІ ІСІГІН ХИРУРГИЯЛЫҚ ЖОЛМЕН ЕМДЕУ КЕЗІНДЕГІ КАТЕТЕРЛІК ЕЮНОСТОМИЯ

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Өзектілігі: Еуропалық парентеральды және энтеральды тамақтану қоғамы энтеральды тамақтануды қоректік заттарды қабылдаудың қолайлы жолы ретінде ұсынады. Алайда, ұзақ мерзімді назоинтестиналдық зондтың болуы пациенттерде елеулі қолайсыздықты тудырады және мұрын, жұтқыншақ, өңеш, асқазан мен ішек ойылуларының пайда болу қаупі осымен тікелей байланысты.

Зерттеу мақсаты – операциядан кейінгі кезеңде асқазанның қатерлі ісігі бар науқастардың энтеральды тамақтануында катетерлік еюностомияны қолдану мүмкіндіктерін зерттеу болып табылады.

Әдістері: Жұмыс гастрэктомиядан кейін және қатерлі ісікке байланысты асқазан резекциясынан кейінгі энтеральды тамақтанудан өткен 71 науқасты тексеру және хирургиялық емдеу нәтижелеріне негізделген. Олардың 36-сында (бақылау тобы) қоректік заттарды енгізу үшін назоюнальды түтік пайдаланылды, ал 35-інде (негізгі топ) – тері арқылы катетерлік энтеростомасы қолданылды. Энтеральды тамақтану принциптері екі топта да бірдей болды.

Нәтижелері: өткізген зерттеуімізге үңілсек, науқастардың өмір сапасына энтеральды тамақтану әдістері әрқалай әсерін көрсетті. Трансназальды зонд арқылы тамақтану барлық әдіс арасында ең ыңғайсыз болып шықты. Өмір сапасы

төмендеген бақылау тобына қарағанда, катетерлік еюностома орнатылған негізгі топтың 14 (40%) науқасы ыңғайсыздық танытпады. Еюностоманы өздігімен алу, алуды өтіну жағдайлары болмады. Іш қабырғасында ешбір асқыну еюностома тұрған уақытта да, оны алып тастаған соң да болмады. Бұл еюностоманың іш қуысына еш өзгеріс әкелмей, алып тасталынған соң өзінен кейін айтарлықтай із қалдырмайтынын көрсетеді.

Қорытынды: катетерлік еюностомия асқазан қатерлі ісігіне жасалған операциядан кейін физиологиялық тұрғыдан тамақтанудың тиімді әрі қолайлы әдісі болып табылады. Яғни, басқа әдістерге қарағанда қауіпсіз, науқастар үшін ыңғайлы болып келеді.

Түйінді сөздер: катетер, еюностомия, асқазан ісігі, хирургиялық емдеу, энтеральді тамақтану.

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