

Results of our study in the 6 tacson decentralized water sources demonstrate good nitrification activity by low level of ammonia nitrogen and nitrites and high level of nitrates. So, in 2008, ammonia nitrogen significantly increased and was on the level:  $0.58 \pm 0.02$  mg/dm<sup>3</sup>, nitrites –  $0.10 \pm 0.009$  mg/dm<sup>3</sup>; nitrates –  $6.09 \pm 0.25$  mg/dm<sup>3</sup> ( $p < 0.001$ ). In 2014, ammonia nitrogen decreased 2.4 times and was on the level ( $0.24 \pm 0.05$ ) mg/dm<sup>3</sup>; nitrites – 3.5 times ( $0.029 \pm 0.008$ ) mg/dm<sup>3</sup>; nitrates increased 4.3 times ( $26.48 \pm 2.49$ ) mg/dm<sup>3</sup>. Ammonia nitrogen had never increase MAC, except in 2013:  $0.37 \pm 0.08$  mg/dm<sup>3</sup>, i.e. (4.0 MAC). On the other hand, nitrates exceeded MAC in the decentralized water supply sources should cause methemoglobinemia among 6 tacson peasants. Thus, between 2008 and 2009 years, nitrates content was on the level (1.2 MAC); in 2010 (1.08 MAC); between 2011 and 2012 years (1.3 – 1.6 MAC); between 2013 and 2014 years (3.0 – 5.3 MAC); average annual indicator (2.08 MAC). It was shown the highest content of nitrates in the drinking water in 2014: ( $26.48 \pm 2.49$ ) mg/dm<sup>3</sup> (see Fig. 1 b).

### Conclusions

In the decentralized water supply sources all tacsons, except 6 tacson, had an unfavorable self-purification processes and incompleteness of nitrification activity. Therefore the average annual indicators in the water samples, carried out in 1-5 tacsons, increased in dynamics by the nitrogen ammonia: from ( $0.24 \pm 0.05$ ) to ( $0.43 \pm 0.20$ ) mg/dm<sup>3</sup>, i.e. in 2.0 times, in comparison with content of nitrates: ( $5.95 \pm 0.06$ ) to ( $14.72 \pm 5.57$ ) mg/dm<sup>3</sup>, which increased in 2.5 times ( $p < 0.001$ ). It was proved that water from decentralized sources in the 1-5 tacsons of Dnepropetrovsk region did not correspond to the GOST 7525:2014 coursed by high concentration of nitrites and nitrates between 2008 and 2014 year. All tacsons of Dnepropetrovsk region, except 2 tacson, did not correspond to some indicators: 1 tacson – nitrites (30.9 MAC) in 2012; 3 tacson – nitrogen ammonia (1.06 – 1.52) MAC in 2009, 2011, (1.42 MAC) in 2012, 2013, (1.36 MAC) in 2014; 4 tacson – oxidation (1.33 – 1.15) MAC in 2008, 2014; 5 tacson – nitrogen ammonia (1.02 MAC) in 2011, nitrites (1.6 MAC) in 2014.

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## THE EFFECTIVENESS OF NONINVASIVE SURGERY IN PATIENTS WITH COLON BLEEDING

**Yu.V. Grubnik, Dr. of Medicine, Full Prof., Head of Surgical department of Odessa city Hospital № 11**

**A.D. Netkov, Assistant, Head of the Surgical Department of Odessa city Hospital № 1**

**V.V. Kryzhanivskiy, Cand. of Medicine, Associate Professor**

**Odessa National Medical University, Ukraine**

**Conference participants,  
National championship in scientific analytics**

*The authors observed 37 patients with intestinal bleeding from tumors of the large intestine of varying severity.*

*The effectiveness of endoscopic hemostasis by laser photocoagulation of vessels and the value of this technique in the prevention of recurrent bleedings evaluated.*

*In 12 patients the bleeding was stopped with application of hemostatic therapy. In 25 patients arrest of intestinal bleeding through colonoscopy with laser photocoagulation of vessels of the tumor with high-energy argon plasma installation and neodmium laser with a wavelength of 1.06 microns was attempted.*

*Non-contact laser argon coagulation of bleeding vessels of the tumor was successfully applied in 14 cases.*

*This treatment strategy is perspective because it allows performing one-stage surgery with minimal risk to the patient.*

**Keywords:** endoscopic hemostasis, laser photocoagulation, neodmium laser, argon laser photocoagulation.

*Авторами наблюдались 37 больных с кишечным кровотечением из опухоли толстого кишечника различной степени тяжести.*

*Оценены эффективность эндоскопического гемостаза при помощи лазерной фотокоагуляции сосудов и значение этой методики в профилактике рецидивов кровотечения.*

*У 12 больных кровотечение было остановлено при применении гемостатической терапии. У 25 больных произведена попытка остановки кишечного кровотечения посредством колоноскопии с лазерной фотокоагуляцией сосудов опухоли с помощью высокоэнергетической аргоноплазменной установки и неодимового лазера с длиной волны 1,06 мкм.*

*Бесконтактная лазерная аргонокауляция кровоточащих сосудов опухоли успешно применена в 14 случаях.*

*Данная тактика лечения является перспективной так как позволяет выполнить одномоментную хирургическую операцию с минимальным риском для пациента.*

**Ключевые слова:** эндоскопический гемостаз, лазерная фотокоагуляция, неодимовый лазер, коагуляция аргоновым лазером.

*Авторами спостерігалися 37 хворих з кишковою кровотечею з пухлини товстого кишечника різного ступеня тяжкості.*

*Оцінені ефективність ендоскопічного гемостазу за допомогою лазерної фотокоагуляції судин і значення цієї методики в профілактиці рецидивів кровотечі.*



*У 12 хворих кровотеча була зупинена при застосуванні гемостатичної терапії. У 25 хворих проведена спроба зупинки кишкової кровотечі за допомогою колоноскопії з лазерною фотокоагуляцією судин пухлини за допомогою високоенергетичної аргонплазменної установки і неодимового лазера з довжиною хвилі 1,06 мкм.*

*Безконтактна лазерна аргонна коагуляція кровоточивих судин пухлини успішно застосована в 14 випадках.*

*Дана тактика лікування є перспективною так як дозволяє виконати одномоментну хірургічну операцію з мінімальним ризиком для пацієнта.*

**Ключові слова:** *ендоскопічний гемостаз, лазерна фотокоагуляція, неодимовий лазер, коагуляція аргонним лазером.*

**Background.** According to the literature, the frequency of bleeding from the colon in the general population is 0.03% annually, and in the age group from 20 to 80 years-old progressively increase nearly 200 times. The average age in the group of patients with this pathology is between 62 and 75 years old and mortality is up to 4-5% [3]. Malignant tumors, diverticulitis, ischemic colitis are the most common cause of colon bleeding. [3,4]. At present colonoscopy is a necessary method of complex endoscopy to identify the source of bleeding and is performed after gastroduodenoscopy except for cases when the source of bleeding is located in the upper gastrointestinal tract. In addition, colonoscopy is performed upon detection of tumors and acute ulcers during gastroduodenoscopy to avoid their presence in the colon [4]. According to most authors, the primary kind of endoscopy, colonoscopy should be made: a) in presence of anamnestic indications of the localization of the bleeding source in the colon; b) in the early period after surgery on the colon; and c) if you suspect the presence of a malignant neoplasm of the colon [3]. According to the summarized data, modern diagnostic accuracy of colonoscopy for bleeding from the lower gastrointestinal tract is 72-86% [2]. Nowadays, there are the following methods of hemostasis:

I. Injection hemostasis. It consists of direct introduction of the agent into the bleeding area.

II. Thermocoagulation. The coagulator are brought directly to the bleeding area to cause coagulation and thrombosis. Multipolar coagulation is also used, in which an electric discharge passes via multiple electrodes on the tip of the catheter, and argon plasma coagulation, which are approximately equally effective.

III. Mechanic hemostasis. It consists in application of endoclips on the bleeding vessel.

IV. Combined methods of therapeutic endoscopy. At present, there is evidence supporting the use of therapeutic endoscopy, which combines injection hemostasis (sclerotherapy, injection of adrenalin) with thermal or mechanical one, especially in the treatment of patients with very severe and active ulcer bleeding.

The relapse rate of bleeding is 15-20%. It usually develops within the first 24 hours after surgery, especially in profuse initial bleeding. The management of the patient with recurrent bleeding, first of all, determination of indications for surgical treatment, is disputable. [4]. Thus, expectant management is justified in some patients with recurrent bleeding in successful therapeutic re-endoscopy, but the next relapse is an absolute indication for surgical treatment. In our work we used thermocoagulation by applying laser photocoagulation of tumor vessels using high-energy argon plasma installation and neodymium laser with a wavelength of 1.06 microns.

**Objective:** 1) to clarify the possibilities of fibrocolonoscopy in determining and verifying the source of bleeding intensity in the colon, 2) to evaluate the effectiveness of a technique of endoscopic hemostasis by laser photocoagulation of the blood vessels and 3) to determine the value of this method in prevention of bleeding recurrence.

**Materials and methods.** The study period covers 2011-2014. All patients were divided by the degree of bleeding severity. In this case, we used the classification of Gostischev V.K., Evseev M.A., 2005.

Determination of the degree of hemorrhage severity is very important for solving the tactics of treatment and determining the nature of transfusion therapy.

We followed up 37 patients who were admitted with symptoms of intestinal bleeding of various degree of severity and 21 patients with anemia. The age of the patients varied from 40 to 88. The average age of the patients was 64 years old. Elderly patients dominated. As to gender, women prevailed in all age groups - 34 (58.6%), and there were 24 men (41.3%).

As to the degree of bleeding severity the patients were distributed as follows: mild degree - 15 (40.5%) patients, moderate - 14 (37.8%) patients, severe - 8 (21.6%) patients.

**Results:** The cause of bleeding in all patients was colon tumor. In 12 patients the bleeding was stopped by application of hemostatic therapy. In other cases, we have performed noninvasive surgery. Patients' preparation is of importance because colonoscopy is difficult in patients with active bleeding, for in poor preparation of the patient it is not always possible to identify a bleeding source. To improve the diagnostic value of this method (sensitivity is 80% for angiodysplasias) careful preparation of the patient is required, compensation of blood volume, adequate anesthesia, as the excessive use of narcotic analgesics leads to peripheral vasodilation. By using cleansing and siphon enemas, we tried to remove the remnants of feces and blood clots. After thorough emptying the distal intestine in 25 patients, we attempted to stop intestinal bleeding by colonoscopy followed by tumor location and tumor vascular laser photocoagulation using a high-energy argon plasma installation and neodymium laser with a wavelength of 1.06 microns. We did not use the contact electrocoagulation of vessels of the destructing tumor because of the high probability of tumor perforation.

Non-contact laser argon coagulation of the tumor bleeding vessels was successful in 14 cases, which allowed stabilizing the patient's condition for a long time and giving time for thorough examination and preoperative preparation of the patient for performing radical surgery in 2-3 days.

This technique did not lead to bleeding control in 11 patients, who required urgent surgical intervention with removal of the tumor bleeding substrate.

While making endoscopic hemostasis, we obtained the following complications: persistent bleeding in 10 cases and in one case there was a bowel wall perforation, which required urgent surgery.

In the group of patients with anemia (22) we carried out blood transfusion and infusion therapy followed by performing diagnostic and therapeutic colonoscopy. In 17 cases we were able to run a double-lumen probe through the obstruction zone under the control of the endoscope, followed by administration of drugs and fluids for washing off and aspiration of feces, thus improving the patient's condition, to solve the phenomena of acute intestinal obstruction temporarily and prepare the patient for radical surgery in 2-5 days.

Endoscopic recanalization of the colon was performed in 12 cases with the use of high-energy laser devices. A tumor was revealed after colonoscopy. If the tumor occupied most of the intestinal lumen in visualization, there was performed laser photocoagulation of the tumor tissue, coagulating the tumor tissue.

When a small canal was formed after the destruction of the tumor tissue, we tried to pass the probe through the obstruction area in the proximal part of the intestine. If this manipulation was ineffective, then the examination was ended and this manipulation was repeated in 24 hours. Upon reaching the effect of passing the double-lumen probe above the tumor obstruction, the intestine was washed off using medicines. A positive effect was achieved in 10 cases.

When performing these manipulations, we have had the following complications: perforation of the tumor occurred during tumor

laser photocoagulation in one case that requires urgent laparotomy, ulcer wall perforation occurred in the intestine diverticulum by the double-lumen probe in the process of photodecomposition in the second case that also requires urgent laparotomy with removal of the tumor and damaged parts of the intestine, and in the third case there was a recurrence of bleeding requiring further argon plasma coagulation.

In 10 cases we were able to run the endoscopic stent through the site of bowel obturation by the tumor. Stenting of the bowel at the site of the tumor obstruction along with a resolution of obstruction is also provided by mechanical hemostasis.

The stenting procedure is a complex endoscopic technique possible only in cases where there is no complete tumor intestinal obstruction. In cases of complete obstruction when trying to pass a stent, there may be bleeding and perforation of the bowel wall with development of peritonitis.

In case of effective installation of the stent, it is possible to clear the bowels quickly and efficiently and eliminate acute intestinal obstruction, allowing to perform a radical traditional or laparoscopic surgery in 2-5 days after the stent installation.

Besides, installation of the stent and elimination of the threat of full germination of the colon lumen with a tumor, allows preventing intestinal obturation and refusing the surgery in case of tumor metastasis in various organs and manifestations of carcinomatosis.

We managed to pass and install the stent in 10 cases. In one case, there was bleeding in the process of the stent installation and attempts to install stent due to difficult visualization and complete obstruction of the lumen of the colon tumor had led to bowel perforation and fecal peritonitis, which required urgent laparotomy with resection of the bowel with the tumor.

Thus, endoscopic techniques require a highly skilled endoscopist and specialized skills, advanced endoscopic and laser equipment.

Based on the data given, it should be noted that the use of endoscopic techniques helps stop bleeding in 60% of cases as well as to obtain management of acute intestinal obstruction in 72% of cases with tumors of the left half of the colon, allowing to make a high-quality preoperative preparation of patients, to reduce the risk of surgery and in most cases, to perform laparoscopic surgery. Application of this method in complex techniques to stop bleeding increases the efficacy of therapeutic endoscopy and contributes to the stabilization of the patients, preoperative preparation as well as reduces the number of complications.

In our opinion this treatment strategy is promising because it allows you to perform one-stage surgery with minimal risk to the patient and to avoid in most cases 2- or 3-stage operations.

#### Conclusions.

1. Endoscopic local hemostasis is an effective method that allows stopping bleeding in the patients with colorectal cancer in 60-70% of cases.
2. The most effective method of endoscopic bleeding control is a combined method of laser photocoagulation with the injection introduction of fibrin glue as well as stenting.
3. The endoscopic hemostasis allows stabilizing the patient's condition, to conduct an effective preoperative preparation, to conduct one-step surgery, and reduce postoperative complications 2 times.

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### SECONDARY LYMPHEDEMA OF LIPS AS A SYMPTOM OF OROFACIAL LESIONS

**Yu. Lakhtin, Dr. of Medicine, Associate Prof.**  
**P. Moskalenko, Cand. of Medicine, Assistant**  
**Sumy State University, Ukraine**  
**L. Karpez, Cand. of Medicine, Assistant**  
**Kharkiv Post-graduate Medical Academy, Ukraine**

**Conference participants,**  
**National championship in scientific analytics,**  
**Open European and Asian research analytics championship**

*The study involved 18 patients with secondary lymphedema of lips with Melkersson-Rosenthal syndrome, Granulomatous cheilitis of Miescher, Crohn's disease, chronic odontogenic periapical inflammation. Based on data from clinical and ultrasound examinations it was established the similarity of the clinical picture and course of lymphedema in these diseases. The authors suggest not to consider the secondary lymphedema of lips to be an independent nosological entity.*

**Keywords:** *lips lymphedema, macrocheilitis, Melkersson-Rosenthal syndrome, Granulomatous cheilitis of Miescher, Crohn's disease.*

Lymphedema is a congenital or acquired disease of the lymphatic system, associated with the abnormality of the outflow of lymph from the lymphatic capillaries and peripheral lymphatic vessels from organs and tissues to the main lymphatic collectors and the thoracic duct, which leads to an increase in the size of the affected organ.

Lymphedema occurs when lymphatic load exceeds the transport capacity of the lymphatic system. The imbalance between the formation of lymph and its outflow occurs in various diseases, including orofacial pathology. Primary lymphedema occurs more rarely, in idiopathic or acquired vascular malformations, especially in their hypoplasia or aplasia. Secondary Lymphedema usually develops in impairment of lymph transport due to damage or resection of lymph vessels and lymph nodes, infections and radiation [6, 8].