

Received: 30 September 2023 / Accepted: 04 January 2024 / Published online: 28 February 2024

DOI 10.34689/SH.2024.26.1.012

UDC 616.345-089.168.1-053.3/5

BASICS OF REHABILITATION OF CHILDREN AFTER OPERATIONS ON THE COLON AND ANORECTAL AREA

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Abstract

Introduction In addition to successful surgical treatment, post-operative treatment is very important for the normalization of bowel function in children who have undergone operations on the colon and anorectal region. After leaving the hospital, such patients receive only general clinical supervision and physiotherapy treatment, as the surgeon, pediatricians and general practitioners do not fully understand the rehabilitation measures in the postoperative period.

The aim of the study is to evaluate the results of patient rehabilitation and increase the awareness of general practitioners and pediatricians about the basics of rehabilitation of patients after colon and anorectal surgery.

Materials and methods: The control group consisted of 60 patients and the main group consisted of 45 patients who underwent colon and anorectal surgery. The Holschneider scale was used to evaluate the outcomes of the rehabilitation program.

Results The complex of rehabilitation measures included expansion of the anus with a Gegara dilator, normalization of defecation (training enemas), psychomotor and electrostimulation, rectal gymnastics. The use of rehabilitation treatment led to a decrease in the unsatisfactory result from 10.2% to 8.2%.

Conclusion. The article contains information about the importance of rehabilitation in the post-operative period, the medical and socio-economic problem of adequate treatment, and the measures taken to restore the patient's health as quickly as possible.

Key words: children, colon, anorectal area, postoperative rehabilitation, general practitioners.

Резюме

ОСНОВЫ РЕАБИЛИТАЦИИ ПОСЛЕ ОПЕРАЦИЙ НА ТОЛСТОЙ КИШКЕ И АНОРЕКТАЛЬНОЙ ОБЛАСТИ У ДЕТЕЙ

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Введение. Помимо успешного хирургического лечения, большое значение для нормализации функции кишечника у детей, перенесших операции на толстой кишке и аноректальной области, имеет послеоперационное лечение. После выписки из стационара такие больные получают общее клиническое наблюдение и физиотерапевтическое лечение, так как хирург, педиатр и врач общей практики не до конца понимают меры реабилитации в послеоперационном периоде.

Целью исследования является оценка результатов реабилитации пациентов и повышение осведомленности врачей общей практики и педиатров основами реабилитации пациентов после операций на толстой кишке и аноректальной хирургии.

Материалы и методы. Контрольную группу составили 60 пациентов, основную группу — 45 пациентов, перенесших операции на толстой кишке и аноректальной области. Для оценки результатов программы реабилитации использовалась шкала Хольшнейдера.

Результаты. Комплекс реабилитационных мероприятий включал расширение заднего прохода расширителем Гегара, нормализацию акта дефекации (тренировочные клизмы), психомоторную и электростимуляцию, ректальную

гимнастику. Применение реабилитационного лечения привело к снижению неудовлетворительного результата с 10,2% до 8,2%.

Заключение. В статье содержатся сведения о значении реабилитации в послеоперационном периоде, медицинской и социально-экономической проблеме адекватного лечения, а также мерах, принимаемых для скорейшего восстановления здоровья пациента.

Ключевые слова: дети, толстая кишка, аноректальная область, послеоперационная реабилитация, врачи общей практики.

Түйіндеме

ЖУАН ІШЕК ПЕН АНОРЕКТАЛДЫ АЙМАҚА ОПЕРАЦИЯ ЖАСАҒАН БАЛАЛАРДЫ РЕАБИЛИТАЦИЯЛАУ НЕГІЗДЕРІ

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Кіріспе Табысты хирургиялық емдеуден басқа, тоқ ішек пен аноректалды аймаққа операция жасалған балаларда ішек жұмысын қалыпқа келтіру үшін операциядан кейінгі емдеу өте маңызды. Ауруханадан шыққаннан кейін мұндай науқастар тек жалпы клиникалық бақылау мен физиотерапиялық ем алады, өйткені хирург, педиатр және жалпы тәжірибелік дәрігерлер операциядан кейінгі кезеңде оңалту шараларын толық түсінбейді.

Зерттеудің мақсаты пациенттерді оңалту нәтижелерін бағалау және жалпы тәжірибелік дәрігерлер мен педиатрлардың тоқ ішек пен аноректалды хирургиялық операциядан кейінгі науқастарды оңалту негіздері туралы хабардарлығын арттыру.

Материалдар мен әдістер: Бақылау тобына 60 науқас және негізгі топқа тоқ ішек пен аноректалды операция жасалған 45 пациент кірді. Оңалту бағдарламасының нәтижелерін бағалау үшін Холшнайдер шкаласы қолданылды.

Нәтижелер: Реабилитациялық шаралар кешеніне анусты Гегар кеңейткішімен кеңейту, дефекацияны қалыпқа келтіру (жаттығу клизмалары), психомоторлық және электростимуляция, тік ішек гимнастикасы кірді. Реабилитациялық ем қолдану қанағаттанарлықсыз нәтиженің 10,2%-дан 8,2%-ға төмендеуіне әкелді.

Қорытынды Мақалада операциядан кейінгі кезеңдегі оңалтудың маңыздылығы, адекватты емдеудің медициналық және әлеуметтік-экономикалық мәселесі, науқастың денсаулығын мүмкіндігінше тез қалпына келтіру үшін қабылдаған шаралар туралы ақпарат бар.

Түйінді сөздер: балалар, тоқ ішек, аноректалды аймақ, операциядан кейінгі реабилитация, жалпы тәжірибелік дәрігерлер.

Bibliographic citation:

Messova A.M., Sanbayev M., Aubakirov M.T., Arintay A., Zhussupov S.M., Abdрахmanov S.T. Basics of rehabilitation of children after operations on the colon and anorectal area // *Nauka i Zdravookhranenie* [Science & Healthcare]. 2024, (Vol.26) 1, pp. 95-101. doi 10.34689/SH.2024.26.1.012

Месова А.М., Санбаев М., Аубакиров М.Т., Аринтай А., Жусупов С.М., Абдрахманов С.Т. Основы реабилитации после операций на толстой кишке и аноректальной области у детей // *Наука и Здравоохранение*. 2024. 1(Т.26). С. 95-101. doi 10.34689/SH.2024.26.1.012

Месова А.М., Санбаев М., Аубакиров М.Т., Әринтай Ә., Жусупов С.М., Абдрахманов С.Т. Жуан ішек пен аноректалды аймаққа операция жасаған балаларды реабилитациялау негіздері // *Ғылым және Денсаулық сақтау*. 2024. 1 (Т.26). Б. 95-101. doi 10.34689/SH.2024.26.1.012

Introduction

Malformations of the large intestine are more common than other malformations of the gastrointestinal tract [2,3,5,7]. Congenital malformations of the large intestine and anorectal region occur in infants with a frequency of 1:500 to 1:5000. The primary goal of early surgical repair is to rebuild anatomically structures with normal bowel habits. Despite the use of modern methods of treatment of these developmental defects, it is observed that in the

postoperative period 10-60% of cases lead to disability with disorders of the gastrointestinal tract [6,14], so the treatment of this pathology is still a problem that cannot be ignored [6,8,9,11,16]. Constipation affects up to 79% of patients with ARM following primary posterior sagittal anorectoplasty (PSARP), and soiling affects up to 48% of patients, fecal incontinence occurred in 42–48%. In the data of the last years, in the post-operative period of these patients, 62,5 cases of fecal leakage, 20 cases of periodic

constipation were detected, 15 cases of difficulty in defecating, and 2.5 cases of decreased urge to defecate [4]. According to the data of our clinic between 1997 and 2011, incontinence was observed in 10.2% patients in the period after surgery on the anorectal areas and the large intestine [1]. The specificity of the problem lies in the fact that, in addition to the frequency of developmental defects, the rehabilitation systems carried out in hospitals and clinics have not yet found a complete solution, preventing the delay in the growth and development of the patient after surgery [14,15,16]. Generally, the improvement of the patient's health is completed 2-4 years after the operation. However, in some patients, recovery of gastrointestinal function takes until puberty and even adulthood [6]. Pelvic floor rehabilitation shows positive results in patients with post-operative fecal incontinence and constipation [13]. Laxative drugs, rectal enemas, transanal irrigations, and antegrade flushes are some methods for managing the bowel [12]. Therefore, taking into account the fact that the issues of rehabilitation treatment after surgery in congenital malformations of the large intestine and anorectal region have not yet been clarified, the justification of rehabilitation of proctological patients is a very important issue.

The aim of the work is to prevent the observed complications in the postoperative period, providing an opportunity for general practitioners and pediatricians to master the basics of rehabilitation of patients who have undergone operations on the large intestine and anorectal region.

Materials and methods: As an object of this research, in the period of 1997-2011, Coave-Lyonushkin (5), Duhamel Bayrov (1), anterior sagittal proctoplasty with the Lyonushkin method (10), Peña method at the Department of Pediatric Surgery of the State Medical University of Semey in the period 1997-2011 posterior sagittal proctoplasty (8), intercostal proctoplasty in lower atresia according to Duffebach-Lenyushkin (11), anoplasty according to the Salomon method (5), anoplasty according to Bairov's method for stenosis of the anus (5), anoplasty for stenosis of the anus according to Hartmann's method (3), surgery according to the Lenyushkin method for rectovestibular snake eyes, right intra-abdominal, interspinal proctoplasty (3) was performed. These 60 patients were included in the comparison group.

In the period from 2012 to 2022 (the main group of 42 patients) operated from Hirschsprung disease according to the Soave-Lenyushkin method (10), Duhamel method (6), superior sagittal proctoplasty using the Peña method (8), anterior sagittal proctoplasty (9), De La Torre-Mondragan method (9). We evaluated the results of rehabilitation treatment using the Holschneider scale. The following examination methods were used: general examination, rectal examination, ultrasound, irrigography, invertogram, general blood and urine tests, biochemical, immunological, bacteriological, morphological examinations.

The general age of patients ranges from 2 days to 11 years. Children with anorectal developmental abnormalities undergo a rigorous course of therapy, which includes surgery. Its correct selection and perfect execution, the absence of postoperative complications, of course, contribute to good functional results. But the final result is determined in most cases by the quality of rehabilitation

activities in the immediate and distant postoperative period. Rehabilitation activities should be carried out continuously until the normal function of the newly formed rectum is reached. Especially, these patients receive physiotherapy only according to their treatment possibilities in the period after being under the supervision of pediatricians and general practitioners.

An analysis of the rehabilitation treatment of 102 patients who underwent operations on the colon and anorectal region was performed. Among them, during the first stage of our research, 1997-2011, rehabilitation of 60 patients (comparison group) was carried out unsystematically in the surgery department of the hospital. Among them, pediatricians and family doctors conducted various rehabilitation measures for 49 patients in a systematic way for 2-4 years. 61.2% of these patients are good, 28.6% are satisfactory, and 10.2% have no positive results (complete incontinence). Rehabilitation measures for these patients were not carried out in a fully systematic manner due to the possibility of rehabilitation in the clinical setting. The conducted analysis showed the absence of a specific scheme of rehabilitation treatment for patients who underwent surgery on the large intestine and anorectal region in the specialized literature. At the same time, based on the rehabilitation rules developed by domestic and foreign doctors, 42 patients were given rehabilitation treatment according to the following scheme in the period from 2012 to 2022.

Table 1.

Holschneider chart [10].

Parameters	Gradation	Number of points
Frequency of stools	Normal /1-2 times a day/	2
	Frequent /3-5 times a day/	1
	Very often	0
Fecal Consistency	Normal	2
	Loose	1
	Liquid	0
Encopresis	No	2
	If Stress or diarrhea	1
	Always	0
Sensation of rectal fullness	Normally	2
	Uncertain	1
	No	0
Ability to control the urge to defecation	Normal	2
	Short	1
	None	0
Being able to distinguish the consistency of feces	Normal	2
	Poor	1
	Absent	0
Needs treatment	Never	2
	Occasionally	1
	Always	0

Note: 14 points - normal function,
10-13 points - good function.
5-9 points - satisfactory function.
0-4 points – unsatisfactory.

Results

The problems of patients after surgery for anorectal malformations are loss of urge to defecate, hypotrophy, anemia, chronic fecal poisoning. The aim of rehabilitation of

anorectal malformations to keep the child clean and dry with an excellent quality of life as they have problems with fecal incontinence or can be artificially maintained clean through a comprehensive bowel management program.

Children who experience chronic constipation are given high-fiber foods (fruits, vegetables, bread made of coarse flour) which promotes the production of stool masses (meat, fish, sour cream, eggs, white bread, potatoes, oatmeal), as well as vaseline oil three times a day, depending on their age.

Understanding the initial deformity, the kid's anatomic condition after surgery, the quality of the sacrum and spine, and a determination of their ultimate continence potential are all necessary for evaluating a child with persistent bowel problems. To rule out anatomical reasons of intestinal dysfunction, the evaluation entails a contrast study, an examination performed under anesthesia, and screening for concomitant VACTERL (vertebral defects, anal atresia, cardiac defects, tracheo-esophageal fistula, renal anomalies, and limb) abnormalities. To determine the possibility for bowel control based on the computed ARM index, sacral X-rays and a spinal ultrasound or MRI are carried out.

Hegar dilators or finger suturing can be utilized to prevent scar distortion from developing as a result of the anal orifice narrowing, hence preventing permanent swelling. In our study we used rehabilitation method by Lenuskin [7]. The duration of rehabilitation was from 6 to 8 months. In order to prevent narrowing of the scar in babies, on the 9-11th postoperative day, after the wound is completely healed, the first step is to determine the caliber of the back hole using a Hegar expander under general anesthesia. In most cases, 5.5-6.0 buj will pass. After that, during treatment without anesthesia, the diameter of the ring is reduced by 0.5 cm, and its diameter is increased to 12. In medical conditions, once a day for 1 week, in the second week every other day, in 3 weeks - 2 times a week, in 4 weeks - 2 times a week, in 5 weeks - 1 time a week. should be carried out and try to reach number 12 at 4 months, 12 at 6 months, 13 at 5, 8 months. During the examination, if the scar after the operation is soft and suitable for stretching, stop the puking. treatment is prescribed / electrophoresis - lidase, ronidase, etc./The state of the anus determines how long vaginal discharge lasts. After 1 to 1.5 months, if there are no stenoses present, a follow-up exam can be done once every 3 days for a year, or once every 3-5 days throughout that time. Treatment problems are resolved based on the unique circumstances of each patient.

Douching twice daily for two to three months is recommended when a patient exhibits signs of anal hole scarring. After that, for 1-1, 5 months, the anus is inflamed once a day. After 3-4, 5 months, it continues 1-2 times a week for 2-3 months. Physiotherapy treatment is prescribed to the child along with anal plugging.

Rectal Enemas

Making children act of defecation on their own is one of the complex problems of rehabilitation for children with anorectal malformation [18,20,21]. This is a complicated reflex process involving the rectum, its sphincter apparatus, pelvic bones, and pelvic muscles with proper anatomical anatomy. Naturally, in addition to morphological aberrations

from the normal condition, reflex-functional abnormalities also arise in cases of atresia of the anus, prevaginal ectopy of the anal canal, or following replantation of the anal canal to the external sphincter. Defecation reflex mechanisms involving regular gut emptying must be formed in this situation, and the normal functioning of the rectum must be "taught."

Rectal enemas should be started every 24 hours at the same time to ensure regular emptying of the colon with a gradual decrease as the character of the stool improves. Depending on the patient's age, we advise utilizing 300-400ml of warm 1% table salt solution for enemas (or saline). Tap water in children can cause dehydration and hyponatremia. For three to four weeks, two enemas should be performed daily: one in the morning for training and one in the evening for cleansing hypertensive. The youngster is placed on the toilet or peninsula (potty) following each enema. The child keeps sitting on the peninsula at the same time every day after the enema cycle ends. This technique of relaxing the reflex has a positive impact on the defecation act in cases of low atresias following less traumatic surgeries.

Patients after surgery for anorectal malformations, when performing a rectal enema, have problems withholding retrograde tide due to poor development of the anal sphincters and, therefore, occurs incomplete filling of the colon with solution. In such cases, transanal irrigation (TAI) or antegrade lavage is recommended. While antegrade enemas start from the right colon and flush the intestine in an antegrade way without the need to hold the solution for colonic emptying, the TAI system with a cone tip or a balloon helps the patients hold the flush.

Reflex defecation after a major traumatic operation in the lower portion of the rectum using the back-sagittal, abdominal, or abdominal-octopus methods is unfortunately a challenging and often unsuccessful treatment. These problems are seen in cases where the pancreas and eyeball are not completely mature. Patients will have to repeat the training and enema cleaning process after a period of one to one and a half months.

It is best to hold the anus at the same time as the reflex to defecate is formed in a single block. Along with different complexes of medical physical training, physiotherapy treatment is conducted for this reason. The patient needs to be psychologically ready for it to succeed. The purpose of the patient's activities should be understood, as well as the limitations of the rectum and its supporting equipment. The kid is only capable of doing the duties given to him accurately in this scenario.

According to the literature, for the treatment of post-operative fecal incontinence for the rehabilitation of the pelvic floor in children, transcutaneous functional electrical stimulation is used in combination with exercises for the pelvic floor muscles. In the rehabilitation program, we performed electrical stimulation with diadynamic currents using a low-frequency therapy ("Electronic incontinence stimulation 5000" equipment) device every 3 months., electrostimulation is performed.

Anorectal malformations, which are often associated with anomalies of the spine and sacrum, arise from an embryologic cessation of the development of the pelvic musculature. Because of inadequate muscular

development, the patient is unable to hold their feces in, which leads to fecal incontinence. The development of bowel control in a child may be hampered if these problems are present.

There are several ways to maintain the reflex through **rectal gymnastics**. Rectal gymnastics is initiated following the creation of the anal aperture of the rectum in cases of lower anorectal abnormalities. The child needs to learn how to obey instructions such as "squeeze the finger" and "relax" during fingering, as well as how to detect the sensation of the finger going over the external and sphincter muscles. A rubber tube is inserted into the rectum, and the child is required to retain the tube while contracting the pelvic floor muscles in order to practice sphincter apparatus. Throughout the compression and muscle relaxation exercise around the tube, the coach should keep an eye on the proper execution

In a single session, thirty to forty contractions and relaxations may occur. The young patient is instructed to grasp the rectal tube in both a vertical and a laying posture.

A rubber balloon that is put into the rectum and then filled with fluids or air until the urge to urinate is felt can also be used to assist create the holding reflex. Subsequently, the youngster ought to attempt to retain the contents of the rectum by tensing the pelvic floor muscles. Exercises specific to the muscles of the limbs and abdomen are done in tandem with the contraction of these muscles.

Psychosocial factors in patients with anorectal malformations

Following surgery for anorectal malformation, constipation and/or fecal incontinence are prevalent and have significant personal, social, and emotional effects. This implies that the quality of life of these patients may be significantly improved by offering behavioral and developmental support as part of their multidisciplinary care [25].

All children who have undergone surgery for anorectal abnormalities must remain in the dispensary report for three to five years following the procedure, under the supervision of pediatric surgeons and rehabilitator physicians who oversee rehabilitation efforts. This makes it possible to identify a number of issues early on and treat them conservatively to avoid the need for additional surgeries.

In therapeutic and educational activities, parents actively participate under the supervision of a physician, with the goal of developing reflexes and promoting defecation and retention. The outcome of care is contingent upon the physicians' and parents' shared understanding. Parents should be aware that full normal function may not be achievable in children who have undergone surgery for inadequate bone structures and pelvic floor muscles, as well as congenital abnormalities of the anorectal region. As a result, everything must be done consistently to help the child adjust to society. In this context, it is recommended that children with developmental disabilities related to the anorectal region be under the care of specialized children's surgical departments. There, they will undergo examinations, a surgical treatment plan will be chosen, post-operative care, dispensary control, and repeated courses of rehabilitation activities will be scheduled and carried out [22, 23, 24].

The findings of the surgical treatment of anal and rectal atresia with vestibular and hilar ectopy indicate that the majority of our patients (62.8%) had good anatomic and functional results. However, 29% of the results are satisfactory, and 8.2% are unsatisfactory. When expressed in absolute terms, the results are as follows: good in 54 cases, satisfactory in 25, and unsatisfactory in 7. Children who achieved satisfactory outcomes were split into three groups: those in group (1) had fecal leakage, those in group (2) had constipation and fecal leakage, and those in group (1) had permanent constipation. Each of these kids needs different kinds of continuing rehabilitation exercises.

Bowel management for anorectal malformations

Bowel management aims to make the child wear regular underwear and empty the colon every day (as verified by radiograph) without any stool passing between regimen administrations (laxatives, rectal enemas, transanal irrigations, or antegrade flushes). It has been demonstrated that a specialized bowel management program greatly enhances children with colorectal illnesses' functional results and quality of life [25]. According to recent studies, the regimens utilized for ARM patients are distributed similarly: roughly 35% are on laxatives, and over 60% are controlled mechanically with rectal or antegrade enemas [1]. Laxatives, transanal irrigations, rectal enemas, and antegrade flushes are among the management options. Because patients with malformed anal sphincters have difficulty detecting soft feces, stool softeners should be avoided [26].

The main task of rehabilitation consists of the final consolidation of the patient's independent defecation skills and the complete restoration of the function of the rectal apparatus that holds feces. The treatment measures used in this period based on the above made it possible to achieve a good anatomical and functional result in 62.8 cases. Unsatisfactory results in 10.2% made it possible to reduce it to 8.2%. According to Wood et al., during a 1-year follow-up, 70% of the 222 patients who were participated in a bowel management program for fecal incontinence were clean. The bowel management program included use of rectal enemas, laxatives, transanal irrigations, and antegrade flushes [26].

Conclusion.

Children with anorectal malformations developed constipation and/or soiling after operation, which require bowel management. The program of bowel management should be introduced in all region of Kazakhstan. Therefore, in the period after surgery, organization of conditions that facilitate the study of a sick child at school, and in the most difficult period, home schooling, exemption from extracurricular classes will help to adapt to society. During the integration of the patient into the society, it could help the patient to have a good relationship with his peers, to fully master the school program, to choose a profession according to his health and wishes. This situation is the most important factor of social rehabilitation.

Conflict of interest No potential competing interest was reported by the authors.

Contributors. All the authors equally participated in the selection, assessment, and analysis of the selected studies. All of them have approved the final article.

Funding. The authors received no financial support for the authorship, research, and publication of this article

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