



**FACTORS IMPAIRING IRON SUCTION AFTER RESECTION OF GASTRIC AND DUODENAL ULCERS**

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✓ *Resume*

*The article examined 56 patients with a chronic ulcer of 12 duodenal ulcer complication of anemia, re-hospitalized one month after gastric resection according to methods B-I and B-II. It was reported that the serum iron content of these patients was compared with the preoperative data after 1, 3 and 6 hours of administration of iron and hydroionized iron.*

*Key words: iron deficiency, chronic anemia, wound disease.*

**ФАКТОРЫ, УХУДШАЮЩИЕ ВСАСЫВАНИЕ ЖЕЛЕЗА ПОСЛЕ РЕЗЕКЦИИ ЯЗВЫ ЖЕЛУДКА И ДВЕНАДЦАТИПЕРСТНОЙ КИШКИ**

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✓ *Резюме*

*В статье обследовано 56 пациентов с хронической язвой 12-перстной осложнением анемии, повторно госпитализированных через месяц после резекции желудка по методикам Б-I и Б-II. Сообщалось, что содержание железа в сыворотке этих пациентов сравнивалось с предоперационными данными после 1, 3 и 6 часов введения железа и гидроионизированного железа.*

*Ключевые слова: дефицит железа, хроническая анемия, раневая болезнь.*

**ОШҚОЗОН ВА ЎН ИККИ БАРМОҚЛИ ИЧАК ЯРАЛАРИНИ РЕЗЕКЦИЯ ҚИЛИШДАН КЕЙИН ТЕМИРНИНГ СЎРИЛИШИНИ БУЗАДИГАН ОМИЛЛАР**

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*Мақолада анемиянинг 56 нафар 12 бармоқ ичак асоратли сурункали яраси бўлган бемор текширилди, улар ошқозон резекциясидан бир ой Б-I и Б-II усуллари бўйича қайта касалхонага ётқизилди. ушбу беморларнинг зардобидаги 1,3 ва 6 соат темир ва гидроионланган темир миқдори операциядан олдинги маълумотлар билан таққосланганлиги маълум қилинди*

*Калит сўзлар: темир танқислиги, сурункали анемия, яра касаллиги.*

**Relevance**

The gastrointestinal tract is of great importance in biological metabolism and absorption in humans and animals. The stomach and duodenum, as well as the upper part of the small intestine, play an important role in the absorption of iron. Research in the field of science also confirms this complex process.

It is known that after gastric resection, the process of absorption of this iron in the gastrointestinal tract is disrupted. The reason for the violation of the absorption of iron in the gastrointestinal tract in the human body is that after resection of the stomach, part of the stomach and part of the duodenum are removed. At the same time, the level of the iron-absorbing parts involved in it decreases. This means that the volume and quality of the enzymes needed to absorb iron from the gastrointestinal tract vary.

Especially if the stomach is resected according to the B-II method, the food is dispensed with without the participation of organs that absorb iron and substances included in them. This condition is indistinguishable for the patient, so it is necessary to study the condition and develop the necessary therapeutic measures. The cause may further lead to severe poly-organ dystrophic insufficiency.

**The aim of the survey** was to study patients with chronic duodenal ulcer with anemia complication, re-hospitalized one month after gastric resection according to methods B-I and B-II and to dynamically study the iron content in the blood serum of these patients for comparison with preoperative data after 1, 3 and 6 hours of iron and hydroionized iron administration.

### Materials and methods

We were patients with chronic anemia who were treated for a long time with 56 diseases of the stomach and 12 duodenum in the period from 2014 to 2020, and then they took patients who had gastric resection performed using various methods. Of these, 22 are women (39%) and 34 (61%) are men representing patients aged 19 to 68 years. These patients were hospitalized and examined for rehabilitation a month after surgery.

### The results of the study

The examination included a general blood test, the condition of the gastric mucosa in FGDS, the number and functional state of the glands, the clinical type of anastomosis, evacuation of food, radiography and a test for the determination of iron in serum. Cases of bleeding from anastomoses and other causes in patients were not included in clinical studies.

*Table No. 1*

*Distribution of patients by age and gender*

Gender	Age 19-30	31 - 50	51 - 60	Above the age of 60.
Male	6 (10,7 %)	14 (25,0 %)	10 (17,8 %)	4 (7,8 %)
Woman	4(7,8)	11 (19,6 %)	6 (10,7 %)	1 (1,7 %)
Total	10 (17,8 %)	25 (44,6 %)	16 (28,7 %)	5 (8,9 %)

We gave the patients 8-10 ml of blood from a vein during lunch, and then gave the patient a 1.0 hydrogen-saturated iron supplement. Then 30 ml of 3% chloride per kilogram was taken orally. Blood was taken from the vein 1, 3, 6 hours after drinking. Then the patient was allowed to eat. The resulting blood was stored in a thermostat at 4-60 degrees, centrifuged after 2 hours at a speed of 2000, plasma was taken separately.

The resulting plasma was again centrifuged at 2000 rpm to separate the plasma. The resulting plasma was tested for iron content. Such examinations were performed on patients before and after surgery.

Depending on the operation performed, 48 patients with gastric gastro-duodenal anastomosis B-I had 2/3 of the stomach removed by resection, 3 patients had decompensated stenosis, 51 patients were divided into three groups. In patients treated with iron from 1 hour, the concentration of jelly was up to 60% in group 24, in 18 patients in group 2 - up to 150%, and in 9 patients in group 3 - above 151%.

In group 4, these 5 patients underwent gastric resection B-II, in which patients in this group had a long loop with a gastro-entero-anastomosis of a Brown bridge across the anterior part of the small intestine, 2/3 of the stomach were resected, and 12 of the duodenum were left at the beginning of intestinal obstruction. All patients who participated in the examination were obtained on the basis of examinations, as indicated above, even in the preoperative period.

After saturation with the iron preparation, we preferred to graphically check the absorbed iron to facilitate generalization (post-absorption indicator). You can consider each case separately and compare whether it has changed one way or another. This can be understood as a comparison of the concentration of iron in the blood serum at a given time in percent (1,3,6 hours) in the preoperative and postoperative periods.

For example, if 100% is taken on an empty stomach before saturation, -140% after one hour, -170% after 3 hours, -150% after 6 hours, our high indicator is 170%. This indicator referred to the average value for all patients. In some patients, 110% on an empty stomach, 160% an hour after administration of ionized divalent iron, 240% after three hours, 180% after 6 hours, 140% on an empty stomach in the third patient, 180% an hour after administration of ionized divalent iron. 210% after three hours, 180% after six hours.

It can be seen that in all three patients, iron absorption was 150% higher after three hours, and variability in iron absorption was detected. These figures are shown in table 2.

**Table No. 2**

***Indicators of patients before surgery who were given ionized iron preparations.***

G.	On an empty stomach	After 1 hour	After 3 hours	After 6 hours
1	100	140	170	150
2	110	160	240	180
3	110	180	210	180
4	100	140	280	160

Postoperative iron absorption in the first group decreased by an average of 45% - three times in 15 patients, four times in 35% - in 8 patients and six times in 25% - in 1 patient. In the second group, the average iron absorption was 170%, in 11 patients after surgery - 34%, i.e. 5 times, and in 7 patients - 28% - 6 times less. In the third group, 40% was detected 4 times in 4 patients, 5 times in 3 patients, 31% and 10 times less in one patient, that is, a very small amount of 15%.

All 5 patients who underwent B-II resection had postoperative anemia. When we examined them in the way described above, the amount of iron in the fasting blood plasma was 70-80%, which is 2-3 times lower than normal. In the study of ionized divalent iron after administration after 1 hour in 4 patients, it is 78-86%, after 3 hours this indicator remains unchanged and is 79-87%, and after 6 hours - 70-80%. In one patient, the baseline level was 66% and did not change after treatment with saturated iron.

In connection with the above, in addition to the postoperative examinations described above, we also studied changes in the rest of the stomach cavity by conducting FGDS in our patients. In the first group of patients in the post-resection period there were 17 patients with superficial gastritis and anastomosis, 1 patient had symptoms of advanced anastomosis, the remaining 3 patients had no changes, in the second group of patients with superficial gastritis and anastomosis there were 15 patients, 1 patient developed anastomosis, the remaining 2 patients had no changes, 6 patients in the third group had superficial gastritis and anastomosis, 1 patient had symptoms of expanded anastomosis, and the remaining 2 patients had no changes. In all patients, the permeability of the anastomosis was preserved and the evacuation of food was not disturbed, which was revealed on contrast radiographs of patients.

Symptoms of superficial gastritis and anastomoses were detected in 4 patients who underwent resection according to the B-II method, evacuation was preserved. In one patient, the process of iron absorption was completely disrupted due to flattening of the gastric mucosa and contraction of the glands.

Biopsies were taken from several sites in all 56 patients to determine the condition of the remaining glands in the postoperative cavity, and when the relative number of glands and the state of secretion were determined, the number of glands was significantly reduced.

Studies have shown that in 56 patients treated with ionized divalent iron, the absorption of the drug worsened after gastric resection than after surgery. In 48 patients, the functional state of the iron-sucking glands of the stomach worsened 3-5 times. In 3 patients of the main group and in patients who underwent gastric resection according to the B-second method, after the introduction of iron, ionized divalent iron completely worsened the absorption of iron, and the dynamics of iron in plasma decreased by 5-6 times. By this time, it was found that the level of iron in the blood plasma decreased by 22-26% from the initial level.

It should be noted that in a healthy person, iron is absorbed in the stomach, the 12-duodenum and the upper part of the small intestine. The lower you go in the small intestine, the less iron is absorbed.

This condition leads to a decrease in the absorption surface of iron, which can lead to severe anemia due to the fact that iron does not pass through the main absorption pathways due to a violation of divalent metabolism. The compensatory function of one's own body also works, but it takes some time for the body to fully assimilate iron.

### Conclusion

Based on the results of the above study and sources in the literature, it was determined that iron deficiency anemia occurs in 72-75% of patients in the postoperative period. The reasons for this were as follows:

Reduction or complete destruction of hydrochloric acid due to inflammation of the rest of the stomach; Reduced absorption of iron; Accelerate the excretion of food from the stomach and change the way you eat;

1. Chronic 12-finger ulcers of the intestine and stomach (regardless of which modification of method B-II) lead to serious absorption disorders in patients after gastric resection. This iron absorption disorder occurs in 72-76% of patients and increases 3-5 times after surgery.

2. The occurrence of hyperemia after gastric resection is a serious complication, which, if left untreated, can lead to hypochromic agastric anemia and hypotrophic multiple organ failure.

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