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Research Article

### THE ROLE OF APICAL SUPPORT AND RECTAL MUCOSAL PROLAPSE EXCISION IN SUCCESSFUL TREATMENT OF RECTOCELE COMBINED WITH PERINEUM DESCENDING: SHORT- TERM AND FOLLOW-UP RESULTS

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#### Abstract:

*Pelvic descending syndrome for the first time was described by A.G.Parks in 1966. But in our days the problem of its surgical treatment is not completely solved. Large number of complications and recurrence, unsatisfactory functional results forced surgeons to develop new surgical techniques. The aim of the research was to improve the results of surgery treatment of posterior compartment of pelvic floor using abdominal sacrocolpopexy and stapled transe-anal resection (STARR). 59 patients underwent abdominal sacrocolpopexy with synthetic mesh as apical support and in 52 patients this method was complementary with STARR. The post-operative outcomes were assessed in 6 months and in 2 years. The following diagnostic methods were used: POP-Q classification, defecography, anorectal functional tests with Polygraf ID device. The quantity of post-operative complications depended of mesh graft was few and didn't increase because of simultaneous STARR. Vaginal mesh erosion was in 2 (3.4%) patients underwent sacrocolpopexy and in 1 (1.9%) patient underwent sacrocolpopexy and simultaneous STARR, mesh contraction in 1 (1.9%) patient of the 2<sup>nd</sup> group, vaginal shrinkage in 1 (1.7%) patient of the 1<sup>st</sup> group, dyspareunia de novo was noted in 3 (5.1%) patients of the 1<sup>st</sup> group and in 2 (3.8%) patients of the 2<sup>nd</sup> group ( $p > 0.05$ ). With POP-Q classification stage 0 of rectocele was achieved in 22(38.9%) patients underwent sacrocolpopexy and in 25(48.1%) patients underwent sacrocolpopexy with simultaneous STARR. In the other patients of both groups stage 1 was diagnosed. Defecography showed the lifting of the perineum body in all patients of two groups without significant difference, but absolute figures were closer to normal value in the group underwent combined surgery: in the rest  $-3.7 \pm 0.5$  cm and  $-3.5 \pm 0.6$  cm, in the straining  $-5.9 \pm 0.6$  cm and  $-6.2 \pm 0.7$  cm in the 1<sup>st</sup> and 2<sup>nd</sup> groups accordingly. The anatomical normalization of posterior anorectal angle measurement rentgenologically was noted in both groups and didn't differ statistically on surgery methods. Rentgenological absence of rectal mucosal prolapse has been noted in 15 (25.4%) patients of the 1<sup>st</sup> group and in 47(90.4%) patients of the 2<sup>nd</sup> group ( $p > 0.05$ ). Voiding was better in the 2<sup>nd</sup> group patients. Voiding normalization noted 12(20.3%) and 15(28.8%) patients, voiding improvement 28(47.4%) and 30(57.7%) and didn't change in 19(32.2%) and in 7(13.4%) patients of the 1<sup>st</sup> and 2<sup>nd</sup> groups accordingly ( $p < 0.05$ ). But in spite of these we observed the constant worsening of the results over time. Abdominal sacrocolpopexy with surgical mesh demonstrated satisfactory anatomical results with low complications rate for rectocele reconstruction in patients with perineum descending, including incontinence improvement. Together with STARR procedure they became even better as revealed good functional results in respect to voiding normalization, as rectal mucosal prolapsed is incised simultaneously, which is not corrected by sacrocolpopexy along. In the end our experience showed that abdominal sacrocolpopexy combined with STARR is a safe enough procedure.*

**Keywords:** Rectocele, perineum descending, rectal mucosal prolapse, sacrocolpopexy, stapled transe-anal resection, constipation

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**INTRODUCTION:**

Pelvic descending syndrome for the first time was described by A.G. Parks in 1966 [1]. But in our days' pelvic floor pathology is still far from its solution. Pelvic organ prolapsed (POP) is a result of weakening or stretching of the supporting structures of the pelvic floor [2]. According to preventive examinations in Belgorod region, Russia, more than 50% of women older than 50 years have pelvic organ prolapse. To 50 years this percentage is somewhat lower and is about 20%. More than in half of them this pathology is combined, and 1 of 10 is needed surgical correction [3]. Because of the increased longevity of the population the spread of POP could increase over time [4, 5]. One of the most frequent manifestations of the disease is rectocele. Rectocele is often combined with perineum body descending and rectal mucosal prolapse which intensifies the symptoms of the disease [6, 7]. This pathology is not removed by the traditional surgical correction of rectocele [8]. Intra-abdominal sacrocolpopexy is one of the most effective procedures for apical support for POP correction and it widely used in gynecology practice [9]. But anatomical and functional results of sacrocolpopexy for surgical treatment of rectocele, especially combined with perineum descending haven't been studied enough.

**The aim of our research** was to improve the anatomical and functional results of surgery treatment of posterior compartment of pelvic floor, including rectocele, rectal mucosal prolapsed, perineum body descending, using abdominal sacrocolpopexy, as apical supporter, and STARR for rectal mucosal prolapse, to evaluate the possibility of combined usage of these both techniques, short-term and follow-up results.

**MATERIALS AND METHODS:**

The study was conducted at the Department of Surgery and Coloproctology of Belgorod State National Research University and Regional Clinical Hospital, Belgorod, Russia, from 2011 to 2016. Short-term results and follow-up results within 2 and 3-year period have been estimated. The following diagnostic procedures for prolapse were fulfilled:

dedicated questionnaire, digital rectal and vaginal examination, RRS (with straining according to Parks), defecography, ultrasound and magnetic resonance imaging. Prolapse stage was estimated using the Quantification System of Pelvic Organ Prolapse (POP-Q). 111 patients with combined pathology of posterior department of pelvic floor such as rectocele, perineum body descending, rectal mucosal prolapse were included in this research and were divided into 2 groups without randomization. 59 patients underwent intra-abdominal sacrocolpopexy and 52 patients underwent intra-abdominal sacrocolpopexy with simultaneous STARR procedure.

Sacrocolpopexy was performed by the following technique. The pelvic peritoneum was opened from the sacrum promontory toward the cul-de-sac and separated aside. Posterior vaginal wall was mobilized up to perineum. Sacrocolpopexy was performed using polypropylene surgical mesh. The strip of surgical mesh was placed between rectum anterior wall and vagina posterior wall and sutured to each of them; distal mesh part was placed into rectovaginal septum up to anal sphincter to repair rectocele and perineum level. The proximal part of mesh strip was fixed to sacral promontory. After fixation, the pelvic peritoneum over the mesh was closed in order to prevent its exposition into the abdominal cavity. STARR procedure was performed using disposable set PPH 002 («Ethicon Endosurgery») according to A. Longo method [5].

Surgery results was assessed using the following criteria: the severity of pain syndrome, the incidence of purulent complications, the incidence of erosions and granulomas, the dyspareunia de novo in distant follow-up period, the rectocele, perineum descending, rectal mucosal prolapse anatomical correction, voiding improvement, the recurrence frequency in the period of 6 months and follow-up over 2 and 3 years.

For purity of experiment all women had intact uteri, had no other kinds of surgery for prolapsed before, all were white race and the same according to the other demography criteria and prolapse stage III-IV was according POP-Q. Patient demographics and prolapse stage are shown in Table 1.

**Table 1:** Patient demographics and Pelvic Organ Prolapse stage (posterior compartment)

Parameter	Surgery	
	Sacrocolpopexy+STARR N=59	Sacrocolpopexy N=52
Mean age	58.9±8.9	59.6±9.1
Body Mass Index (kg/m <sup>2</sup> )	27.1±3.8	26.6±4.2
Mean parity	2.1±0.8	2.3±0.7
Menopausal	42 (71.2%)	38 (73.1%)
Estrogen therapy	15 (35.7%)	13 (34.2%)
Smoker	21 (35.6%)	18 (34.6%)
Co morbidity	39 (66.1%)	35 (67.3%)
Posterior segment prolapse stage (POP-Q)		
III	40 (67.8%)	35 (67.3%)
IV	19 (32.2%)	17 (32.4%)

P > 0.05 for all data

### RESULTS:

There were no significant intra surgery complications in both groups such as injuries of the sacral blood vessels, ureters, or rectum wall, described in the literature. Average blood loss was 235±21.4 ml in the sacrocolpopexy group and 246±25.6 ml in sacrocolpopexy with simultaneous STARR group (p>0.05). Median operative time was 85±10.6 min for sacrocolpopexy and 22±4.6 min for STARR. Simultaneous STARR didn't increase greatly postoperative pain syndrome, as most patients felt rectal discomfort only for a period of one postoperative day. No significant purulent complications were registered in the both groups. The only suppuration in the abdominal wall wound was

observed in the combined surgery group which was treated successfully by drainage and local antibacterial therapy. No purulent complications in the rectum were observed after STARR. The mesh-associated complications were at a low level which was not higher in the group with STARR additional usage. There was no need to remove mesh in any patient. Dyspareunia de novo in distant follow-up postoperative was recorded in 3(5.1%) patients of the 1<sup>st</sup> group and in 2 (3,8%) patients of the 2<sup>nd</sup> group. So it didn't depend on the additional STARR. In 1 patient it could be explained by excessive vaginal narrowing because of shrinkage, in other 2 patients with mesh erosions; in two more patients it was inexplicable (Table 2).

**Table 2: Mesh-related complications**

Parameter	Surgery procedure	
	Sacrocolpopexy N=59	Sacrocolpopexy+STARR N=52
Vaginal mesh erosion	2 (3.4%)	1 (1.9%)
Vaginal granulomas	1 (1.7%)	0
Mesh contraction	0	1 (1.9%)
Vaginal shrinkage	1 (1.7%)	0
Dispareunia de novo	3 (5.1%)	2 (3.8%)

P > 0.05 for all data

Anatomical results became better in all patients of two groups, especially in that underwent combined surgery. In the period over 6 months postoperatively according to POP-Q stage 0 appeared in 22(38.9%) patients underwent sacrocolpopexy and in 25(48.1%) patients underwent sacrocolpopexy with simultaneous STARR. ( $p < 0.05$ ). In other patients stage I was diagnosed. In 2-year follow-up period there was no relapse incidence, but in 8 patients of the 1<sup>st</sup> group and in 4 patients of the 2<sup>nd</sup> group stage 0 turned into stage I. After 3 years the results became a little worse: in 3 patients of the 1<sup>st</sup> group stage I transformed into the stage II, and in 2 patients stage 0 into the stage I. In the 2<sup>nd</sup> group the results were better: only in 1 patient stage 0 transformed into the

stage 1, and in 2 patient stage I transformed into the stage II.

Defecography data of perineum body level also improved after surgery in all patients of both groups, but its digital indicators were closer to normal values in the 2<sup>nd</sup> group. Rectal mucosal excessive disappeared in 15(25.4%) patients of the 1<sup>st</sup> group and in 47(90.4%) ( $p < 0.05$ ) patients of the 2<sup>nd</sup> group postoperatively; in 2 years its absence observed in 11(18.6%) и 44(84.6%), in 3 years 8(13.6%) and 42(80.7%) accordingly. The anatomical correction of posterior ano-rectal angle became closer to normal in both groups but didn't depend on kind of surgery performed in this study (Table 3).

**Table 3: Prolapse anatomical correction**

Parameter N=59	Surgery					
	Sacrocolpopexy N=52			Sacrocolpopexy+STARR		
	6 months	2 years	3 years	6 months	2 years	3 years
<u>Rectocele anatomical correction (according to POP-Q)</u>						
Stage 0	22 (38.9%)	14 (23.7%)	12 (20.3%)	25 (48.1%)	21 (40.4%)	20 (38.5%)
Stage I	37 (61.1%)	45 (76.3%)	44 (74.5%)	27 (51.9%)	31 (59.6%)	30 (57.7%)
Stage II	-	-	3 (5.2%)	-	-	2 (3.8%)
<u>Disappearance of mucosal prolapse</u>						
	15 (24.4%)	11 (18.6%)	8 (13.6%)	47 (90.4%)	44 (84.6%)	42 (80.7%)
<u>Perineum level (cm)</u>						
Rest	-3.7±0.5	-3.8±0.7	-4.1±0.9	-3.5±0.6	-3.7±0.5	-3.9±0.6
Straining	-5.9±0.6	-6.1±0.6	-6.3±0.7	-6.2±0.7	-6.4±0.5	-7.1±0.5
Before surgery	Rest 4.7±0.6	Straining - 9.2±0.8				
<u>Anorectal posterior angle (degrees)</u>						
Rest	109.5±6.5	111.7±7.1	112.8±6.9	107.7±7.3	113.2±6.9	113.9±7.9
Straining	151.3±6.4	153.4±6.7	147.3±5.9	148.4±4.3	150.5±6.3	148.8±8.1
Before surgery	Rest: 136.7±5.9	Straining: 171.1±8.5				

$p > 0.05$   $p^* > 0.05$   $p^{**} < 0.05$   $p^{***} > 0.05$

$p$  – differences between the groups in 6 months and in 2 year follow-up periods

$p^*$  - differences in 6 months and 2-year follow-up within one group

$p^{**}$ - differences between preoperative and postoperative data

$p^{***}$  differences between 2 years and 3-year postoperative data

Normally ano-rectal border locates above 3 cm from pubo-coccygeous line in the rest, and in straining effort falls down less than 3 cm.

Normally ano-rectal angle value amounts  $99.9 \pm 1.5^\circ$  in average in the rest and  $135.5 \pm 2.2^\circ$  in straining effort.

The patients themselves had estimated the postoperative results as: good (voiding normalization), satisfactory (voiding improvement) and not satisfactory (not changing constipation) (Table 4).

**Table 4: The patients' subjective sensations of voiding improvement**

Parameter	Surgery					
	Sacrococcolpopexy N=59			Sacrococcolpopexy+STARR N=52		
	6 months	2 years	3 years	6 months	2 years	3 years
<u>Voiding</u>	12(20.3%)	10(16.9%)	8(13.6%)	15(28.8%)	13(25%)	2(23.1%)
<u>normalization</u>						
<u>Voiding</u>	28(47.4%)	27(45.8%)	26(44.1%)	30(57.7%)	31(59.6%)	31(59.6%)
<u>Improvement</u>						
<u>Constipation</u>	19(32.2%)	22(37.3%)	25(42.3%)	7(13.4%)	8(15.4%)	9(17.3%)
	$p < 0.05$	$p^* > 0.05$	$p^{**} < 0.05$	$p^{***} > 0.05$		

p – differences between the groups in 6 months and in 2 year follow-up periods

p\* - differences in 6 months and 2-year follow-up within one group

p\*\* - differences between preoperative and postoperative data

p\*\*\* differences between 2 years and 3-year postoperative data

### DISCUSSION:

Over the past 10 years, a large number of studies on the kinds of methods, risks, outcomes and rate of re-interventions, the optimal surgical accesses at operations, are running about POP. One of the most common diseases in the pelvic organ prolapse is a rectocele, which is manifested violation of defecation. Despite this, till now, there are no standards in choosing a methodology for the correction prolapse [10]. Rectocele may be accompanied with rectal mucosal prolapse and perineum descending. In such cases surgical treatment should include not only correction of rectocele, but also excision of excess mucosa of the rectum [11]. Correction of rectocele can be performing by transanal and transperitoneal access, including the use of synthetic or biological grafts [12], anterior levatoroplasty [13], intra-abdominal access [14], combined [15]. One of the most important advances in the surgical treatment of pelvic organ prolapse over the past 10 years has been concluded that the apical support is a key factor in achieving the successful reconstruction of prolapsed [16]. Correction only of vaginal walls prolapse without apical support often caused the recurrence of prolapse [17, 18]. However, many authors point out that only 30-40% of the needy women with cystocele and/or rectocele are performed an additional apical support. Therefore, 17% of such patients in further need repeated surgical intervention in case of recurrence prolapse [19, 20]. There are different ways of apical support. It can be carried out by vaginal and abdominal access, using the own tissue of the patient or mesh grafts [21, 22]. In spite of intra-abdominal mesh implantation for POP reduces the risk of recurrence and re-operation, there is a risk of exposure or erosion of the mesh into the bladder or rectum. Currently, most surgeons, like the authors of

this study, give the preference for intra-abdominal sacrococcolpopexy with the use of mesh graft [8]. Most researchers consider that the implementation of intra-abdominal sacrococcolpopexy not require simultaneous posterior colporrhaphy, as sacrococcolpopexy corrects rectocele itself [23]. But according to our previous data, moreover to rectocele, concomitant rectal mucosa prolapse requires additional correction [24]. But the best method of this pathology is still debated. Our own experience and other's authors data confirm that mucosal resection using STARR is effective in anatomical results, reducing postoperative pain and leads to rapid return to normal activities compared with its traditional mobilization and bringing down to the anal canal [25, 26, 27]. But both of these procedures without apical supporter are not effective alone for rectocele reconstruction [28]. That's why we decided to estimate possibility, short-term and follow-up anatomical and functional results of abdominal sacrococcolpopexy, using surgical mesh combined with STARR procedure.

### CONCLUSIONS:

Thus, many studies are held at present time in order to improve the results of surgical treatment of pelvic organ prolapse in women. The literature discusses the risk and benefits of the numerous surgical techniques. Unfortunately, none of the modern methods allow avoiding recurrences, repeated surgical interventions, complications. Our experience showed that intra-abdominal sacrococcolpopexy, especially combined with STARR procedure in surgical treatment of rectocele, combined with rectal mucosal prolapsed and perineum descending allows improving anatomical and functional results for constipation. But in spite of these we observed the constant worsening of the results over time.

**SUMMARY:**

Pelvic organ prolapse is a common pathology in women. One of the most frequent anatomical disorders in POP is rectocele, which often accompanied with rectal mucosal prolapsed and perineum descending. The traditional surgery procedures, such as posterior colporrhaphy is not effective enough, the using of surgical mesh by vaginal approach appears a lot of complications in treatment of these combined pathology. Apical supporter is needed when rectocele combined with perineum descending. Abdominal sacrocolpopexy, widely used for correction of postgysterectomy prolapse revealed good results in such cases. But this method doesn't eliminate rectal mucosa excess with its presence. Concomitant rectal mucosal prolapse incision is needed. Simultaneously STARR procedure considers being the best method for this purpose.

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