**To Kazachistan**

**Surgical treatment of combined pathology of chronic colostasis and stress urinary incontinence in women.**

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**Abstract**

**Introduction:** Chronic colostasis (CC) significantly increases intra-abdominal pressure (IAP) due to prolonged straining, with the force directed toward the pelvic diaphragm. In 43.1% of cases, childbirth contributes to pelvic floor dysfunction, both factors significantly influencing cystocele formation. Post-surgical recurrence of cystocele occurs in 35–45.9% of cases.

**Objective:** To evaluate the effectiveness of simultaneous surgical correction of CC and cystocele in women.

**Materials and Methods:** A prospective study included 195 women with CC aged 22–63 years; 66 (33.85%) were diagnosed with cystocele of varying degrees. Patients underwent standard diagnostic protocols. Surgical treatment for CC included subtotal colectomy (28 patients), sigmoid resection (25), and colopexy with Baughin’s valve repair (13). To correct cystocele, 30 patients underwent the Burch procedure, 7 had hysterectomy with sacro-vaginopexy, and 29 underwent sacro-vaginopexy alone.

**Results:** No cases of stress urinary incontinence (SUI) were reported postoperatively. Diarrhea occurred in all patients following subtotal colectomy, while stool difficulties were noted in 20% of patients after sigmoid resection and 15.38% after colopexy. At an 18-month follow-up, 63 (95.45%) patients were assessed: recurrence of grade 1 cystocele occurred in 3 (10%) patients after the Burch procedure, all of whom also had colostasis recurrence (12%) following sigmoid resection.

**Conclusion:** Simultaneous surgical correction of CC and cystocele via abdominal access is highly effective, with 95.46% success. However, cystocele recurrence is mainly associated with unresolved CC, emphasizing the importance of addressing both conditions concurrently.

**Keywords:** chronic colostasis, intra-abdominal pressure, stress urinary incontinence

**Introduction.** Chronic constipation (CC) is a significant global medical and social problem. The worldwide prevalence of CC is around 14%, with a notably higher incidence in women [1]. According to the Rome III criteria (2006), a diagnosis of functional constipation can be made when defecation occurs less than three times per week; straining during defecation occupies at least 25% of the time over the last three months, with the onset of symptoms at least six months prior to diagnosis [2].

Chronic colostasis contributes to increased intra-abdominal pressure (IAP) and adversely affects the pelvic organs' circulation. Intra-abdominal pressure is defined as the established pressure within the abdominal cavity. Normal IAP levels range from 5–7 mm Hg or 68–95 mm H2O (1 mm Hg = 13.5951 mm H2O). J.M. Burch et al., in 1996 [3], developed a classification of abdominal compartment syndrome based on the level of IAP, which, after some minor modifications, currently looks as follows:

* Grade I: intravesical pressure of 12–15 mm Hg;
* Grade II: 16–20 mm Hg;
* Grade III: 21–25 mm Hg;
* Grade IV: more than 25 mm Hg [4].

In the context of CC, the function of the pelvic diaphragm's elements gradually declines under prolonged exposure to increased IAP, creating conditions for pelvic organ prolapse (bladder, uterus, and rectum). Childbirth also aggravates pelvic floor function in women. Symptoms of pelvic floor dysfunction are observed in 43.1% of patients two months postpartum and may progress in 25% of cases in the long term, despite the natural restorative potential of the soft birth canal. As a result, with the development of CC against a background of increased IAP, weakened pelvic diaphragm structures often predispose to the appearance of prolapse [5]. According to modern concepts, the pelvic floor is a three-dimensional muscle-connective tissue structure whose primary function is to counteract intra-abdominal pressure. The pelvic floor is conventionally divided into four anatomical layers (peritoneum, intrapelvic fascia, deep pelvic floor muscles, superficial pelvic floor muscles). The intrapelvic fascia is believed to be fundamental in fixing and stabilizing pelvic organs and counteracting fluctuating intra-abdominal pressure [6].

In patients with CC, the act of defecation lasts more than 25 minutes with straining throughout this period, during which the IAP sharply rises (up to 160–200 mm H2O); the main pressure is exerted on the pelvic diaphragm. Elevated IAP evenly presses on the bladder, its neck, and the urethra. When the elements of the pelvic diaphragm remain intact, spontaneous urine leakage (incontinence) does not occur due to the normal tone of the urethral sphincter. However, if there is pelvic diaphragm weakness and a hypermobile urethra, the bladder-urethral junction shifts extra-abdominally, leading to uneven distribution of increased intra-abdominal pressure; in this context, the sphincter can no longer withstand the increased IAP, resulting in urine leakage. Conversely, with pelvic diaphragm weakness, even without urethral hypermobility, due to a low Valsalva leak point pressure and internal sphincter insufficiency, the sphincter fails to withstand the increased IAP, leading to urine leakage [7].

It has been convincingly proven that loss of support for the perineal muscles due to obstetric injuries leads to further development of pelvic floor muscle insufficiency [8]. The most common problem in patients with pelvic organ prolapse is cystocele formation with anterior vaginal wall descent. The presence of a cystocele, in turn, can lead to significant bladder neck descent and worsen urinary disorders [9, 10].

There are four degrees of cystocele:

* **First (initial) degree**: Prolapse of the anterior vaginal wall that deviates from the norm but does not reach the introitus by 1 cm.
* **Second degree**: Descent of the anterior wall not reaching 1 cm to the introitus or extending no more than 1 cm beyond its boundaries.
* **Third degree**: Pronounced prolapse of the anterior wall visible to the naked eye and extending more than 1 cm beyond the introitus, but no more than 5–6 cm.
* **Fourth (maximum) degree**: Complete prolapse of the anterior vaginal wall, which is always accompanied by significant descent in other parts of the pelvic floor [11].

Pelvic organ prolapse (POP) and stress urinary incontinence are highly prevalent conditions, affecting about 51% of women worldwide [12]. The question of selecting a rational treatment strategy for patients with CC remains a topic of debate [13]. According to many authors, with conservative treatment, unsatisfactory results are observed in 20–30% of cases, and the recurrence rate after surgical treatment reaches 35–45.9% [14]. One unresolved issue in the surgical treatment of CC is the choice of optimal colon resection volume and the inability to determine the condition of its non-functioning segments.

Many authors consider it advisable to limit indications for extensive interventions and not go beyond segmental colon resection and hemicolectomy [15]. Others advocate for broader indications for surgical treatment, recommending extended resection of the colon up to subtotal and total colectomy [16]. According to L. Sarli et al., subtotal colectomy with the formation of an ascending-rectal anastomosis, being a standardized and more physiological operation, has the advantage of preserving a small part of the colon and allows surgical correction of refractory constipation in 90% of patients [17]. Before the introduction of endoprostheses for the correction of SUI, various methods were used, mainly transvaginal and others. The Burch procedure is performed through small suprapubic incisions; the anterior vaginal wall is sutured with special supporting sutures to the Cooper's ligament. However, SUI correction using the patient's tissues was associated with a high number of recurrences.

Since 2005, endoprostheses, initially Trans-Vaginal Mesh Prolift (France), and from 2008, Elevate system endoprostheses—Apogee and Perigee meshes (American Medical Systems)—have been introduced to eliminate pelvic prolapse. By using these endoprostheses to reconstruct the damaged anterior or posterior segments of the endopelvic and apical fascia of the vagina, surgeons achieved good results in the early postoperative period. It was believed that the problem of pelvic prolapse had been resolved.

However, in the long-term postoperative period, multiple so-called mesh- or implant-associated complications were observed, such as vaginal mucosal erosion, dyspareunia, chronic pain syndrome, urinary disorders, and others. According to A.N. Nechiporenko and N.A. Nechiporenko (2013), transvaginal extraperitoneal fixation of the uterus and vaginal walls using mesh prostheses based on the Prolift anterior and posterior principles is complicated by vaginal mucosal erosion with exposure of the synthetic prosthesis in 2.2% of cases. Fixation of the uterus and anterior vaginal wall following the Prolift anterior principle is complicated by migration of a fragment of the prosthesis into the bladder in 0.8% of cases [18]. Anti-stress surgery in the form of suburethral sling plastic surgery with a synthetic tape based on the TVT operation principle is complicated by vaginal mucosal erosion in 1.3% of cases, migration of a synthetic tape fragment into the bladder in 1.2% of cases, and migration of the tape into the urethral lumen in 0.6% of cases. Consequently, in 2016, American Medical Systems was forced to recall all of its polypropylene urogynecological products, including sling tapes and kits for transvaginal and transabdominal implant placement. Due to this, the use of mesh endoprostheses in vaginal surgery was banned in some countries (e.g., France), and non-mesh pelvic floor surgery techniques became relevant again [19].

**Study Objective:**  
To evaluate the effectiveness of simultaneous surgical correction of chronic colostasis (CC) and cystocele in women.

**Material and Methods:**  
In 2000-2023, a prospective examination and surgical treatment of 195 women with chronic colostasis (cs) aged 22-63 years was conducted at the Scientific Center of Surgery (Baku). Based on the severity of CC, the patients were divided into 2 groups: Group 1 - 136 (69.7%) patients with subcompensated CC and Group 2 - 59 (30.3%) patients with decompensated CC. Of the total number of patients, 66 (33.85%) had stress urinary incontinence (SUI) of varying severity; of these, 31 (22.8%) were in Group 1 and 35 (59.3%) in Group 2 patients. The duration of complaints of urinary incontinence in all patients averaged 5.5±2.0 years. The duration of menopause among patients over 50 years old averaged 5.3±1.5 years. The exclusion criteria were the presence of rectocele in addition to urocele, grade 4 pelvic organ prolapse, concomitant cardiovascular, respiratory and gynecological diseases, as well as the presence of signs of connective tissue dysplasia.

Patients with CC were examined according to the generally accepted protocol for this pathology, including a survey, examination, abdominal and pelvic ultrasound, esophagogastroduodenoscopy (EGDS), fibrocolonoscopy (FCS), contrast radiography of the gastrointestinal tract, irrigography, and anorectal manometry. In patients with SUI, echographic examination of the pelvic floor using transvaginal and high-frequency linear sensors was performed.

All patients underwent a gynecological examination with an assessment of the degree of SUI according to the POP-Q classification in both the preoperative and postoperative periods, as well as rectal examination assessing the condition of the rectal walls and the anal sphincter, and functional tests for urinary incontinence. Magnetic resonance imaging of the pelvis, cystoscopy, uroflowmetry, and hysteroscopy were performed as indicated.

Signs of pelvic floor insufficiency were detected in 35 (70%) patients of group 1 and 29 (67.4%) of group 2 : thinning of the muscle bundles of the levator muscles (m. bulbocavernosus), diastasis of the muscles in the area of the tendinous center, deformation or absence of the tendinous center, indicating pelvic floor dysfunction.

Anatomical results were evaluated using the POP-Q (Pelvic Organ Prolapse Quantification System) staging. Subjective and quality of life outcomes were assessed using validated questionnaires from the International Consultation on Incontinence (ICIQ): Vaginal Symptoms (ICIQ-VS), Female Lower Urinary Tract Symptoms (ICIQ-FLUTS), and Incontinence Impact Questionnaire-7 (IIQ-7). Additional outcomes included a 3-day voiding diary and a cough test, with results assessed preoperatively and 6 weeks postoperatively.

The ABD pressure level was measured in all patients during the examination and treatment period using the Unometer™ Abdo-Pressure™ (Unomedical, Denmark). The elastic and highly stretchable bladder wall serves as a passive membrane, accurately transmitting the intra-abdominal pressure level [20].

Transabdominal, perineal and endovaginal ultrasound were used to assess bladder neck and urethral mobility,bladder wall thickness , perineal muscules, to visualize mesh implants and evaluate changes after surgical treatment. Transvaginal ultrasound was used to clarify dislocation of the urethrovesical segment and to diagnose urethral sphincter insufficiency .The most informative parametrs of ultrasound pathology of the ultravesical segment and urethral sphincter are the value of deviation of the longitidunal axis of the urethra fdrom the vesical axis of the body more than 230 at rest or an increase of the angle more than 200 in the Valsalva test , the ratio of the area of the urethra to the thickness of the sphincter more than 0,74. Wen choosing a method of surgical correction of urinary incontinence and assessing its effectiveness, we used the above parameters together with other urethral parametrs.In cystourethrography, thickening of the bladder wall to ≥ 2 mm indicated the presence of UIW in 95.5%, and thickening of the wall over 2.9 mm in 100%.Thickening of the bladder wall correlates with pronounced disturbance ofurodynamics. Using uroflowmetry monitoring it was possible to quantitatively record and objictevely determine the type of micturition, measure urine flow velocity, and construct volume and velocity profiles of urination.

The examination plan also included consultations with related specialists, such as an endocrinologist, psychiatrist, and neurologist, to exclude extraintestinal causes of chronic constipation.

The severity of cystocele was determined according to generally accepted classifications:

* First (initial) degree: prolapse of the anterior vaginal wall that differs from the norm but does not reach the introitus by 1 cm.
* Second degree: prolapse of the anterior wall that does not reach 1 cm to the introitus or protrudes no more than 1 cm beyond its limits.
* Third degree: prolapse of the anterior wall extending more than 1 cm beyond the introitus but not more than 5-6 cm.
* Fourth (maximum) degree: complete prolapse of the anterior vaginal wall [21].

The distribution of patients with CC + SUI by age, duration of chronic colostasis, and degree of cystocele is shown in Table 1.

Table 1. Distribution of patients with CC+ CNM by age, duration of chronic colostasis and degree of cystocele

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Degrees of CNM | Total number of patients with CNM (n=66) | | | | | |
| Age of patients (years) | | | Duration of chronic colostasis (years) | | |
| *22-35* | *35- 55* | *55-63* | *3-5* | *5-10* | *>10* |
| I(n=38) | 29 | 9 | - | 35 | 3 | - |
| II(n=19) | 11 | 8 | - | 8 | 7 | 4 |
| III (n=9) | - | 3 | 6 | - | 5 | 4 |
| Итого | 40 | 20 | 6 | 43 | 15 | 8 |

As shown in Table 1, among all patients with SUI, cystocele of the 1st degree was present in 38 (57.6%) patients, of the 2nd degree in 19 (28.8%) patients, and cystocele of the 3rd degree in 9 (13.6%) patients. Out of 66 patients, subcompensated colostasis was present in 55 (83.3%) patients, and decompensated CC was present in 11 (16.67%) patients. CC lasting from 3 to 5 years was observed in 43 patients with SUI, from 5 to 10 years in 15 patients, and over 10 years in 8 patients with SUI. Among the 29 patients aged 22-35, 22 (33.3%) had no history of childbirth.

Based on the comprehensive examination, the causes of CC were determined as follows: megadolicocolon in 25 patients, pathological mobility of the right colon with Bauhin valve insufficiency in 13 patients, and dolichosigma in 28 patients.

Indications for surgical treatment of chronic constipation were considered:

1. Patients suffering from subcompensated or decompensated CC for more than 3 years, where conservative therapy for at least 6 months had no effect;
2. Despite ongoing conservative therapy, the presence of symptoms of partial intestinal obstruction.

The surgeries were performed under general endotracheal anesthesia. Given the presence of combined pathology—CC + SUI (cystocele)—it was decided that during laparotomy, after correcting CC, transabdominal methods would simultaneously be applied to eliminate the causes of cystocele, depending on the stage of prolapse severity, the general condition, and physical characteristics of the patient.

**Results of Surgical Treatment and Follow-Up**

The outcomes of surgical treatment were studied both in the immediate and 18-month postoperative periods through patient questionnaires and comprehensive instrumental and laboratory examinations.

**Ethical Review**  
The study was conducted in accordance with the standards of good clinical practice and the principles of the Helsinki Declaration. The research was approved by the local ethics committee of the M.A. Topchubashov National Center of Surgery (protocol No. 01-7 dated 22.01.2000). All patients signed informed consent forms for participation in the study.

**Statistical Analysis**  
Statistical analysis was performed on a personal computer with an AMD Athlon™ XP 1800 processor using Microsoft Windows XP Professional, version 2002 Service Pack 2, and the statistical module of Microsoft Excel 2007. The following parameters were calculated: mean (M); standard deviation (SD); coefficient of variation; skewness and kurtosis with assessment of their representativeness by Student's t-test; correlation coefficient (r); and the degree of probability of possible error (p). To assess the significance of differences between mean values, the confidence coefficient was calculated according to Student's criteria. A confidence level of 95.0% (p ≤ 0.05) was accepted as the threshold for significance. Factorial and random influences were determined using analysis of variance (ANOVA). The correlation coefficient and its significance were calculated according to Bravais–Pearson, where 0.3–0.5 is moderate, 0.6–0.7 is significant, and 0.7–0.9 is a strong correlation. A value of p < 0.05 was considered statistically significant.

**Results and Discussion**

Clinicians universally recognize chronic constipation as a significant medical and social problem, with a prevalence of about 14% worldwide, significantly more common among women (odds ratio — OR 2.22; 95% confidence interval — CI 1.87–2.62) and people over 60 years of age (OR 1.41; 95% CI 1.17–1.70)【22】. On the other hand, pelvic organ prolapse (POP) and stress urinary incontinence occur in about 51% of women worldwide, according to various sources【23】. Besides difficult childbirth and decreased estrogen levels in older women, one of the main causes of pelvic organ prolapse is the prolonged impact of increased intra-abdominal pressure on the pelvic diaphragm structures【24].

Аll patients with SUI, cystocele of the 1st degree was present in 38 (57.6%) patients, of the 2nd degree in 19 (28.8%) patients, and cystocele of the 3rd degree in 9 (13.6%) patients. Out of 66 patients, subcompensated colostasis was present in 55 (83.3%) patients, and decompensated CC was present in 11 (16.67%) patients. CC lasting from 3 to 5 years was observed in 43 patients with SUI, from 5 to 10 years in 15 patients, and over 10 years in 8 patients with SUI. Among the 29 patients aged 22-35, 22 (33.3%) had no history of childbirth

Currently, there are more than 400 surgical methods for correcting cystocele. The abundance of these techniques indicates persistent challenges in treating the condition. After many of these methods, recurrence rates for cystocele starting from the first year post-surgery remain high (ranging from 0 to 92%)【25】. Could this be due to factors beyond surgical, anatomical, physiological, or inadequate rehabilitation reasons, such as the impact of untreated chronic constipation during the preoperative period?

As mentioned earlier, in patients suffering from chronic constipation, the act of defecation with straining lasts over 25 minutes, during which intra-abdominal pressure sharply increases (up to 160-200 mm H₂O). The pelvic diaphragm must resist this increased pressure. Surprisingly, no scientific studies on the interrelation of these pathologies (chronic constipation, intra-abdominal pressure, and stress urinary incontinence) were found in the literature, or they are altogether absent. While examining and surgically treating 195 patients, we found that 66 (33.85%) women suffered from stress urinary incontinence (cystocele) to varying degrees. Assessing the identified causal factors of stress urinary incontinence, we concluded that (without disregarding such factors as difficult childbirth and menopause in the majority of women), the main cause of cystocele is chronic constipation. This conclusion is based on the fact that among the 29 patients aged 22-35 years with stress urinary incontinence and chronic constipation, 22 (33.3%) had no childbirth history. Based on this finding, we decided to simultaneously surgically treat chronic constipation and cystocele during laparotomy, hoping that by eliminating the primary cause of increased intra-abdominal pressure, the postoperative results of cystocele correction would improve, and the recurrence of cystocele would significantly decrease.

**Surgical Techniques**

To correct cystocele, sacrocolpopexy (promontofixation) via abdominal access was proposed in the mid-20th century, and it remains relevant today. The effectiveness of this method, according to I.E. Nygaard et al., ranges from 77% to 100%【26】. According to Jefferis H. et al. (2017), after sacrocolpopexy (promontofixation) via abdominal access, complications (such as bladder injury and bleeding) occur in 1.8% of cases. However, the authors did not report cases of endoprosthesis extrusion【27】.

The surgical interventions used, depending on the method of chronic constipation elimination, the severity of cystocele, and the technique of cystocele correction, are presented in Table 2.

Table 2. Methods of surgery used in patients with chronic colostazis combined with cystocele (n=66).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Сauses of chronic colostazis and degrees of cystocele(CC) | Виды применяемых операций | | | | | |
| Subtotal colectomy  (n=28) | Dolichosigmoid resection (n=25) | Colopexy with Baugin's plastic surgery (n=13) | *Bertz's operation (n=30)* | *Hysterectomy with sacro-vaginopexy (n=7)* | *Sacrovaginopexy (n= 29)* |
| Megadolichocolon(n=25)  *CC-1(n=11)*  *CC-2(n=7)*  *CC-3(n=7)* | 25 |  |  | *8*  *7*  *-* | *-*  *-*  *6* | *3*  *-*  *1* |
| Pathological mobility of the right colon with Baugin's insufficiency (n=13)  *СС-1(n=9)*  *СС-2(n=3)*  *СС-3(n=1)* | - | - | 13 | *5*  *3*  *-* | *-*  *-*  *-*  *1* | *-*  *4*  *-*  *-* |
| Dolichosigma(n=28)  *CC-1(n=18)*  *CC-2(n=9)*  *CC-3(n=1)* | 3 | 25 | - | *-*  *7* | *-* | *11*  *9*  *1* |
| Total(n=66) | 28 | 25 | 13 | *30* | *7* | *29* |

As shown in Table 2, for 25 patients with megadolichocolon, a subtotal colectomy was performed. Of these, 11 had first-degree cystocele, 7 had second-degree cystocele, and 7 had third-degree cystocele. After colectomy, a Burch colposuspension was performed for 15 patients, a hysterectomy with sacrocolpopexy for 6 patients, and sacrocolpopexy alone for 4 patients.

For chronic colostasis due to mobility of the right side of the large intestine with Bauhin's valve insufficiency, colopexy with Bauhin's valve repair was performed. In this group, 9 patients had first-degree cystocele, 3 had second-degree cystocele, and 1 had third-degree cystocele. After colopexy and Bauhin's valve repair, a Burch colposuspension was performed in 5 patients with first-degree cystocele and 3 patients with second-degree cystocele; hysterectomy with sacrocolpopexy was performed in 1 patient with third-degree cystocele. Only sacrocolpopexy was used in 4 patients with first-degree cystocele.

Among 28 patients with chronic constipation due to dolichosigma, a subtotal colectomy was performed in 3 cases due to the expansion of the ascending colon with a mesentery, while the remaining 25 cases involved resection of the sigmoid colon. Among patients with dolichosigma, first-degree cystocele was observed in 18 patients, second-degree in 9, and third-degree in 1 patient. To correct the cystocele, a Burch colposuspension was performed in 7 cases (CC-1,2,3) and sacrocolpopexy in 21 cases.

In all groups, the operation lasted 170 ± 22 minutes. In the postoperative period, the catheter from the bladder and the tube from the rectum were removed on the third day. Patients were allowed to get out of bed on the fifth or sixth day. All patients were put on a diet following the protocol for managing patients who underwent colon surgery.

On the fourth day, one patient aged 68 with diabetes mellitus, third-degree cystocele, and first-degree obesity, who underwent subtotal colectomy and hysterectomy with sacrocolpopexy, developed symptoms of colorectal anastomosis insufficiency. She underwent re-laparotomy with colostomy; on the 15th day after re-laparotomy, she was discharged home in satisfactory condition, without urinary disturbances. Six months later, she tolerated the surgery well, with no bladder prolapse observed, and she declined the proposed operation to close the colostomy. Her decision not to close the colostomy was pragmatic: after struggling with constipation for over 20 years, she felt "reborn," and she was not confident that after the colostomy closure, her bowel issues wouldn't return.

In 3 (4.54%) patients, after subtotal colectomy and Burch colposuspension, urinary retention occurred after catheter removal, requiring re-catheterization. Subsequently, normal urination was restored in these patients. The postoperative period was smooth in the remaining 62 (95.46%) patients.

Following transvaginal cystocele correction surgeries, patients were advised to maintain a gentle regimen for about a month, remaining in a horizontal position to protect the pelvic floor reconstruction. In contrast, after transabdominal methods of eliminating bladder prolapse, patients could assume a vertical position by the fifth or seventh day.

Out of the 66 operated patients, 57 (86.36%) were examined in the long-term postoperative period (18 months); during this time, 3 (4.54%) patients died (the causes were identified in only one case — domestic trauma).

The examination included: questionnaires, examination of complaints (before and after surgery), ultrasound of the abdominal cavity and pelvis (conventional and transvaginal), irrigography, contrast study of the gastrointestinal tract, consultations with a gynecologist and urologist. The results of examination of patients in the late period of operations to eliminate chronic colostasis and correct cystocele are reflected in Table 3.

11.Table 3. Results of examination of patients operated 18 months ago for chronic colostasis and cystocele.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Examination parameters | Types of operations applied | | | | | |
| Subtotal colectomy  n=28(42,4%) | Dolichosigmoid resection n=25(37,9%) | Colopexy with Baugin's plastic surgery n=13(19,7%) | *Bertz's operation n=30(45,5%)* | *Hysterectomy with sacro-vaginopexy n=7(10,6%)* | *Sacrovaginopexy*  *n= 29(43,9%)* |
| Regular stool | 24(85,7%) | 20(80%) | 11(84,6%) | *25(83,3%)* | *7(100%)* | *26(89,6%)* |
| Normal urination | 25(89,3%) | 19(76%) | 10(76,9%) | *22(73,3%)* | *6(85,7%)* | *24(82,8%)* |
| Dysuric phenomenon | 2(7,2%) | 2(8%) | - | *2(6,7%)* | *1(14,3%)* | *1(3,4%)* |
| Difficulty urinating | - | 1(4%) | 1(7,7%) | *1(3,3%)* | *-* | *1(3,4%)* |
| Recurrence of cystocele | - | 3(13%) | 2(15,4%) | *3(10,7%)* | *-* | *2(7%)* |
| Recurrence of constipation | - | 3(13%) | 2(15,4%)) | *3(10,7%)* | *-* | *2(7%)* |
| Adhesive disease | 1(3,7%) | 1(4,3%) | - | *-* | *1(14,3%)* | *1(3,6%)* |

According to the literature, positive outcomes of surgical treatment for chronic colostasis (CC) are observed in 88.9% of cases, while unsatisfactory outcomes occur in 4.9% of cases [28]. In our patients, these rates were 87.3% and 7.9%, respectively (among the 63 patients examined, 5 experienced constipation). An unsatisfactory outcome — recurrence of constipation — was observed in 3 (13.04%) out of 23 patients who underwent dolichosigma resection and in 2 (8.7%) out of 23 patients after colopexy with Bauhin’s valve plasty. In the latter 2 patients, a recurrence of Bauhin’s valve insufficiency was detected on an irrigography.

As reported by A. Glia and co-authors [29], severe diarrhea and anal incontinence are observed in 25–50% of patients who underwent colectomy with the formation of an ileorectal anastomosis. In our patients, during the long-term postoperative period, stool frequency in 57 patients did not exceed 3-4 times per day, and only in 3 cases (4.8%) did stool frequency exceed 5-6 times per day, which we evaluated as a satisfactory result.

To correct cystocele, sacrocolpopexy (promontofixation) via an abdominal approach was proposed in the mid-20th century; this method remains relevant to this day. According to I.E. Nygaard et al., the effectiveness of this method ranges from 77% to 100% [26]. Complications after sacrocolpopexy (promontofixation) via an abdominal approach are observed in 1.8% of cases (bladder injury and bleeding). However, the authors did not report any cases of endoprosthesis extrusion [30].

In patients with grade III cystocele and chronic colostasis, after eliminating the cause of CC (megadolichocolon), 6 patients underwent hysterectomy with sacrovaginoplasty, and one patient underwent sacrovaginoplasty without hysterectomy. At the 18-month follow-up, no recurrence of cystocele was observed in patients who underwent subtotal colectomy and hysterectomy with sacrovaginopexy. One patient complained of dysuric symptoms, and one had moderate symptoms of adhesive disease. However, all patients had stool frequency of 3-4 times per day.

Among 28 patients who underwent colopexy with Bauhin’s valve plasty and sacrovaginoplasty, a recurrence of cystocele (grade I) was observed in 2 cases against the background of constipation recurrence.

A recurrence of chronic colostasis and cystocele was observed in 3 women who underwent sigmoid resection and sacrovaginoplasty. Recurrence of cystocele occurred in 3 cases after Bert's operation; in 2 cases, colopexy was performed, and in 1 patient, dolichosigma resection was done.

Thus, among the total of 66 patients with CC and cystocele of varying degrees operated on, in the long-term postoperative period (18 months), recurrence of CC and cystocele was observed in 5 (7.57%) cases. Without a recurrence of chronic colostasis, a recurrence of cystocele did not develop!

Conclusions:

1. Stress urinary incontinence (SUI) occurs in 21% of women against the background of chronic colostasis.
2. Defecation in CC is accompanied by prolonged straining, which increases intra-abdominal pressure (IAP) and the load on the pelvic floor.
3. The main factor of SUI is an increase in IAP, which affects the pelvic floor.
4. Surgical treatment of CC and cystocele includes eliminating the main cause (CC) and correcting cystocele using Bert's operation or sacrovaginoplasty.
5. Elimination of CC and correction of cystocele via the abdominal approach help reduce the risk of cystocele recurrence; however, recurrence may be observed with continued CC.

**Acknowledgments:** The authors express their appreciation and gratitude to the staff of the functional diagnostics department and the clinical laboratory department for conducting the research at a high level.

**Financing**-this scientific research was part of the scientific research plan of the Scientific Center of Surgery and was financed from funds allocated by the Ministry of Health of the Republic for scientific research.

**Authors' contributions:** All authors equally participated in the research and writing of this article.

Isaev G.B. - Concept, design, and oversight of the study, approval of the final version. Writing the article text (introduction, discussion).

Musaev B.V., Abbasov T.N. – Collection and preparation of data, initial processing of material and their verification.

Isaev G.B., Imamova N.Dzh. – Statistical processing and analysis of the material, writing the article text (materials and methods, results).

All authors approved the final version of the manuscript.

**Publication information:** This article has not been previously published or peer-reviewed in other journals.

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