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A New Method of Surgical Treatment of Rectal Prolapse

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Abstract

For practical coloproctological, a method for the formation of rectopexy in rectal prolapse of II-III degree is proposed, the introduction of which is aimed at reducing the frequency of specific immediate and long-term postoperative complications, reducing the duration of the hospital stage of surgical treatment and improving the quality of life of patients. There was no development of hematomas among the operated patients, observation during the year showed no development of the adhesive process and scar deformation in the rectopexy zone.

Keywords: *rectum, prolapse, presacral fascia, relapse, mesh implant.*

INTRODUCTION

The invention relates to medicine, namely colorectal surgery, and can be used to treat rectal prolapse. All surgical interventions for this disease can be divided into 2 large groups: perineal and abdominal (transabdominal). Currently, transanal rectal resection, Delorme surgery and intraperitoneal rectopexy by Zernin-Kymmel are the most commonly used perineal operations [1, 2, 3].

The method of trans anal resection consists in the fact that the rectum is isolated by trans anal access and is lowered into the anal canal with excess. The excess is subsequently cut off. This method allows you to respect the prolapsed rectum, patients have reduced difficulties with stool, there is a more regular urge to defecate. Its disadvantage is that a

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second stage of surgical treatment is required, the occurrence of strictures of the reduced intestine, poor functional results [4].

The Delorme operation (corrugation) consists in the demucosation of the prolapsed rectum and circular corrugation of the muscular layer of the intestine. This method is easily tolerated by patients, allows the formation of a circular smooth muscle cuff from the muscular layer of the rectum. The function of anal retention is better than with transanal resection, but slightly, and allows resecting no more than 6 cm of the fallen intestine. Perineal surgery is advisable to use in elderly and senile people with severe concomitant diseases. Its disadvantage is the ability to resect no more than 6 cm of the protruding part of the intestine. In addition, the function of anal holding improves slightly [5].

The technique of intraperitoneal rectopexy by Zernin-Kummel is used in the presence of a solitary ulcer of the rectum due to the danger of perforation of the intestinal wall during sclerotherapy. When using this technique, it is possible to achieve reliable fixation of the rectum to the sacrum throughout the entire site. The technique consists in carrying out a low-median laparotomy, dissection of the parietal peritoneum in the area of the sacrum cape, mobilization of the rectum along the right lateral and posterior walls to the levator level, and thorough hemostasis. On the anterior surface of the sacrum, starting from the cape and grabbing the periosteum, 3-4 nylon sutures are applied. Starting from the lower seam, the rectum is fixed, the intestine is sewn behind the free front wall. The dissected parietal peritoneum is sutured above the intestine.

Transabdominal operations can be divided into 3 subgroups: 1) transabdominal fixing operations, 2) transabdominal operations with resection of the rectum and part of the colon, 3) combined operations. A common feature of transabdominal fixing methods of treatment is the strong fixation of the prolapsed intestine to the sacrum [6].

The method of trans peritoneal rectopexy, related to fixing operations, in the treatment of rectal prolapse, in which a semi-circular incision of the peritoneum is made to the right of the rectum with a transition to its anterior wall, the posterior wall, the right lateral and anterior walls are mobilized to the elevators, the stretched rectum is fixed with sutures to the periosteum of the sacrum behind the anterior wall of the intestine with a turn of the latter to 180° and restore the pelvic peritoneum [7]. The disadvantages of methods of Trans peritoneal fixation is the possibility of a relapse of the disease due to the lack of a strong fixation of the intestine.

Currently, the most common surgical interventions for rectal prolapse are anterior loop rectopexy (Ripstein operation) and posterior loop rectopexy (Wells operation) using allografts (prolene, Teflon mesh, etc.) as a fixing material.

Posterior loop rectopexy using allografts is currently the main surgical intervention for rectal prolapse. There is a method of transabdominal posterior loop rectopexy to the sacrum using a synthetic mesh as an allograft, proposed in 1959 by E.H. Wells [8]. So, with a known method of such an operation, a lower-median laparotomy is performed, the pelvic peritoneum is dissected, the rectum is mobilized to the middle rectal vessels, the allograft is fixed to the sacrum in the promontory area with four sutures, the mobilized intestine is stretched and fixed to the allograft along the anterior surface with 4-6 sutures. It gives a relatively small percentage of relapses (2-8%) and does not lead to increased constipation, because the anterior semicircle of the rectum remains free and its narrowing does not occur.

MATERIALS AND METHODS

The disadvantage of this method of surgery is the need to perform median laparotomy, which leads to significant surgical trauma, a long period of postoperative rehabilitation.

In addition, four-fold stitching of the sacral fascia during allograft fixation can lead to damage to the sacral veins and the development of massive bleeding. The presence of a scar on the anterior abdominal wall, especially in young people, has a clear cosmetic disadvantage. When using Ripstein synthetic mesh as an allograft, constipation increases due to possible narrowing of the rectum during fixation [9, 10].

From patent sources, a "Method of surgical treatment of rectal prolapse in elderly and senile persons" is known [11], including rectal resection, characterized in that the rectum with the distal third of the sigmoid colon after mobilization from the dentate line is lowered into the anal canal, the intestine is crossed at the level of the sigmorectal junction, after resection of the rectum is separated the muscular layer of the sigmoid colon with the excess mucosa remaining, a muscle flap is cut out on the leg and circularly fixed to the proximal part of the intestine, forming a smooth muscle cuff, a sigmoanal anastomosis is formed with the excess mucosa remaining, the excess mucosa is cut off on the third day. The method allows to reduce the bed-day and improve the functional results of surgical treatment of rectal prolapse in elderly and senile people. However, in our opinion, this method eliminates only the excess of the protruding part of the rectum and does not take into account the functional state of the external sphincter of the rectum.

Also known is "A method of treating rectal prolapse and a device for its implementation" [12]. The method involves fixing the allograft to the sacrum and to the intestine and differs in that the fixation of the allograft to the sacrum is performed by screwing a self-tapping retainer with slot grooves, carried out using a guide tube with a socket screwdriver and with an internal retaining rod connected by thread to a self-tapping retainer. This method makes it possible to achieve reliable fixation of the graft to the sacrum while reducing the traumatic nature of the operation and preventing the possibility of bleeding from the sacral veins. However, with this method, laparotomy is necessary, which increases the traumatic nature of the operation, as a result, the average bed-day of hospital stay, as well as the risk of intraoperative bleeding from the sacral veins.

A "method of surgical treatment of rectal prolapse" is known [13]. The method consists in the mobilization of the rectum along the anterior and posterior semicircle to the pelvic floor, with the preservation of the lateral rectal ligaments, after which two separate nodular sutures with a non-absorbable thread on an atraumatic needle are made, an allograft flap measuring 4 × 12 cm is fixed for the middle part, the rectum is pulled up and free "wings" allografts are fixed with nodular sutures to the side walls of the stretched rectum , characterized in that, that a semi-circular suture is subsequently applied to the edge of the pelvic peritoneum along the right semicircle of the rectum with the inclusion of a free right wing fixed to the rectum, a mesh allograft, which, when the suture is tightened, leads to corrugation and lifting of the pelvic peritoneum, then a semi-circular suture is similarly applied along the right semicircle of the rectum. The method allows to treat rectal prolapse, however, with this method there is a risk of complications from the allograft, followed by a recurrence of rectal prolapse.

Thus, the task is to reduce the risk of complications of surgery, improve hemostasis, and also prevent the development of adhesions and scar deformation of the rectopexy zone.

The task was solved by a method of surgical treatment of rectal prolapse, including laparotomy, dissection of the pelvic peritoneum, isolation of the rectum to the pelvic floor, implantation of a polypropylene mesh to the presacral fascia in the promontory area, rectopexy to the mesh by wrapping it around the rectum at 270° with fixation of the edges with sutures, characterized in that before implantation of a polypropylene mesh to the presacral fascia is exposed to the presacral region with a diode laser with a wavelength of 1630 nm, with a power of 7 watts in the scanning mode, at the same time, every 0.5 cm2 is irradiated for 2 seconds, after implantation of the mesh, Xemoben powder is applied to it at the rate of 60 mg per 10 cm2 of the surface.

The use of laser technologies makes it possible to achieve stable hemostasis, and the use of Xemoben composite powder, which polymerizes in tissues also contributes to persistent hemostasis, and, in addition, prevents the development of adhesions and scar deformation of the rectopexy zone.

To implement the described method, a domestic bioabsorbable surgical hemostatic agent was used from a composite polymer material from cotton cellulose derivatives "HEMOBEN", developed at the Republican specialized scientific and practical medical center of surgery named after academician V.Vakhidov", for which the patent "Bioabsorbable surgical hemostatic agent" of the Intellectual Property Agency of the Republic of Uzbekistan was obtained (IAP 05906 dated 04/24/2015). Local production and low price of the drug ensures its availability for medical and preventive institutions and for a wide segment of the population.

Hemostatic agent "HEMOBEN" has the ability to quickly stop bleeding, high biocompatibility, easily decomposes and has a positive effect on wound healing, speeding up the healing and recovery process.

The method uses a Mediola Compact diode laser - a two-wave and single-wave laser surgical system for equipping private clinics, polyclinics and short-stay hospitals of multidisciplinary hospitals.

RESULTS AND DISCUSSIONS

Laparotomy was performed under endotracheal anesthesia. The pelvic peritoneum is dissected, the rectum is isolated to the pelvic floor, the presacral region is treated with a Mediola Compact diode laser with a wavelength of 1630 nm, with a power of 7 watts in scanning mode, while every 0.5 cm2 is irradiated for 2 seconds. Implantation (fixation) of polypropylene mesh sutures to the presacral fascia in the promontory area is performed. Xemoben powder is applied to the mesh at the rate of 60 mg per 10 cm2 surface. Rectopexy to the mesh by wrapping the latter around the rectum at 270o with fixing the edges with sutures. Layered suturing of the wound.

An example of execution to illustrate the claimed method.

Patient M., 27 years old, was admitted with complaints of rectal prolapse during the act of defecation and during physical exertion. He has been suffering from the disease for 3 years. The disease is associated with constant constipation from childhood and childbirth. After conducting clinical, laboratory and instrumental studies, the patient was diagnosed with "Rectal prolapse of the II degree".

The operation was performed using the method developed by us:

Laparotomy was performed under endotracheal anesthesia. The pelvic peritoneum was dissected, the rectum was isolated to the pelvic floor, the presacral region was treated with a Mediola Compact diode laser with a wavelength of 1630 nm, with a power of 7 watts in scanning mode, while every 0.5 cm2 was irradiated for 2 seconds. Implantation (fixation) was performed with polypropylene mesh sutures measuring 3.0 x 12.0 cm to the presacral fascia in the promontory area. Xemoben powder was applied to the mesh at the rate of 60 mg per 10 cm2 of the surface (a total of 216 mg). Rectopexy to the mesh by wrapping the latter around the rectum at 270o with fixing the edges with sutures. Layered suturing of the wound.

The postoperative period proceeded without complications. She was discharged on the 7th day after the operation in a satisfactory condition. There is no data for relapse within 12 months (Fig. 1-6).

Fig. 1. Patient M., 27 years old. Rectal prolapse of the II degree.

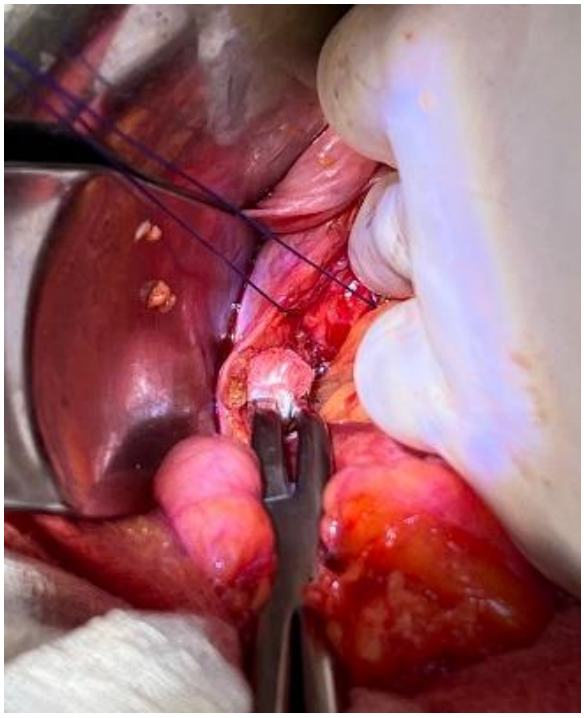

Fig. 2. Under the mesentery of the rectum, the retroperitoneal space is opened by 4-5 cm and 2 stitches are applied to the promontory (monophile 1.0)

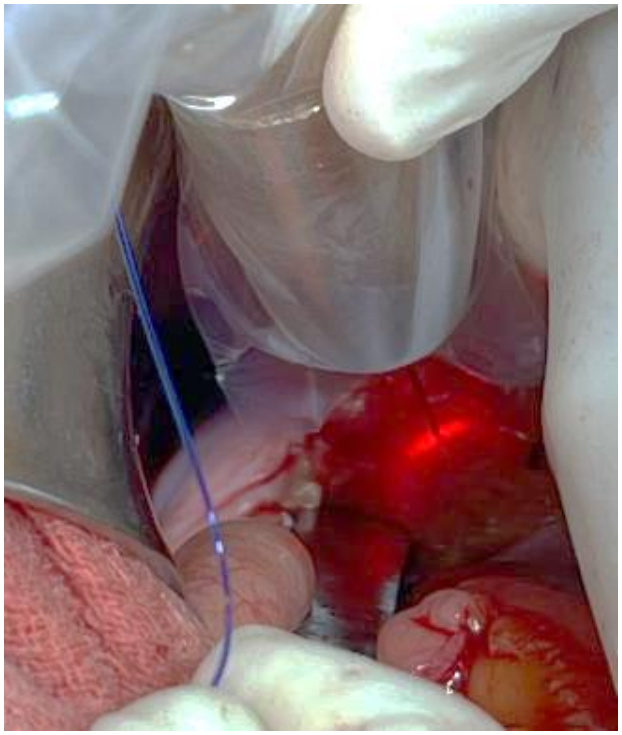

Fig. 3. Mediola Compact diode laser treatment of the presacral region

Fig. 4. Polypropylene mesh 3x10 cm in size is attached to the promontory from the middle

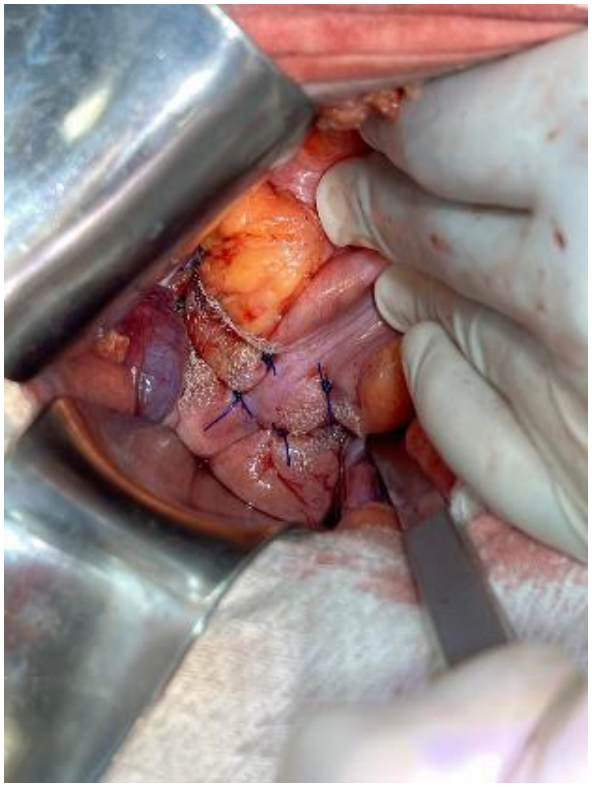

Fig. 5. Fixing the mesh to the anterior and lateral walls of the sigmoid colon with 2-3 sutures

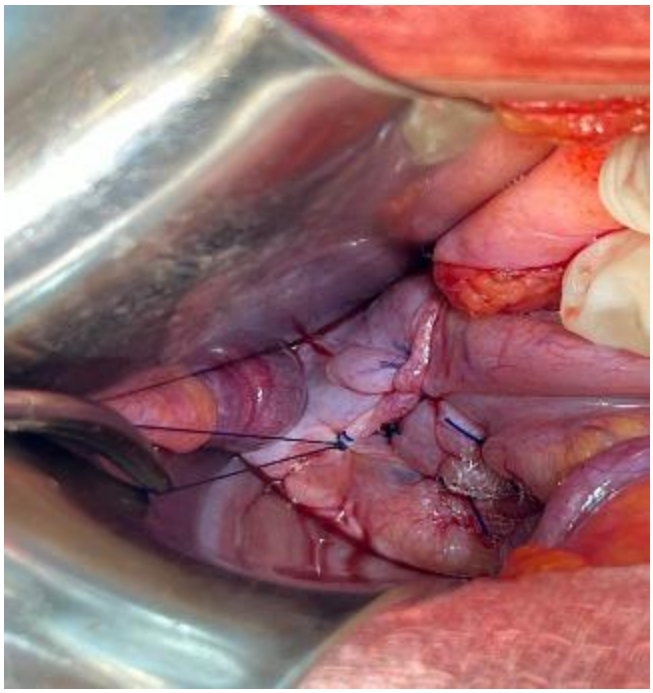

Fig. 6. The pelvic peritoneum is sutured on both sides from above the mesh

A total of 49 such operations have been performed to date. There was no development of hematomas among the operated patients, observation during the year showed no development of the adhesive process and scar deformation of the rectopexy zone. That is, the task has been completely solved in the declared way.

For this method, an invention patent was obtained from the Ministry of Justice of the Republic of Uzbekistan No. IAP 07259 "Method of surgical treatment of rectal prolapse"

(Sadykov R.A., Babadjanov A.Kh., Rustamov A.E., Eshmurodova D.B., Nishanov M.F.) dated December 30, 2022.

Thus, the proposed method of surgical treatment of rectal prolapse of the II-III degree includes rectopexy, supplemented by the use of a mesh implant coated with a composite Xemoben powder, which polymerizes to form a coating that, together with the effect of laser exposure to the presacral region, provides persistent hemostasis and prevention of the development of adhesions and scar deformation in the rectopexy zone.

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