

Ya. S. Bereznytskyi, R. V. Duka

# TECHNICAL FEATURES OF THE IMPLEMENTATION OF SLEEVE GASTRECTOMY AND BILIOPANCREATIC DIVERSION IN THE TREATMENT OF OBESE PATIENTS

The Dnipropetrovsk Medical Academy, Dnipropetrovsk, Ukraine

УДК 616.33-089.87-056.257

Я. С. Березницкий, Р. В. Дука

## ТЕХНИЧЕСКИЕ ОСОБЕННОСТИ ВЫПОЛНЕНИЯ РУКАВНОЙ ГАСТРЭКТОМИИ И БИЛИОПАНКРЕАТИЧЕСКАЯ ДИВЕРСИЯ В ЛЕЧЕНИИ ПАЦИЕНТОВ С ОЖИРЕНИЕМ

*Днепропетровская медицинская академия, Днепропетровск, Украина*

Значительно и неуклонно повышается количество людей, страдающих избыточным весом, особенно во всех экономически развитых странах. По данным Всемирной организации здравоохранения, около 30 % населения имели избыточный вес в конце XX в.

Билиопанкреатическая диверсия (в модификации Hess-Marceau) позволяет добиться устойчивого снижения массы тела и нормализации липидного и углеводного метаболизма в течение 2-х лет в среднем % EWL на 72 %.

Рукавная гастрэктомия снижает % EWL до 64 % в течение 2 лет после операции.

**Ключевые слова:** морбидное ожирение, хирургическое лечение, билиопанкреатическая диверсия, рукавная гастрэктомия.

UDC 616.33-089.87-056.257

Ya. S. Bereznytskyi, R. V. Duka

## TECHNICAL FEATURES OF THE IMPLEMENTATION OF SLEEVE GASTRECTOMY AND BILIOPANCREATIC DIVERSION IN THE TREATMENT OF OBESE PATIENTS

*The Dnipropetrovsk Medical Academy, Dnipropetrovsk, Ukraine*

**Background.** Steady growth of the number of people with excessive weight is observed almost in all economically developed countries. According to the World Health Organization (WHO), about 30% of people had excessive weight by the end of the twentieth century. Thereby, assimilation and improvement of the methods of bariatric surgeries is an actual task.

**Aim of the study.** To estimate technical features and the results of sleeve gastrectomy and biliopancreatic diversion (Hess-Marceau modification).

**Methods.** During the period from 2009 to 2012 year bariatric surgery was performed in 24 patients (16 women and 8 men). Patients' age ranged from 28 to 59, BMI range from 31.6 to 80 kg/m<sup>2</sup>. Biliopancreatic diversion (Hess-Marceau modification) was performed on 18 patients (with BMI > 40 kg/m<sup>2</sup>). Sleeve gastrectomy was performed in 6 patients (with BMI range from 31.6 to 47.7 kg/m<sup>2</sup>).

The main complaints of patients with morbid obesity were a progressive increase in body weight, with no effect from other methods of treatment (diet, drug therapy, intragastric balloon), severe shortness of breath with little exertion, pain in the back and in large joints of lower limbs, different degrees of manifestation of Pickwickian syndrome (night snoring, apnoea, daytime sleepiness). Body mass, carbohydrates and fats metabolism rates were controlled.

**Results.** All patients reported a significant reduction in appetite after surgery. It was reported a median percentage of excessive weight loss (%EWL) by 49% within the first year after the operation, 64% EWL after two years.

**Conclusions.** Biliopancreatic diversion (Hess-Marceau modification) leads to a significant reduction in body weight and normalization of lipid and carbohydrate metabolism and in two years a median %EWL is 72%. Sleeve gastrectomy reduces %EWL by 64% within 2 years after surgery.

**Key words:** morbid obesity, surgical treatment, biliopancreatic diversion, sleeve gastrectomy.

### Actuality of the Work

Steady growth of the number of people with excessive weight is observed almost in all economically developed countries. According to the World Health Organization (WHO), about 30% of people had excess weight by the end of the twentieth century. Today obesity is considered

to be a non-infectious epidemic. 60% of the Americans are overweight people and 27% of them are obese; in the countries of Western Europe about 25% of the population have excess weight. Arterial hypertension, diabetes mellitus and dyslipidaemia are closely associated with obesity; they decrease the quality of patient's life, increase costs

of medical treatment and in most cases they are the reason of an untimely death.

Treatment of obesity is a difficult task for a doctor and especially for a patient. Obesity is regarded as a chronic recurrent disease, which needs a lifelong treatment and it is very important to the patient to understand this necessity. Present methods of



conservative treatment contain nutrition and lifestyle changes, longtime therapy, but it is really hard to do for most patients. That is why in 90% of cases conservative treatment is ineffective and after treatment cessation patients have a relapse of the disease.

As for up-to-date methods the most complete and lasting effect can be reached with the help of surgical methods of treatment of morbid obesity [1–5]. All bariatric surgeries are commonly divided into three main groups: restrictive, malabsorptive and combined [1; 2; 4; 5].

One of the modern methods of restrictive surgery is sleeve gastrectomy. In recent times this methodology attracts more and more attention of bariatric surgeons and gets wide spread. However, because of the relative novelty of the methodology there is no enough number of observations over the patients in the long term after the operation. This fact causes the high interest to the results of sleeve gastrectomy.

Combined surgery is recommended to the patients with morbid obesity and with accompanying dyslipidaemia, insulin resistance and hypertension. One of the effective combined methodologies is biliopancreatic diversion (Hess-Marceau modification). This methodology allows to achieve a good result with a small number of complications in the early postoperative period and provides a high quality of life in the late period [2–6; 8; 9].

Thereby, assimilation and improvement of the methods of bariatric surgeries is an actual task.

### **Purpose of the Work**

To estimate technical features and the results of sleeve gastrectomy and biliopancreatic diversion (Hess-Marceau modification).

### **Object and Methods of Research**

During the period since 2009 till 2012 year bariatric surgery

was performed on 24 patients, there were 16 women and 8 men. Patient age ranged from 28 to 59, BMI range from 31.6 to 80 kg/m<sup>2</sup>.

Biliopancreatic diversion (Hess-Marceau modification) was performed on 18 patients (with BMI > 40 kg/m<sup>2</sup>). Sleeve gastrectomy was performed on 6 patients (with BMI range from 31.6 to 47.7 kg/m<sup>2</sup>).

The main complaints of patients with morbid obesity were a progressive increase in body weight, with no effect from other methods of treatment (diet, drug therapy, intragastric balloon), severe shortness of breath with little exertion, pain in the back and in large joints of lower limbs, different degrees of manifestation of Pickwickian syndrome (night snoring, apnoea, daytime sleepiness).

Body mass, rates of the metabolism of carbohydrates and fats were controlled.

The degree of obesity was defined according to WHO classification (1997 year); BMI was defined as the individual's body mass (kg) divided by the square of his or her height (m<sup>2</sup>); ideal body weight was defined according to the international table Metropolitan Height and Weight Tables, Converted to Metric System (1983 year); the percentage of excess weight loss was defined according to the formula

$$\%EWL = \frac{\text{Weight Loss (kg)}}{\text{Excess Weight (kg)}} \cdot 100\%$$

### **Results and Discussion**

The surgeon together with every patient planned and decided which method of surgical treatment to chose. During the conversation it was determined if expectations of patients were realistic; the advantages and disadvantages of each type of surgery, the expected decrease in body weight were discussed. Will and possibility of the patient to be under medical supervision in long-term periods after surgery

were obligatory conditions for the surgery. In our opinion, it is obligatory to obtain consent for surgery not only of the patient but also of the relatives, especially in the cases of younger patients.

All patients underwent a standard preoperative assessment. It was first estimated that 9 patients had hypertension and it caused longer preoperative preparation. All operated patients were in risk of thromboembolic complications, this fact was the reason to carry out specific and non-specific prevention of thromboembolic complications. Compression stockings were used for non-specific prevention, nadroparin (fraxiparine) was used for carrying out specific prevention. In all cases prevention of purulent-septic complications with the use of second-generation cephalosporins was carried out.

Biliopancreatic diversion (Hess-Marceau modification) was performed on 18 patients with class III obesity. Body mass of these patients was from 100 to 248 kg, BMI range from 40 to 80 kg/m<sup>2</sup>. In discussing the technical aspects of the operation it should be noted the Harmonic scalpel (Johnson & Johnson) was used to mobilize the greater curvature of the stomach and duodenum, that greatly facilitated the implementation of this phase of the operation, and reduced its time. Resection was performed while gastric tube (12 mm) was inserted, along the lesser curvature of stomach and the line of resection was carried out on the edge of the probe. The line of surgical staples was obligatory peritonized by a continuous encircling stitch. Intraoperative measurement of the stomach showed that the volume of reservoir was from 70 to 150 ml. For the intersection of the stomach and duodenum the suturing devices Ethicon Proximate (with the length of the seam — 75 mm) were used. The length of the total loop was left 80–100 cm. Before intersection of the small intestine the marks were made on



the gut, it allowed to identify clearly the proximal and distal parts of the loop during the surgery.

Discussing the results of the treatment, it should be noted that almost immediately after surgery all patients of this group reported a significant decrease in appetite. Within 2 months after surgery loose stools was noted up to 4 times a day, then this number decreased by 1–2 times a day and depended on the quality of food. All patients regularly take a multivitamin, fat-soluble vitamins, iron and calcium. During the first year after surgery in this patient group, the percentage of excess weight loss ranged from 52 to 87%, a median %EWL for the first year was 58%. Within second year, a median %EWL was 72%. Before surgery, eight patients had disorders of carbohydrate and fat metabolisms; it caused hyperinsulinemia, hypercholesterolemia, hypertriglyceridemia, increased levels of leptin and C-peptide. Also, there were an increase in blood pressure, Pickwickian syndrome and pain in large joints of lower limbs. In the postoperative period carbohydrate and fat metabolism rates, blood pressure numbers were normalized, Pickwickian syndrome was liquidated, and there is no pain in the lower limbs. Indicators of iron, calcium and protein were monitored, they remained within normal limits.

Sleeve gastrectomy was performed on 6 patients (with body mass from 95 to 159 kg and BMI range from 31.6 to 47.7 kg/m<sup>2</sup>), and in 4 cases laparoscopic way was used. Talking about the features of surgery it should be noted that the first intersection of the stomach was performed at a distance of 5 cm from the pylorus, and only for the second stitching a gastric tube was inserted (12 mm in diameter). The line of surgical staples was peritonized by a continuous stitch. All patients reported a significant reduction in appetite after surgery. It was reported a median

percentage excess weight loss (%EWL) of 49% in the first year after the operation, 64 %EWL after two years.

## Conclusions

Biliopancreatic diversion (Hess-Marceau modification) leads to a significant reduction in body weight and normalization of lipid and carbohydrate metabolism and in two years a median %EWL is 72%. Sleeve gastrectomy reduces % EWL 64% within 2 years after surgery.

## REFERENCES

1. Егивев В. Н. Рестриктивные вмешательства на желудке в лечении больных ожирением / В. Н. Егивев, М. Н. Рудакова, Д. С. Белков. – М. : Медпрактика, 2004. – 99 с.
2. Лаврик А. С. Результаты хирургического лечения сахарного диабета II типа у больных с морбидным ожирением / А. С. Лаврик, О. С. Тивончук, О. А. Лаврик // Клиническая хирургия. – 2010. – № 8. – С. 21.
3. Седлецкий Ю. И. Современные методы лечения ожирения / Ю. И. Седлецкий. – СПб. : ЭЛБИ-СПб, 2007. – 403 с.
4. Яшков Ю. И. Гастрошунтирование и билиопанкреатическое шунтирование — первые наблюдения и результаты / Ю. И. Яшков // Хирургическое лечение ожирения и сопутствующих метаболических нарушений : материалы 3-го Рос. симп. Санкт-Петербург, 1–2 июля 2004. – СПб., 2004. – С. 53–54.
5. Яшков Ю. И. Этапы развития хирургии ожирения / Ю. И. Яшков // Вестник хирургии. – 2003. – № 3. – С. 53–56.
6. Biliopancreatic diversion with duodenal switch / P. Marceau, F. S. Hould, S. Simard [et al.] // World J. Surg. – 1998. – Vol. 22. – P. 947–954.
7. Twenty years of biliopancreatic diversion: what is the goal of the surgery? / S. Biron, F. S. Hould, S. Lebel [et al.] // Obes Surg. – 2004. – Vol. 14. – P. 160–164.
8. Hess D. S. The biliopancreatic diversion with the duodenal switch: results beyond 10 years / D. S. Hess, D. W. Hess, R. S. Oakley // Obes Surg. – 2005. – Vol. 14. – P. 408–416.
9. Biliopancreatic diversion for obesity: state of the art / N. Scopinaro, G. Marinari, G. Camerini [et al.] // Surg Obes. – 2005. – Vol. 1. – P. 317–328.

## REFERENCES

1. Egiev V.N., Rudakova M.N., Belkov D.S. Restrictivnyye vmeshatelstva

na zheludke v lechenii bolnyh oshireniiem [Restrictive procedures on stomach for morbid obesity]. Moscow, Medpractica, 2004:99.

2. Lavrik A.S., Tyvonchuk O.S., Lavrik O.A. Results of surgical treatment of type II diabetes associated with morbid obesity. Klinichna hirurgiya 2010;8: 21.

3. Sedletskiy Yu.I. Sovremennyye metody lechenia ozhireniya [Modern methods of treatment of obesity] Sanct-Peterburg, Elbi-Spb, 2007:403.

4. Yashkov Yu.I. Gastric and biliopancreatic diversion — first results. Hirurgicheskoe lechenie ozhireniya i soputstvuyuschih metabolicheskikh narusheniy: Materialy III Rossiyskogo simpoziuma (Surgical treatment of obesity and related metabolic disorders: Proceedings of III Russian Symposium). Sanct-Peterburg 2004:53-54.

5. Yashkov Yu.I. Etapy razvitiya hirurgii ozhireniya [Steps of evolution of obesity surgery]. Vestnik hirurgii 2003;3: 53-56.

6. Marceau P., Hould F.S., Simard S., et al. Biliopancreatic diversion with duodenal switch. World J Surg 1998; 22:947-954.

7. Biron S., Hould F.S., Lebel S., et al. Twenty years of biliopancreatic diversion: what is the goal of the surgery? Obes Surg. 2004;14:160-164.

8. Hess D.S., Hess D.W., Oakley R.S. The biliopancreatic diversion with the duodenal switch: results beyond 10 years. Obes Surg. 2005;14:408-416.

9. Scopinaro N., Marinari G., Camerini G., et al. Biliopancreatic diversion for obesity: state of the art. Surg Obes. 2005;1:317-328.

Submitted 17.07.2012

