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THE CHOICE OF A METHOD FOR SURGICAL TREATMENT OF INTERNAL CHRONIC HEMORRHOIDS

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Haemorrhoids are one of the most common diseases in the anorectal zone. Often this disease requires surgical treatment, so the study of types of operations for treatment of hemorrhoids is very important in our time. The aim of our study was to compare Rafaelo radiofrequency ablation of hemorrhoids and Milligan-Morgan hemorrhoidectomy to determine the best method of surgical treatment of chronic hemorrhoids. Our study included 135 patients divided into two groups. The first group consisted of 75 patients operated on by radiofrequency ablation, the second group consisted of 60 patients who underwent classical Milligan-Morgan hemorrhoidectomy. Obtained results showed that the method of radiofrequency ablation of hemorrhoids using the Rafaelo method is less traumatic, easier to perform for surgeons, has an insignificant level of postoperative pain, low frequency of early and late postoperative complications and recurrence, does not require additional drug therapy and is characterized by a short postoperative period and recovery.

Key words: internal hemorrhoids, radiofrequency ablation, hemorrhoidectomy, Milligan-Morgan, Rafaelo.

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ВИБІР МЕТОДУ ОПЕРАТИВНОГО ЛІКУВАННЯ ВНУТРІШНЬОГО ХРОНІЧНОГО ГЕМОРОЮ

Геморой є однією з найпоширеніших хвороб аноректальної зони. Найчастіше дане захворювання потребує оперативного лікування, тому дослідження видів операцій для лікування гемороює дуже актуальним в наш час. Метою нашого дослідження було порівняти методику радіочастотної абляції гемороїдальних вузлів Rafaelo та гемороїдектомію по Міллігану – Моргану для визначення пріоритетної методики оперативного лікування хронічного гемороюю. У нашому дослідження прийняло участь 135 пацієнтів, які були поділені на дві групи. Першу групу складали 75 хворих, що були прооперовані методом Rafaelo, другу групу становили 60 хворих, яким була проведена гемороїдектомія по Міллігану – Моргану. Результати отримані нами показали, що метод радіочастотної абляції гемороїдальних вузлів методом Rafaelo є менше травматичним, простим у виконанні для хірургів, характеризується незначним рівнем післяопераційного болю, низькою частотою ранніх та пізніх післяопераційних ускладнень та рецидиву, не потребує додаткової терапії та характеризується коротким періодом реабілітації.

Ключові слова: внутрішній геморой, радіочастотна абляція, гемороїдектомія, Мілліган-Морган, Rafaelo.

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Hemorrhoids are the most widespread disease of the anorectal zone, characterized by varicose veins of the cavernous bodies of the rectum [1]. According to the WHO, from 34.4 % to 76.4 % of the entire world population has this pathology. In general, the prevalence of this disease is 120–130 cases per 1000 adult population, which in the structure of diseases of the rectum and anal canal is 34–41 % [2]. The factors for the development of hemorrhoids include a sedentary lifestyle, heavy physical work, violations of dietary and hygienic norms, frequent constipation and chronic diarrhea, regular increase in internal abdominal pressure for many reasons (pregnancy, chronic constipation, ascites, etc.), heredity with this pathology, natural or acquired change in the elasticity of the vascular wall [2, 9]. Currently, there are two main factors (vascular and mechanical) that combine to cause hemorrhoids [8]. There are two types of hemorrhoids: external, which are located below the dentate line, and internal, located in the distal part of the rectum above the dentate line. In 75 % of patients, three internal hemorrhoidal nodes are formed, located above the dentate line at 3, 7, 11 o'clock of the conventional dial (in the supine position), which corresponds to the distal sections of the three main branches of the superior rectal artery [9]. Acute and chronic hemorrhoids are also distinguished. The majority of surgeons in the world use J. Goligher's classification (1980) to choose a method of treatment for internal hemorrhoids. The main symptoms of the disease are bleeding, pain and discomfort in the anus, prolapse of hemorrhoids during physical exertion or during the act of defecation, the presence of mucous secretions on underwear, itching in the anus and the feeling of an incomplete act of defecation [4]. For many years, the "gold standard" for the treatment of chronic hemorrhoids was the Milligan-Morgan hemorrhoidectomy. However, this operation is very traumatic and requires a long period of rehabilitation, the use of analgesics and antibiotics in the postoperative period and

is characterized by a high frequency of complications and recurrence [12]. Not so long ago, a new minimally invasive method of surgical treatment of chronic hemorrhoids – Rafaelo radiofrequency ablation (RFA) of hemorrhoidal nodes – was introduced into global proctological practice [10]. The therapeutic effect is achieved thanks to the thermal energy that occurs during radio frequency radiation. This treatment method is characterized by a short rehabilitation period, does not require the use of analgesics and antibiotics in the postoperative period, has a minimal number of complications and recurrence, and can be used for the treatment of all degrees of hemorrhoids (I – IV) according to the J. Goligher classification [11]. We present an analysis of our experience with the Rafaelo technique of radiofrequency ablation of hemorrhoids.

The purpose of the study was to compare the effectiveness of the Rafaelo method of the hemorrhoidal nodes surgery and the Milligan-Morgan hemorrhoidectomy for the treatment of internal chronic hemorrhoids of all degrees (I–IV) according to the classification of J. Goligher and to determine the priority method of surgical treatment of chronic hemorrhoids.

Materials and methods. The analysis was carried out among 135 patients, who were divided into 2 groups: 75 patients operated for internal hemorrhoids grade II–IV. according to the classification of J. Goligher with the help of Rafaelo RFA of hemorrhoidal nodes and 60 – by the Milligan-Morgan method of hemorrhoidectomy in the period from September 2019 to December 2021. on the basis of Poltava "2-nd City Clinical Hospital" and Poltava "3-d City Clinical Hospital" The data set included gender, age, body mass index of patients; impact of hemorrhoid symptoms on patients' quality of life (QoL); assessment of the severity of hemorrhoids (HSS); visual analog pain scale (VAS) on the 1st, 3rd day and 2 weeks after surgery. The patients in the groups were representative in terms of clinical manifestations, gender and age.

Exclusion criteria: pregnant women, patients with a pacemaker, oncological diseases, Crohn's disease, ulcerative colitis, anal fissure, and the presence of external hemorrhoids.

The first group included 75 patients, whose mean age was 45.04±11.37 years (in the range of 27–72 years). There were 47 (63 %) men and 28 (37 %) women among the examined. The average value of BMI among patients of this group was 26.3±6.9.

The second group included 60 patients, whose mean age was 46.95±12.88 years (in the range of 28–74 years). There were 31 (52 %) men and 29 (48 %) women among the examined. The average value of BMI is 26.88±6.68.

All patients underwent surgical treatment under spinal anesthesia. Patients of the first group of the study were operated on by Rafaelo RFA method of hemorrhoidal nodes surgery. The following equipment was used for the operation: the EVRF radio frequency module and the corresponding electrode HPR45i (F-care systems Antwerp, Belgium; diameter 1.9 mm, length 200 mm and length of the metal tip 50 mm), which was designed specifically for this procedure and emits RF energy with a frequency of 4 MHz in relation to hemorrhoidal nodes; anoscope; Emmett's tweezers; local anesthetic (10 ml of 0.5 % bipuvacaine hydrochloride); sterile physiological solution; Sterican needles; gauze swabs soaked in cold water. The patient was in the lithotomy position on the operating table. 10 ml of bipuvacaine hydrochloride 0.5 % was infiltrated as a perianal blockade for 3, 7 or 11 hours of the anal canal. Anoscopy was performed. An anoscope was inserted into the anal canal and hemorrhoidal nodes were identified 1.5 cm above the dentate line. Using a Sterican syringe and needle, 1–2 ml of sterile saline was injected to create a liquid layer between the hemorrhoidal node and the anal sphincter muscles. The HPR45i probe was inserted into the hemorrhoidal node, followed by its withdrawal from the muscle. A pedal was pressed, which activated the supply of continuous RF energy. The recommended amount of energy per location is 1200–3000 J. The change in the color of the hemorrhoid tissue to whitish is a sign of effective coagulation. In order to avoid anal stenosis, a sufficient number of bridges of mucous tissue were left between the treatment areas. Coagulation at the level of the anoderm should be avoided, as it can be accompanied by severe postoperative pain and cause thermal damage to the muscles of the anal sphincter.

Hemorrhoidectomy according to Milligan-Morgan was performed under spinal anesthesia. The patient underwent sphincter divulsion. The hemorrhoidal node was fixed with a window clamp. A Billrot clamp was applied to the base of the node. The vascular pedicle was sutured with catgut and bandaged. The hemorrhoidal node was cut off above the Billroth clamp, the clamp was removed and hemostasis was assessed.

Results of the study were statistically processed by using the Microsoft Excel package and Statistika 6.0. package with the calculation of the student's criterion. Specificity, sensitivity and accuracy of the study were calculated using generally accepted formulas.

Results of the study and their discussion. The preoperative examination algorithm was standardized and included digital rectal examination, anoscopy, general clinical examinations and additional consultation of other specialists.

To determine the degree of chronic hemorrhoids, the classification of J. Goligher (1980) was used. Among the first group of the study, which included 75 patients operated on by the Rafaelo RFA method, according to the classification, hemorrhoids of the II stage were in 30 (40 %) patients; hemorrhoids of the III stage – 28 (37 %); hemorrhoids of the IV stage – 17 (23 %). The main complaints of the patients were: falling out of the node during the act of defecation – 35 patients (47 %); falling out of the node during physical exertion – 30 (40 %); appearance of blood in the anus – 58 (77 %); feeling of pain in the anus – 60 (80 %); feeling of an incomplete act of defecation – 21 (28 %); the presence of mucous secretions on underwear – 29 (39 %); itching – 50 (67 %).

Among the second studied group, where 60 patients underwent classic Milligan-Morgan hemorrhoidectomy, according to the classification hemorrhoids of the II stage were in 25 (42 %) of patients; hemorrhoids of the III stage – 20 (33 %); hemorrhoids of the IV stage – 15 (25 %). The main complaints among the examinees of this group were: falling out of the node during the act of defecation – 30 patients (50 %); falling out of the node during physical exertion – 40 (67 %); appearance of blood in the anus – 49 (82 %); feeling of pain in the anus – 50 (83 %); feeling of an incomplete act of defecation – 30 (50 %); the presence of mucous secretions on underwear – 28 (47 %); itching – 39 (65 %).

Since all patients of both studied groups underwent surgical treatment under spinal anesthesia, before the operation, the anesthesiologist assessed the patient's physical condition according to the ASA. According to this classification, among the first group 40 patients (53 %) were ASA-I; ASA-II – 25 patients (33 %); ASA-III – 10 (14 %). The second group included ASA-I – 35 (58 %) patients; ASA-II – 15 (25 %); ASA-III – 10 (17 %).

To investigate the efficacy of surgical treatment of chronic hemorrhoids, the severity of hemorrhoidal symptoms (HSS) was assessed for both study groups 2–3 weeks before surgery and 6–8 weeks after surgical treatment and given a comparative characteristic. In the survey, 0 points were “not bothered by the symptom”; 3 points – “occurred constantly”. The results of the study for the first group 2–3 weeks before the operation were: pain – 1.56±1.04; itching – 1.53±1.27; bleeding – 1.84±1.19; mucous discharge – 0.81±1.12; falling out of the node during the act of defecation – 0.94±1.13.

After Rafaelo RFA surgery of hemorrhoidal nodes, the indicators improved significantly in 6–8 weeks: pain – 0.12±0.5; itching – 0; bleeding – 0.08±0.36; mucous discharge – 0.04±0.26; falling out of the node during the act of defecation – 0.05±0.28.

For the second research group, the results 2–3 weeks before the Milligan-Morgan hemorrhoidectomy were: pain – 1.8±0.5; itching – 1.2±1.08; bleeding – 1.7±1.11; mucous discharge – 0.9±1.16; falling out of the node during the act of defecation – 1.27±1.19. After 6–8 weeks after the operation, the indicators for this study group had the following data: pain – 0.7±0.1; itching – 0.23±0.7; bleeding – 0.2±0.61; mucous discharge – 0.15±0.06; falling out of the node during the act of defecation – 0.1±0.48. It should be noted that the indices of severity of symptoms 6–8 weeks after surgery are significantly lower after RFA, compared to the values after hemorrhoidectomy according to Milligan-Morgan. A visual comparison of the results of the investigated methods of surgical treatment of chronic hemorrhoids are shown in fig. 1. Statistical significance is at $p \leq 0.05$.

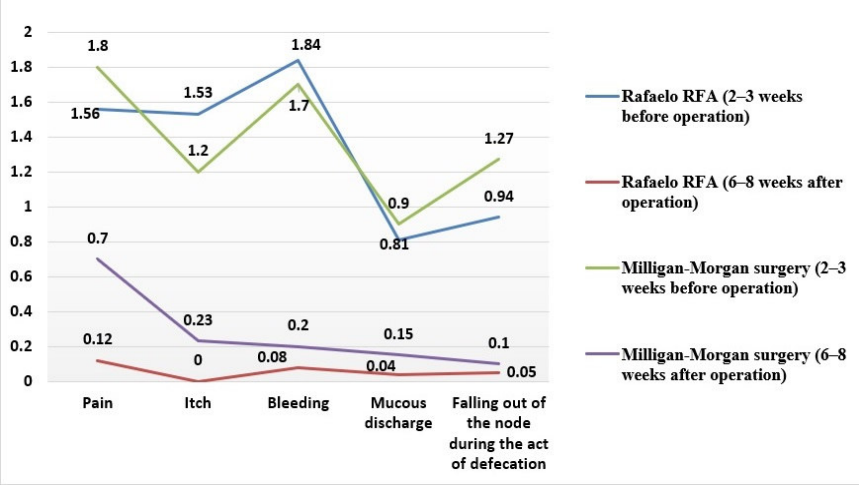

Fig. 1. Comparative characteristics of the symptoms of the severity of hemorrhoids

Before operative treatment by the Rafaelo method for the first study group and Milligan-Morgan hemorrhoidectomy for the second, a survey was conducted on the impact of symptoms on patients' quality of life (QoL) 2 to 3 weeks before surgery and 6 to 8 weeks after operative treatment. During the survey, 0 points was no effect of symptoms, 10 points – symptoms occur every day and significantly affect the quality of life. For the first studied group, 2–3 weeks before the operation, the medium QoL score was 7.43±2.35;

6–8 weeks after surgical treatment – 0.36±0.85. For the second research group, the score was 7.5±1.12 before and 2.43±1.12 after the operation. The results of this survey are shown in fig. 2. Statistical significance is at p≤0.05.

The expression of pain syndrome in the postoperative period at 1st, 3rd postoperative day and 2 months after the surgery was studied using a visual analog scale (VAS). The scale is a segment of 10 cm, where 0 is "no pain" and "10" is unbearable pain. According to the results of the survey, the first group of the study, where patients were operated on by the Rafaelo RFA method, had the following values: 1st day after surgery – 3.96±0.95, 3rd day – 1.51±0.6 and 2 weeks after surgery – 0.12±0.5. For the second studied group, the results were significantly higher: 1st day after surgery – 8.6±1.26, 3rd day – 6.17±1.22, and 2 weeks after surgery – 2.25±1.24. The analysis of the survey of patients according to this scale for both studied groups and their comparison are shown in fig. 3. Statistical significance is at p≤0.05.

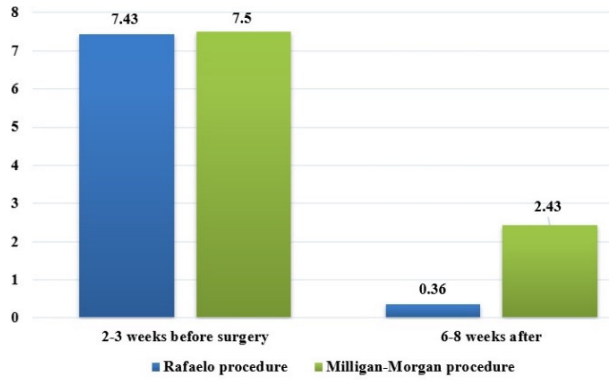

Fig. 2. Comparison of survey results on the impact of symptoms on patients' quality of life (QoL)

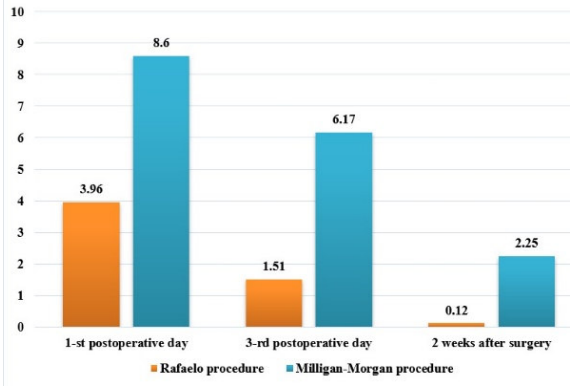

Fig. 3. Comparing of the results of postoperative pain in the groups

In the first studied group (n = 75), where patients were operated by the RFA method, cases of postoperative pain that did not require the administration of analgesics were recorded in 5 patients (7 %). A late postoperative complication among this study group included mucous discharge from the anus, which was recorded in 10 patients (13 %), which continued for 10–14 days after surgery and did not require additional therapy.

Table 1

Characteristics of early postoperative complications for operated patients for both study groups

Complications	First group (n=75)	Second group (n=60)
Postoperative bleeding	0	25 (42 %)
Hematoma of the anal canal	0	2 (3 %)
Anal canal infiltrate	0	0
Urinary retention (for men)	1 (1 %)	3 (5 %)
Wound infection	0	0

The mean energy level used during Rafaelo RFA among the studied patients was 2165.3±431.23 J. None of the operated patients of the first group required the administration of antibiotics, analgesics or other medical drugs in the postoperative period.

All patients from the first study group were discharged on the 3rd day after surgery with a VAS pain score of 1.53±0.57. The average duration of follow-up of the treated patients was 4.64±2.23 months (in the range of 2–12 months).

After 2 months of observation, 3 patients (4 %) had a recurrence of internal hemorrhoids. Patients complained of bleeding in the anus, pain, and mucous discharge on underwear. Each of the patients associated the repeated development of this disease with a rapid increase in body weight, violation of hygienic and dietary norms. Symptoms were rated as less intense than previous symptoms prior to Rafaelo's treatment. During the re-examination, hemorrhoids of the 2nd stage were revealed. All agreed to repeat surgical treatment by RFA method.

In the second study group (n=60), all patients recorded a high level of postoperative pain and required additional prescription of analgesics (Dexketoprohen 50 mg once a day). All patients were prescribed antibiotic therapy (Ceftriaxone 1.0 gr. intravenous 2 times a day) for 3 days after surgery. The aseptic dressing was changed daily. 15 (25 %) patients complained of mucous secretions from the anus within 10–14 days after the operation, but additional therapy was not required.

Among the second group, 21 (35 %) patients were discharged on the 7th day after surgery with a VAS score of 5.25±0.85; 19 (32 %) patients were discharged on the 8th day with a VAS score of 4.8±1.11; 10 (17 %) patients – on 9th day with a VAS score of 3.7±0.82; 5 (8 %) patients – on the 10th day with a VAS scale of 3.4±0.89; 5 (8 %) patients – on the 11th day with a VAS score of 2.4±0.89.

2 months after the examination, 5 (8 %) cases of relapse were recorded among this group of patients. Patients complained of pain in the anus, bleeding, itching, and prolapse of hemorrhoidal nodes. Patients refused repeated surgical treatment of internal hemorrhoids by the Milligan-Morgan method.

Taking into account the obtained data, we can state that Rafaelo RFA of hemorrhoidal nodes is more effective and superior to Milligan-Morgan hemorrhoidectomy as a method of operative treatment of internal chronic hemorrhoids. This is evidenced by the short postoperative period (3 days in the first group in contrast to 8.25±1.24 in the second group). These data are correlated with information from literature sources [6, 9]. The Rafaelo technique is reliably associated with minimal postoperative pain, which does not require the prescription of analgesic drugs, as shown in literature [4, 5]. Also, the studied method has low levels of early and late postoperative complications and recurrences, because during further observation of the operated patients, the number of cases of recurrence of chronic hemorrhoids was significantly lower among the subjects of the first group and amounted to 4 % (3 patients), compared to the second group of the study, where the number of relapse cases was 8 % (5 patients) [7, 8]. Radiofrequency ablation has a short rehabilitation period, there is no need for additional antibiotic therapy, it is simple to perform, a reliable and safe method for surgeons, for the treatment of chronic hemorrhoids of various degrees of severity [3].

Conclusions

1. The quality of life of patients 6–8 weeks after surgery according to the QoL survey was significantly higher ($p \leq 0.02$) in patients operated on by the Rafaelo method, as it was 0.36±0.85 in the first study group, compared to the score of the second research group – 2.43±1.12.

2. The level of postoperative pain on the 1st day after the operation was significantly lower in the patients of the first group of the study, who were operated on by the RFA method, and was equal to 0.12±0.5 compared to the level of pain of the second group of the study – 8.6±1.26. The level of remote postoperative pain 2 weeks after the operation also shows the advantage of the RFA method, because in the first group of the study it was significantly lower – 0.12±0.5, as in the second group the pain level was 2.25±1.24.

3. After using the RFA method of Rafaelo hemorrhoidal nodes, a significantly lower number of early and late postoperative complications was observed.

4. The Raphael method allows you to abandon the routine prescription of analgesics and antibiotic therapy, which is impossible with the classic Milligan-Morgan method.

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