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Research Article

Posterior Colporrhaphy and Levatoroplasty versus Abdominal Sacral Colpopexy Combined with Stapled Trance-anal Resection (STARR) for the Surgical Treatment of Rectocele Concomitant with Rectal Mucosal Prolapse

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ABSTRACT

High incidence, frequent unsatisfactory anatomical and functional results, large number of complications makes the treatment of pelvic organ prolapsed (POP) actual.

The aim of our research was to improve the anatomical and functional results of rectocle repair.

Materials and Methods. For rectocele (III-IV st. POP-Q) in combination with rectal mucosal prolapsed, 59 patients were performed anterior levatoroplasty with STARR and 52 patients were performed abdominal sacrocolpopexy combined with STARR. The post-operative follow-up results were estimated using POP-Q stage determine, defecography, anorectal function testing.

Results. The better results were in the group underwent sacrocolpopexy combined with STARR, than in the group underwent anterior levatoroplasty with STARR.

Conclusions. Abdominal sacrocolpopexy combined with STARR is a good procedure for surgical treatment of rectocele combined with rectal mucosa prolapse.

Keywords: Pelvic organ prolapse, rectocele, rectal mucosal prolapse, sacrocolpopexy, stapled trance-anal resection (STARR), voiding, constipation

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INTRODUCTION

Pelvic prolapse is a common pathology in perimenopausal women [1]. Prophylaxis examinations of women performed in Russia revealed that about 60% of parous women suffered from different manifestations of pelvic organ prolapse and 1 of 10 of them is needed surgical correction. Rectocele is one of the most frequent form of pelvic organ prolapse and it often combines with rectal mucosal prolapse, which aggravates voiding difficulties [2].

The treatment of pelvic organ prolapse in women is still actually. It's high incidence, unsatisfactory anatomical and functional results and large number of complications causes the appearance of different surgical techniques for improvement of the results. One of the most popular surgical techniques for rectocele repair is still colporrhaphy and levatoroplasty. In recent times sacrocolpopexy consider being one of the most effective surgical procedures to correct pelvic organ prolapse [4]. But both of them don't remove rectal mucosa excessive.

The aim of our research was to improve the anatomical and functional results of rectocle repair with colporrhaphy and levatoroplasty and sacrocolpopexy by additional Stapled Trance-anal Resection of the Rectal Mucosal Prolapse (STARR).

MATERIALS AND METHODS:

All procedures were performed at the Department of Surgery and Coloproctology of Belgorod State National Research University and Regional Clinical Hospital, Belgorod, Russia, from 2011 to 2016, and were approved by Local Ethics Committee.

For rectocele and rectal mucosal prolapse diagnostics the following procedures have been performed: dedicated questionnaire, digital rectal and vaginal examination (the evaluation of a rectocele was conducted using the Quantification System of Pelvic Organ Prolapse (POP-Q)), RRS (with straining according to Parks), defecography (for the rectocele degree diagnostic and rectal mucosal intussusceptions), ultrasound and magnetic resonance imaging (performed to diagnose mm. levator ani and recto-vaginal aponeurosis (Denonvilliers' fascia) damage), anorectal function testing (Polygraf ID device). Using these methods of diagnostic rectocele combined with rectal mucosal prolapsed were diagnosed in 117 patients. In 62 patients without levators and rectovaginal fascia ruptures colporrhaphy and levatoroplasty were performed and in 55 patients with these ones sacrocolpopexy was fulfilled. In both groups simultanious STARR procedure was done.

Sacrocolpopexy was performed by abdominal approach. The pelvic peritoneum was opened from the sacrum promontory toward the cul-de-suc and separated aside. Posterior vaginal wall was mobilized up to perineum. Sacrocolpopexy was performed using polypropelene 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 anal sphincter. 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, developed by «Ethicon Endosurgery», the main part of which is circular stapler, according to the method, suggested by Italian surgeon A.Longo [5, 6].

The results of surgery techniques had been estimated, using such criteria as painful syndrome intensity, the frequency of purulent complications, the frequency of erosions and granulomas, the dyspareunia appearense in distant follow-up period, rectocele anatomical correction (due to POP-Q System and defecography data), voiding improvement and relapse frequency.

The post-operative results were estimated in 6 months and follow-up over 2 years.

All data were compared using Student's criteria, Fisher's exact test, for non-parametric variables Mann-Whitney test was used and Wilcoxon paired test for POP-Q parameters estimation was used. The significance level was 5%. All women had intact uteri, had no other kinds of surgery for prolapse, all were white race and the same according to the other demography criteria and rectocele degree, which stage III-IV was according POP-Q. Patient demographics and prolapse stage are included in Table

Table 1. Patient demography and Pelvic Organ Prolapse stage

Parameter	Surgery		
	Colporrhaphy + Levatoroplasty + STARR N=62	Sacrocrocolpopexy + STARR N=55	
Mean age	53.9±6.9	52.6±8.1	
Body Mass Index (kg/m²)	27.7±3.8	26.9±4.3	
Mean parity	2.2±0.7	2.1±0.6	
Menopausal	43 (69.3%)	39 (70.9%)	
Estrogen therapy	19 (30.6%)	16 (29.1%)	P · 0.05
Smoker	22 (35.5%)	19 (34.5%)	for all data
Co morbidity	41 (66.1%)	37 (67.2%)	
Posterior segment prolapse stage (POP-Q)			
III	43 (69.3%)	37 (67.3%)	
IV	19 (30.7%)	18 (32.7%)	

RESULTS

There were no significant intra operational complications in patients of both groups, including perforation of rectovaginal septum, injuries of the sacral blood vessels and ureters. Average blood loss was 246.2±25.6 ml in sacrocolpopexy and STARR group and minimal, about 115.3±10.4 ml in colporrhaphy, levatroplasty and STARR group ($p<0.05$). Median operative time was 55±10.6 min for colporrhaphy and levatoroplasty group and 96±14.6 min for sacrocolpopexy group, including STARR procedure in both. Simultaneous STARR procedure didn't influence greatly on postoperative pain syndrome, as most patients experienced rectal discomfort only for the 1st post operative day. There were no significant inflammatory complications in the both groups. There was suppuration in the abdominal wall wound in one patient underwent sacrocolpopexy, which was treated successfully by drainage and local antibacterial therapy. The usage of circular stapler for rectum mucosa resection didn't caused inflammatory complications in the rectum. The following late postoperative complications associated with mesh implantation were observed: vaginal mesh erosion in 1 patient (1.8%), mesh contraction in 1 patient (1.8%), dispareunia de novo in 2 patients (3.6%). Their frequency was low and didn't increase the same complications after sacrosolpopexy performed without STARR according to our previous data [7]. All these complications were treated conservatively as it was no necessity in mesh removal. There were no perioperative complications and in follow-up except vaginal shrinkage because of excessive vaginal narrowing in 3 (4.8%) patients, who reported dispareunia de novo in the group of patients, underwent colporrhaphy and levatoroplasty. Anatomical improvement of prolapse was observed in all patients of both groups, but results were better in the group underwent sacrocolpopexy and STARR. Using POP-Q system rectocele diagnostic stage 0 was achieved in 26(47.2%) of patients underwent sacrocolpopexy and STARR and in 23(37.1%) (p· 0.05) of patients underwent colporrhaphy, levatoroplasty and STARR. The other patients of both groups had stage I. In 2-year follow-up period there was no relapse incidence, but in 7 patients of the colporrhaphy and levatoroplasty group and in 3 patients of the sacrocolpopexy group stage 0 turned into stage I. Thus, the results after sacrocolpopexy were little better.

Rentgenological symptoms of recatal mucosa prolapse disappeared in 17(27.4%) patients of the colporrhaphy and levatoroplasty group and in 48(87.3%) ($p<0.05$) patients of the sacrocolpopesy group. This was in accordance with the anatomical correction of posterior ano-rectal angle, which was better in sacrocolpopexy group (Table 2). In the 2-year follow-up the results were less bad: 11(18.6%) и 44(84.6%)

Table 2. Results of prolapse anatomical correction

Parameter	Surgery				
	Colporrhapy + STARR N=62		Sacrocrocolpopexy+STARR N=55		
	In 6 months	In 2 years	In 6 months	In 2 year	
Rectocele anatomical correction (according to POP-Q)					
Stage 0	23 (37.1%)	16 (25.8%)	26 (47.2%)	22 (40.0%)	p < 0.05
Stage I	39 (62.9%)	46 (74.3%)	28 (52.8%)	31 (60.0%)	p* < 0.05
Disappearance of mucosal prolapse	17(27.4%)	13(20.9%)	48(87.3%)	45(81.8%)	
	Before surgery				
Anorectal posterior angle (degrees)					p · 0.05
Rest	108.9±6.9	112.8±8.3	105.8±8.1	110.6±7.1	134.5±6.9 p* · 0.05
Straining	145.7±7.9	152.4±6.7	146.7±6.1	149.5±5.2	172.1±7.9 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

In the normal's ano-rectal angle value amounts 99.9±1.5º in average in the rest and 135.5±2.2º in straining effort.

The patients themselves had estimated the postoperative results as: good (voiding normalization), satisfactory (voiding improvement) and not satisfactory (not changing constipation). These data did not differ greatly between groups, but were less good in the group underwent sacrocolpopexy accompanied with STARR. In the both groups these results getting worse slightly in the follow-up. The patients' subjective sensations were confirmed by impartial data of balloon test (Table 3).

Table 3. Voiding Function' Estimation

Parameter	Surgery				
	Colporrhaphy + STARR N=62		Sacrocrocolpopexy+STARR N=55		
	In 6 months	In 2 years	In 6 months	In 2 years	
The patients' subjective sensations of voiding improvement (number of patients)					
Voiding normalization	13(20.9%)	11(17.7%)	16(29.1%)	14(25.6%)	
Voiding Improvement	29(46.8%)	26(41.9%)	31(56.4%)	32(58.2%)	p < 0.05 p*▪ 0.05
Constipation	20(32.3%)	25(40.3%)	8(14.5%)	9(16.2%)	
Expulsion (balloon) Test					
Patients' number had been able to expel a 150 ml-balloon	40(64.5%)	35(56.4%)	39(70.9%)	37(67.3%)	

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

DISCUSSION

Pelvic prolapse is a frequent pathology in women of all ages especially in perimenopause. The weakness of pelvic connective tissue and muscles often occurs in posterior department of pelvic floor and lead to rectocele which is often combined with pelvic mucosa prolapse [8]. The main symptom of this disorder are voiding difficulties [9, 10]. That's why the aim of surgery is not only anatomical correction of pelvic floor but normalization of voiding disorders which are not achieved in all patients. A lot of surgery methods of anatomical correction have been suggested for rectocele repair. But this problem is still actually, as anatomical and functional results are not satisfactory in large number of patients. It seemed that with appearance in 2004 Gynecare Prolift System (Jonson&Jonson) for reconstruction of pelvic floor, the problem of pelvic organ prolapse had been solved. But the great number of postoperative complications such as vaginal mesh erosions, granulomas, vaginal shrinkage, caused pelvic discomfort forced the majority of surgeons to change their point of view to this surgical technique and review their attitude to traditional surgery of pelvic organ prolapse without grafts using vaginal approach [11,12, 13]. However, in excessive rectocele of III-IV Stages, especially in high rectocele, this method is not effective enough [14, 15, 16]. For such cases abdominal sacrocolpopexy with graft using was suggested. According to literature data, abdominal sacrocolpopexy is one of the most effective and safe surgeries performed for pelvic organ prolapse repair, especially for post-hysterectomy prolapsed. Different modifications of this operation are performed today, including surgical meshes which are fixed to promontory proximally and between vaginal posterior surface and rectal anterior surface in the mm.

levators level [17, 18, 19]. It is not fraught with such serious complications associated with mash usage as neofascia performed transperineally.

Using defaecografy it was founded out that rectocele often combines with rectal mucosa prolapse and this pathology is not reconstructed by traditional surgery methods of rectocele repair [7, 20]. Our own investigations revealed that levatoroplasty and sacrocolpopexy along, preformed for rectocele reconstruction doesn't correct rectal mucosal prolapse. This combined pathology needed in additional excision of excessive rectal mucosa.

CONCLUSIONS

Abdominal sacrocolpopexy combined with STARR procedure may be the method of choice for surgical treatment of rectocele combined with rectal mucosa prolapse, as it has more satisfactory anatomy and functional results compared with that of colporrhapy, levatoroplasty and STARR. Simultanious STARR procedure didn't lead to serious complications in both groups and allowed to improve the results of both surgical methods.

SUMMARY

The treatment of pelvic organ prolapse in women is still actually. It's high incidence, frequent unsatisfactory anatomical and functional results and large number of complications causes the appearance of different surgical techniques for improvement of the results. Rectocele accompanied with rectal mucosal prolapsed is difficult in choosing the true surgery method. Different techniques are used to treat this pathology. We compared the results of posterior colporrhapy with anterior levatoroplasty and STARR and sacrocolpopexy and STARR. The last ones showed better anatomical and functional results.

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