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Anatomical and functional outcomes of surgical treatment of rectocele with internal rectal intussusception

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ABSTRACT *AIM: to estimate anatomical and functional outcomes of surgical treatment for rectocele combined with rectal intussusception.*

PATIENTS AND METHODS: the retrospective study included 96 patients with rectocele with internal rectal intussusception. The median age was 52 (21; 79) years. Laparoscopic rectocolposacropexy was performed in 59/96 (61%) patients with rectocele combined with high internal rectal intussusception, and Longo's procedure was performed in 37/96 (39%) women with rectocele and low internal rectal intussusception.

RESULTS: late outcomes were estimated in 71/96 (74%) patients. The median follow up was 16 (6; 72) months. No complications occurred after laparoscopic rectocolposacropexy. Two (5%) patients had bowel movements up to 8–10 times a day after Longo procedure right after the surgery. After 2 months, bowel movements decreased to 2–3 times a day. Normal residual volume of the rectum after the Longo procedure was detected in 16/37 patients, while laparoscopic rectocolposacropexy did not affect it ($p = 0.01$). The median rectocele size after surgery in both groups decreased from 5.0 cm to 2.7 cm ($p < 0.0001$). High rectal intussusception persisted in 20/59 (34%) patients after rectocolposacropexy, low intussusception — in 15/37 (40%) after Longo procedure. According to the original scale-questionnaire, a decrease in the manifestations of SOD was noted in 20/31 (65%) patients after Longo procedure and in 14/40 (35%) patients after rectocolposacropexy ($p = 0.018$). Improvement in the quality of life (PFDI questionnaire) after the surgery was registered in both groups without significant differences ($p = 0.2$). The severity of the effect was 22 (6–48) points ($p < 0.0001$).

CONCLUSION: surgery for complex rectocele, regardless of the operation, does not always provide complete anatomical correction of the defects of the rectum. Laparoscopic rectocolposacropexy is inferior to the Longo procedure in functional outcomes.

KEYWORDS: *rectocele, internal invagination, rectocolposacropexy, Longo procedure*

CONFLICT OF INTEREST: *The authors declare no conflict of interest*

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INTRODUCTION

Rectocele is the most common manifestation of pelvic floor prolapse syndrome (PFPS). According to the literature, the rate of its detection during preventive examinations of middle-aged and elderly women ranges from 15% to 80% [1–3]. In most cases, an X-ray reveals a complex of anatomical defects when, along with the rectocele, there are signs of internal rectal intussusception [4,5]. According to its localization, intussusception is divided into high recto-rectal (invaginate falls no lower than the proximal border of the rectocele) and low recto-rectal (invaginate is at the rectocele level) or recto-anal (displacement of the intestinal walls reaches the anal canal or is embedded in it) [6]. Clinically, these conditions are manifested by problems with evacuation of feces with the obstructive defecation syndrome (SOD). Difficulty in emptying occurs due to a change in the direction vector of fecal masses

towards a pathological 'pocket' on the anterior rectal wall (rectocele), as well as a result of the folds of the mucous layer or invaginate formed during internal prolapse [7–10,11].

Laparoscopic rectocolposacropexy is used for surgical correction of rectocele in combination with high internal rectal intussusception [12]. In cases where rectocele is combined with low rectal intussusception, transanal proctoplasty (Longo's procedure) is performed [9].

THE AIM OF THE STUDY

To assess the anatomical and functional results of surgical correction of the rectocele in combination with internal rectal intussusception.

PATIENTS AND METHODS

The retrospective analysis included 96 patients with rectocele in combination with rectal intussusception operated on between January 2015 and December 2019. The median age of patients was 52 (21;79) years. Complaints of incomplete rectal emptying were made by 91 (95%) of 96 patients, and 74 (77%) women required manual drainage to empty the rectum. During X-ray defecography, 59/96 (61%) patients, along with rectocele, showed signs of high internal rectal intussusception, 37/96 (39%) patients showed signs of low rectal intussusception (Fig. 1,2).

Laparoscopic rectocolposacropexy was performed in 59 patients with rectocele in combination with high internal rectal intussusception.

The surgery consisted in mobilizing the rectum along the anterior and right lateral semicircles to the lateral ligament. Then the rectovaginal septum was split to the anal sphincter. The synthetic implant was sewn to the mobilized anterior rectal wall and with several sutures — to the posterior formix. The free end of the mesh was attached to the sacral periosteum with endoscopic hernio-stapler'ProTack'. The surgery was completed by suturing the pelvic peritoneum. Correction of rectocele and low internal rectal intussusception in 37 patients was performed using transanalproctoplasty by A. Longo. With a anoscope inserted into the rectum, two or three mucomuscular semicircular sutures were applied to its anterior semicircle (vicril 00 on needle 5/8). The number of sutures was determined by the size of the prolapsing segment of the rectal wall. The first suture was applied 2–3 cm above the dentate line, the other sutures were 1.5–2.0 cm proximal to the previous one. The working part of the circular stapler PPH-01 with the maximum extended head was inserted into the rectum. The sutures tightening the rectal wall

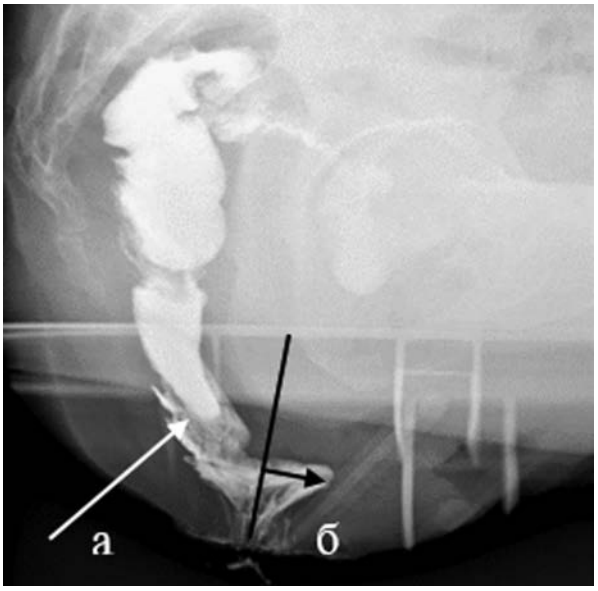


Figure 1. *Defecogram. High internal invagination of the rectum (a), rectocele (b)*

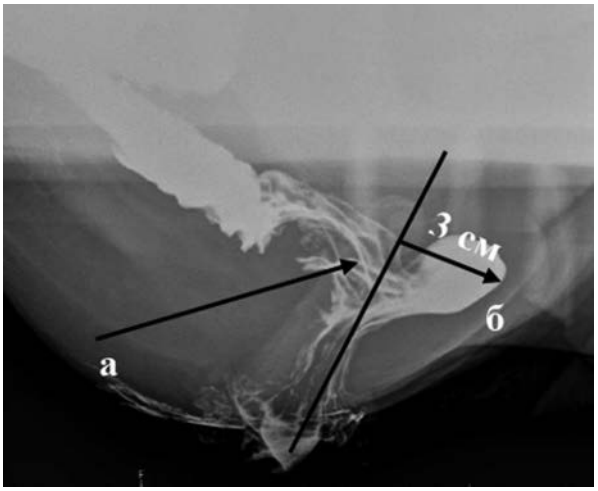


Figure 2. *Defecogram. Low internal invagination of the rectum (a), rectocele (b)*

were tied on the rod of the device, and the head was closed with the main part. When pressing the handle of the device, a section of the rectal wall involved in the device was resected with the double-row staple suture. In the same way, the intestinal wall was resected along the posterior semicircle with 1–2 semi-stitches.

A subjective assessment of the signs of obstructive defecation syndrome (SOD) after surgery was carried out using an original scale questionnaire [13]. The quality of life of the patients was assessed using the PFDI (Pelvic Floor Distress Inventory) questionnaire [14].

Statistical analysis

All continuous values, as well as qualitative ordinal ones, were presented in the form of median, lower and upper quartiles in the form of Me (Q1; Q3). Independent groups were compared by the Mann-Whitney U-test, dependent groups by the Wilcoxon T-test. The comparison of nominal qualitative values was carried out using a two-way exact Fisher'stest. The null hypothesis was rejected if the error of the first kind was less than 5%.

The analysis was performed using the Statisticav.13.3 program (Tibco, USA) and RStudio (v.4.4.1 (RCoreTeam, Vienna, Austria)) using the gtsummary library.

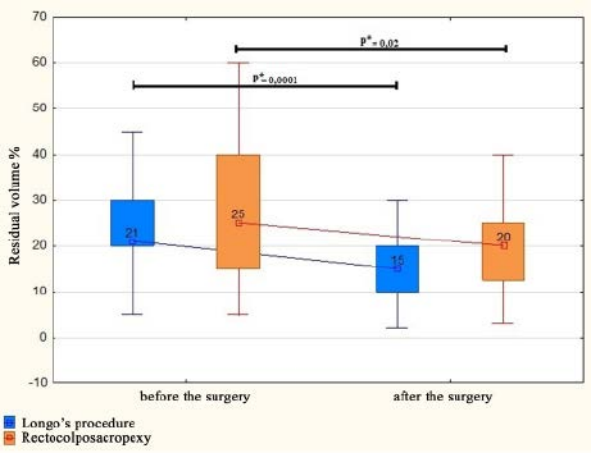
RESULTS

No postoperative morbidity developed after laparoscopic rectocolposacropexy.

After Longo's procedure, complications developed in 2 (5%) patients. They consisted in frequent emptying of the rectum (up to 8–10 times a day), resulting from a decrease in the volume of the rectum after its transanal resection. No special measures were required to treat these complications. In 2 months after the surgery, intestinal function was adapted, and the frequency of emptying decreased to 2–3 times a day. Late results of surgical treatment of rectocele in combination with intussusception were assessed in 71 (74%) of 96 patients. The follow-up period ranged from 6 to 72 months, with a median of 16.

According to the control defecography, a significant decrease in the residual volume of the rectum compared with the preoperative period was noted both in patients who had undergone Longo's procedure ($p = 0.0001$) and in those who had undergone laparoscopic rectocolposacropexy ($p = 0.02$) (Fig. 3).

However, changes in residual volume indicators to normal values were significantly more frequent after Longo's procedure than after rectocolposacropexy (Fig. 4).



** Wilcoxon's T-test*

Figure 3. *Range diagram of residual volume of contrast agent according to defecography data before and after surgery in patients with complex rectocele*

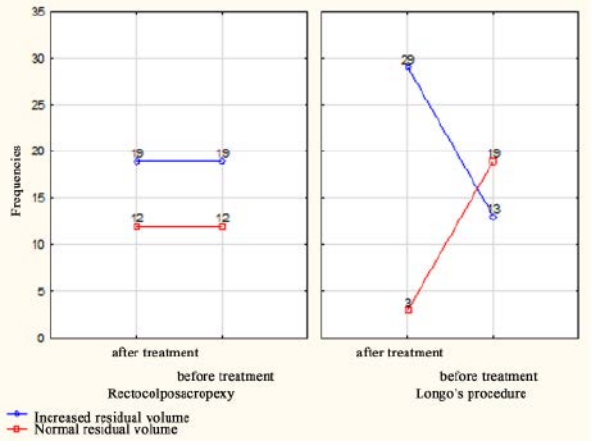


Figure 4. *Indicators of normalization of residual volume after laparoscopic rectocolposacropexy and Longo operation according to defecography data*

Table 1. *Changes in the evacuation function of the rectum in the postoperative period in patients with rectocele in combination with internal invagination depending on the nature of the surgical intervention*

Characteristic	Rectocele + internal intussusception of the rectum, N = 71		*p*
	Recto (colpo)sacropexy N = 40	Longo's procedure N = 31	
Improvement	14 (35%)	20 (65%)	0.018
Without changes	18 (45%)	11 (35%)	0.47
Deterioration	8 (20%)	0	0.008

As can be seen from the picture, rectocolposacropexy had no effect on the residual volume of the rectum in this category of patients ($p = 1.0$). At the same time, after Longo's procedure, there was a significant decrease in the number of patients with increased residual volume and, accordingly, a greater number of them with normal residual volume ($p < 0.01$).

Such differences can be explained by the fact that the fixation of the implant in the rectovaginal septum, performed during rectocolposacropexy, does not significantly affect the size of the rectal ampoule. At the same time, its transanal resection (Longo's procedure) significantly reduces the size of the rectum and, accordingly, the residual volume of the rectum.

According to defecography, the median rectocele size after surgical treatment in both groups decreased from 5.0 cm to 2.7 cm ($p < 0.0001$).

Control defecography showed that the phenomena of high intussusception persisted after surgery in 20/59 (34%) patients after rectocolposacropexy, and in 15/37 (40%) ladies who had undergone Longo's procedure, there were signs of low rectal intussusception (Fig. 5,6).

According to the results of a subjective assessment of obstructive defecation syndrome using the original scale, significant differences were obtained between the severity of obstructive defecation syndrome before surgery and after surgical treatment: 11 (3;17) points versus 7 (0;15) points, respectively ($p = 0.00003$).

In an individual analysis of the severity of SOD after surgery, the results were evaluated as

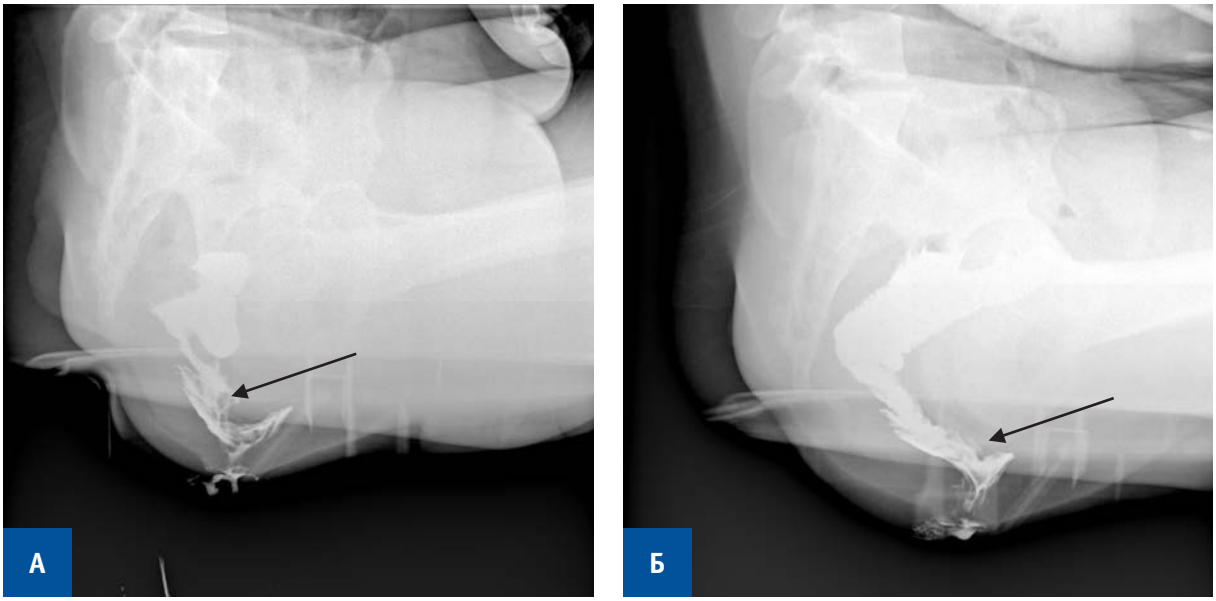


Figure 5. *Defecogram before surgery (A) — high internal invagination of the rectum (arrow). Defecogram 12 months after surgery (Б) — high internal invagination of the rectum (arrow)*

Table 2. *Indicators of changes in quality of life (according to the PFDI scale) in patients with complex rectocele depending on the type of surgical treatment*

Characteristic	Rectocele + internal intussusception of the rectum, N = 71		*p*
	Recto (colpo)sacropexy N = 40	Longo's procedure N = 31	
Improvement	28 (70%)	25 (81%)	0.2
No changes	1 (2%)	2 (6%)	0.1
Worsening	11 (28%)	4 (13%)	0.5

follows: 1) deviation from the initial indicator by 1–2 points — the condition remains unchanged; 2) decrease in the indicator by 3 or more points — improvement; 3) increase in the indicator by 3 or more points — deterioration of the condition.

The nature of changes in the evacuation function of the rectum after surgical correction of a complex rectocele is presented in Table 1.

Improvement of the evacuation function of the rectum after rectocolposacropexy was noted by 14/40 (35%) patients, after Longo's procedure — by 20/31 (65%) patients. Thus, according to a subjective assessment, a decrease in the manifestations of SOD was statistically significantly more often noted by patients who had undergone Longo's procedure (p = 0.018). The number of patients with indications showing the absence of significant changes in the functional state of the intestine was comparable – 18/40 (45%) and 11/31 (35%) (p = 0.47). However, 8/40 (20%) patients who had undergonerectocolposacropexy noted a deterioration in rectal emptying after surgery, whereas in those who had undergone Longo's procedure, there was no deterioration in the evacuation function of the rectum in any case (p = 0.008). It should be noted that in 8 patients who reported a deterioration in emptying after rectocolposacropexy, a change in rectal function occurred against the background of slowtransit constipation. Despite the use of ballast laxatives, they continued to be concerned about the absence or difficulty of emptying the rectum, the need to use manual aids or cleansing enemas, which indicated the predominance of a functional component in the violation of fecal evacuation. According to the survey data, an improvement in the quality of life (PFDI) was noted: a decrease in indicators after surgical treatment was recorded in both groups compared with the preoperative period — from 92 (79;99) to 65 (35;92) points, respectively. The severity of the effect of the treatment was 22 (6;48) points (p = 0.0001).

When comparing the quality of life in patients after rectocolposacropexy and Longo's procedure, improvement was noted in 28/40 (70%) and 25/31 (81%) women, respectively, and deterioration in 11/40 (28%) and 4/31 (13%) patients, respectively. However, there were no statistically significant differences between these groups of patients (Table 2).

CONCLUSION

Surgical treatment of rectocele in combination with internal intussusception of the rectum, regardless of the method of surgery, does not always provide complete correction of rectal defects, but only allows to achieve a decrease in the severity of existing anatomical disorders. Laparoscopic rectocolposacropexy, as the most recognized method of treating complex manifestations of PFPS, does not normalize the residual volume after emptying the rectum and is inferior to Longo's procedure in achieving a better functional result [12,15,16]. This approach to the treatment of patients with complex rectocele should be used in cases of high recto-rectal intussusception concomitant with rectocele, when the anatomical localization of

the defect does not allow correction in another way. In patients with rectocele combined with low intussusception, the best anatomical and functional effect can be achieved with Longo's procedure.

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