

Characteristic of Late Postoperative Complications and Recurrences of Anorectal Malformations Developed after Various Types of Proctoplastics

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Abstract. After primary anorectoplasty, postoperative complications remain high, from 10% to 60%. According to various authors, the reasons for the high percentage of unsatisfactory results are intraoperative iatrogenic errors. The aim of the study is to improve the results of treatment of recurrent anorectal malformations by improving surgical tactics and rehabilitation. 713 children with anorectal malformations were examined, including 130 (18.2%) - with relapses of the disease at various times after primary surgery. Of the re-operated patients, 47 (36.2%) were initially operated on in our clinic, 83 (63.8%) in other clinics. children were admitted after performing the most popular and most frequently used type of surgery in this category of patients - various types of perineal proctoplasty. The choice of the method of repeated surgical correction of the sphincter apparatus of the anus depended on the nature of the recurrence of the arm. We used low-trauma surgery for recurrent posterior-sagittal and anterior-sagittal reanorectoplasty.

Key words: anorectal malformations, recurrence, children, low-traumatic reanorectoplasty.

Relevance. According to the World Health Organization (WHO), "congenital malformations and premature birth are the most important causes of death in childhood, from which 303,000 children die each year during the first 4 weeks of life." Anorectal malformations (ARM) are one of the most common pathologies among congenital anomalies. In the structure of congenital malformations, the share of ARMs is about 7%, while they are in 9th place among all malformations according to the international register. According to a number of foreign experts, the mortality rate with ARM ranges from 16-19% and higher. After primary anorectoplasty,

postoperative complications remain high, from 10% to 60%. According to various authors, the reasons for the high percentage of unsatisfactory results are intraoperative iatrogenic errors. Because of the latter, the anatomy of the anorectal zone, its blood supply, and the innervation of muscle fibers and sphincters are disrupted. As a result, there is a gaping or vice versa stenosis of the anus, which leads to complications such as chronic constipation or fecal incontinence.

The aim of the study is to improve the results of treatment of ARM with relapses by improving surgical tactics and rehabilitation.

Materials and research methods. For the period from 1989 to 2015 inclusive, in the 2nd clinic of the Samarkand State Medical Institute, only 713 children with ARM were treated, including 130 (18.2%) - with relapses of the disease at various times after primary surgery. Of the re-operated patients, 47 (36.2%) were initially operated on in our country, 83 (63.8%) in other clinics.

Research results. As mentioned above, we have experience in the management of 130 children with late postoperative complications and relapses of ARM, developed after various types of proctoplasty and requiring repeated surgical correction. Before admission to us, the patients underwent from 1 to 3 unsuccessful surgical interventions in the form of various perineal and abdominal-perineal anoplasty. As a rule, children were admitted after performing the most popular and most frequently used type of surgery in this category of patients - various types of perineal proctoplasty - there were 117 such patients (90.0%). As a rule, children were admitted after performing the most popular and most frequently used type of surgery in this category of patients - various types of perineal proctoplasty - there were 117 such patients (90.0%). Rarely enough, we observed a recurrence of ARM after transverse extirpation (6 cases) and invagination extirpation according to Lyonyushkin's H-fistula (3 cases), as well as abdominal-perineal proctoplasty (4) (Table 1).

Table 1.
Types of primary surgical interventions before reanorectoplasty n = 130

Types of surgical interventions	Number of children	
	abs.	%
Various types of perineal proctoplasty	117	90,0
Perineal extirpation of the H-fistula	6	4,6
Abdominal-perineal proctoplasty	4	3,1
Invagination extirpation of the H-fistula according to Lyonyushkin	3	2,3

Fecal incontinence was the main clinical manifestation of ARM recurrence in all 130 patients, including in 35 (26.9%) cases, encopresis was combined with constipation, when postoperative cicatrice stenosis of the anus leads to severe stretching of the end section of the rectum by stagnant feces. Resulting in the endings and muscles of this zone lose sensitivity and the ability to respond adequately in order to retain stool.

Analysis of the reasons leading to the postoperative failure of the rectal sphincter apparatus showed that 82 (63.1%) children had diagnostic and tactical errors, as well as technical errors (33; 25.4%) in the performance of primary operations. And only in 15 (11.5%) patients,

postoperative purulent-inflammatory complications of the intervention became the cause of ARM recurrence (Table 2).

Table 2.
Reasons for ARM relapse, n = 130

Reasons	Numberofchildren	
	abs.	%
Diagnosticandtacticalerrors	82	63,1
Technicalerrors	33	25,4
Purulent-inflammatorycomplications	15	11,5

In this regard, it should be noted that some children were operated on in general surgical departments of district hospitals by surgeons who did not undergo specialized training in the surgical treatment of newborns with ARM. Local surgeons often poorly differentiate high and low forms of defect, as a rule, they do not diagnose rectal fistulas with the child's genitourinary system, and without taking into account these features of the disease, they are fond of performing proctoplasty with the perineal approach, which does not always provide adequate and radical elimination of the malformation. As we mentioned above, 90% of patients are admitted precisely after perineal proctoplasty (Table 1). To the most common technical errors of the operation, admitted by general surgeons, we attribute the inadequate mobilization of the rectum by the perineal approach in supralelevatorial forms of ARM, when the reduced intestinal mucosa is fixed to the neoanus with tension, which is the main and well-known cause of postoperative necrosis and mucosal retraction. Not all surgeons who performed primary operations possess the necessary skills for the rehabilitation of this category of children. In particular, they do not follow the generally accepted scheme of postoperative bougienage of the neoanus, do not send children to courses of electrical stimulation of the sphincter apparatus, and do not engage in procedures aimed at increasing the tone of the newly formed sphincter apparatus.

In addition, during the primary operation, in more than half of the patients (69; 53.1%), the neoanus was not formed in its typical place, which did not ensure the full functioning of the latter and extremely difficult to perform repeated reconstructive and restorative surgery, significantly increased its trauma (Table 3).

Table 3.
Localization of the neoanus after primary surgery, n = 130

Localization of the neoanus	Numberofchildren	
	abs.	%
In a typicalplace	61	46,9
Out of the typical place	69	53,1

Almost half of the patients with recurrent ARMs were children with difficult-to-correct forms of the defect - 62 (47.7%), whose radical elimination required the use of technical

complex reconstructive and restorative interventions and which had a high incidence of postoperative complications (Fig. 1).

In our opinion, the most optimal time for performing reanorectoplasty is the period from 1 to 1.5 years after the imposition of a preventive sigmoidostomy or undergone primary anorectoplasty. Such a time interval is necessary for the complete relief of inflammation in the anorectal region, for the normalization of the diameter and tone of the previously dilated distal colon.

During this preparatory period, we actively carry out a set of conservative measures, consisting of a laxative diet, cleansing enemas, and general strengthening therapy. To cleanse the intestines, preparations of lactulose, magnesia, wheat bran, etc. were also used. In order to improve intestinal motility, physiotherapy was widely used (electrical stimulation of the colon, electrophoresis with proserin on the abdominal region).

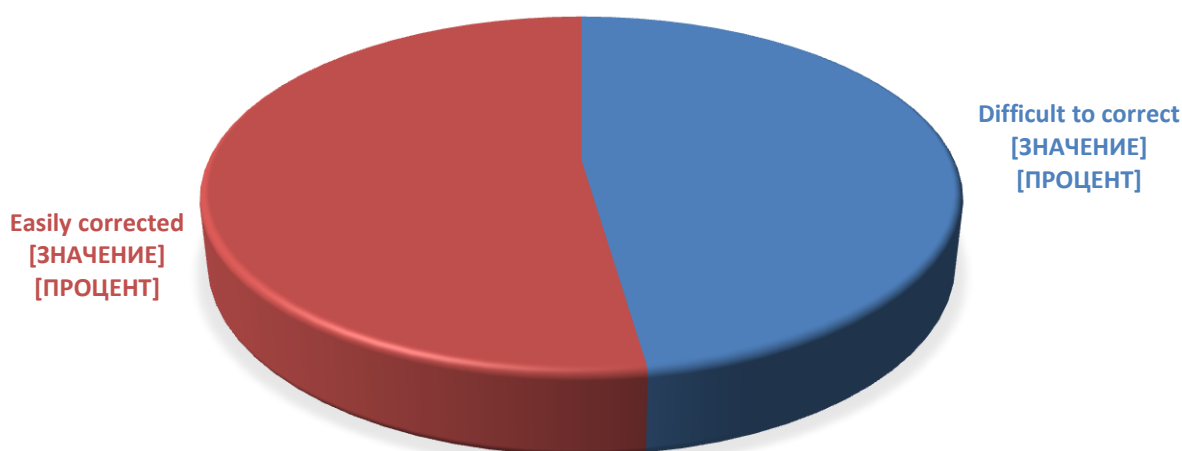


Figure: 1. Distribution of children with relapsing workstation according to the complexity of the defect.

The choice of the method of repeated surgical correction of the sphincter apparatus of the anus depended on the nature of the recurrence of the ARM. Thus, in 49 (37.7%) out of 130 patients, we used posterior-sagittal reanorectoplasty (PSRAP) (Table 5), the indication for which was the presence of rectourethral and rectovestibular fistulas. PSRAP provides a radical elimination of complex fistulas opening into the child's urogenital system, and adequate restoration of the anatomy of the anal canal. The operation technique involves the intersection of the skin and the muscular complex of the pelvic floor in a strictly sagittal plane along the intergluteal fold from the coccyx to the fistula in the genital tract in girls or the scrotal root in boys. At the same time, we try to preserve the muscle structures of the rectal sphincters, pushing them to the side, and not crossing them (Fig. 2).

Table 5
The nature of repeated surgical interventions for relapses of ARM n = 130

Surgical correction method	Number of children	
	Abs.	%
Posterior-sagittal reanorectoplasty	49	37,7
Perineal proctoplasty with excision of the stenosing ring	32	24,6
Sphincterlevaroplasty	9	6,9
Anterior-sagittal reanorectoplasty	7	5,4
Anal canal reimplantation	5	3,8
Anterior reanorectoplasty for recurrent H-fistulas	4	3,1
Excision of the H-fistula according to Lenyushkin	1	0,8
Abdominal-perineal reanorectoplasty with rectal demucosation	23	17,7

With pronounced dilatation of the rectum in 12 (24.5%) children out of 49, technical difficulties arose due to the discrepancy between the diameters of the rectum and the anal canal, in connection with which they underwent partial resection of the posterior wall of the descended segment of the intestinal tube according to A. Pena.

When performing intraoperative PSRAP, an intermediate form of the disease in relation to the levator muscles was revealed in 24 (49.0%) children, and a low form - in 25 (51.0%) children. Among the types of fistulas, vestibular (in 16 (32.7%) children) and rectourethral (15; 30.6%) fistulas were most often detected, and perineal fistulas were often detected (4; 8.2%). Rectourethral fistulas required urethroplasty. Non-perforated anus was diagnosed in 13 (26.5%) patients. 1 (2.0%) child had a cloaca with a common canal less than 3 cm, in connection with which total urogenital mobilization and urethrovaginoplasty were performed.

In 3 (6.1%) cases out of 49, posterior-sagittal reanorectoplasty was supplemented with the removal of the presacral cyst (Fig. 3), sacrococcygeal teratoma and lipoma identified in the anorectal region.

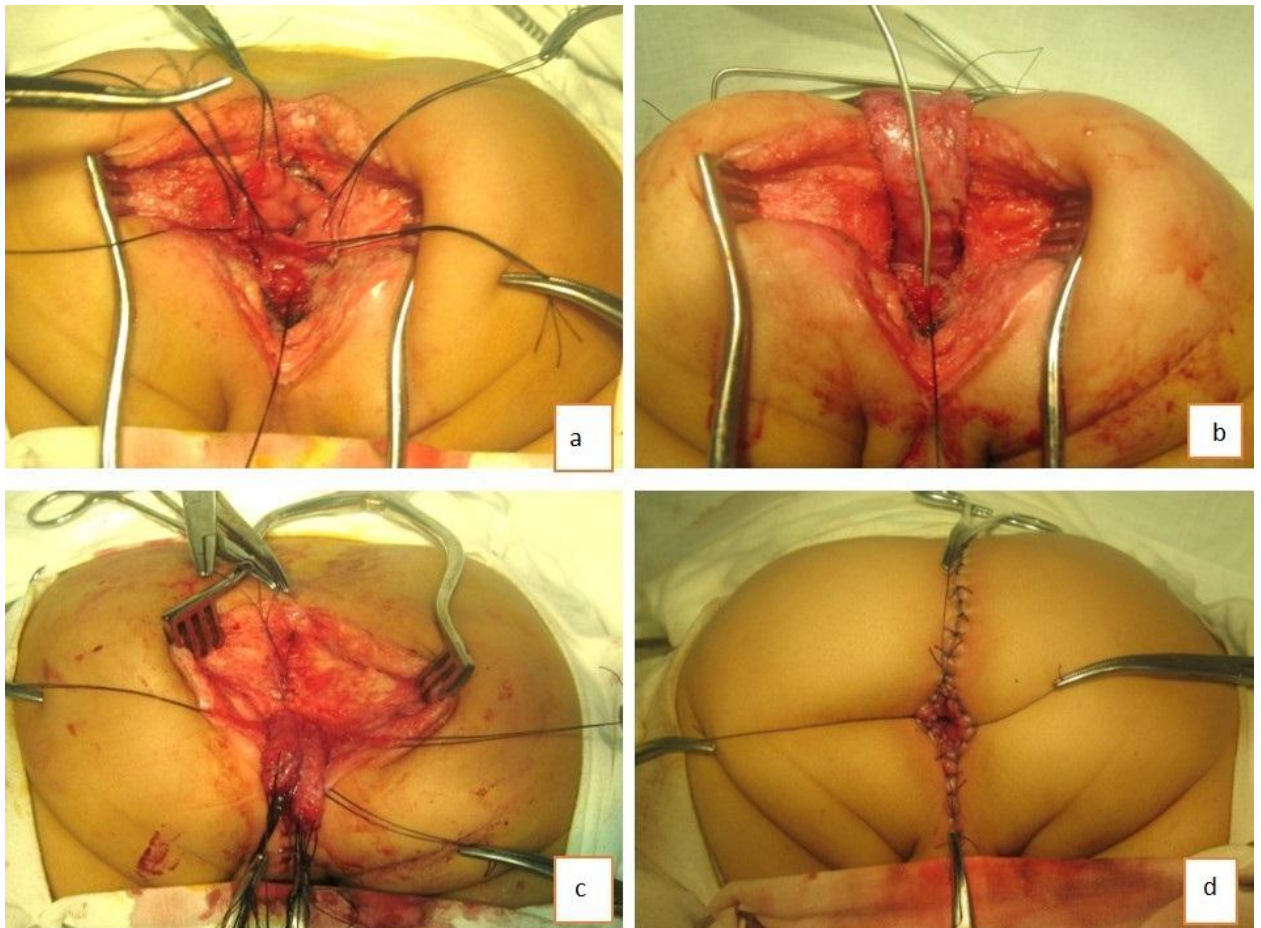


Figure: 2. Patient M. D-z: Neanus stenosis. Condition after repeated proctoplasty. Stages of post-sagittal reanorectoplasty: a) the rectum is taken with retainer sutures; b) the mobilized rectum and catheter in the cut off rectourethral fistula;c) the rectum is laid in the center of the muscle complex, the urethra is sutured; d) final view.

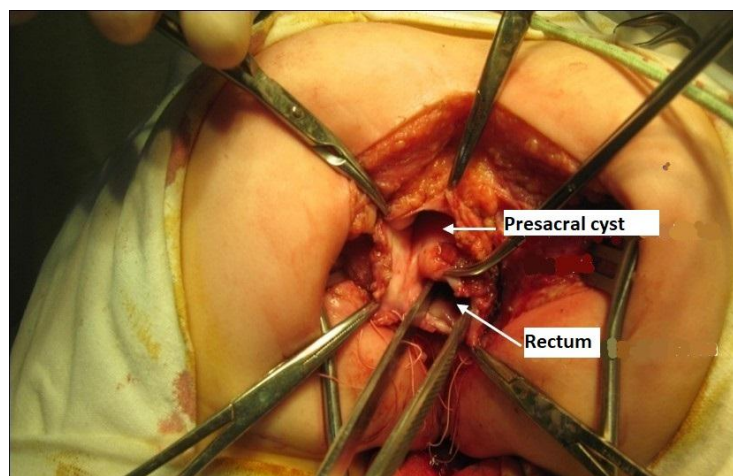


Figure: 3. Removal of the presacral cyst when performing posterior-sagittal reanorectoplasty.

Methods of perineal reanorectoplasty without transection of the pubo-rectal muscle were performed in only 58 (44.6%) children with so-called easily corrected recurrent defects (see Table 5.). In this category of patients, pronounced stenosis of the neanus prevailed, in whom

excision of the stenosing ring with bringing down the normal section of the rectal mucosa by perineal access was optimal - perineal proctoplasty in the modification of the clinic. We used this method in 32 (55.2%) children. A distinctive feature of our proposed modification of proctoplasty is bringing down the previously mobilized rectal mucosa into the zone of the newly formed neoanus. This is a technically uncomplicated technique, which provides for the mobilization of the rectal mucosa only 0.5-0.7 cm in the proximal direction from the border of the normal area, which allows you to reliably cover the suture line and thereby ensures reliable prevention of stenosis recurrence.

In 9 (6.9%) children with local damage to the sphincter muscles, but not more than 1/3 of the circumference of the external sphincter, we limited ourselves to sphincteroplasty (4) and sphincterolevatoroplasty (5), as the simplest, least traumatic and effective method of reanorectoplasty in this category of patients (fig. 4). Anterior sagittal reanorectoplasty (ASARP), which was used in 7 (5.4%) patients, including 5 with relapses of the vestibular fistula and two with rectal retraction with stenosis. When performing ASARP, the levators of the rectum are not damaged; the intervention itself is carried out through a small incision, which is the undoubted advantage of this operation (Fig. 6). However, this technique also has a number of disadvantages: 1) a small incision makes it difficult to perform the stages of reanorectoplasty with an intermediate type of rectum location (rectourethral fistulas, cloaca); 2) an enlarged rectum can create some technical difficulties in the formation of the neoanus; 3) the presence of cicatricial changes in the rectum and deformation of the perineum and anal canal sharply limit the use of this method.



Figure: 4. Sphincterolevatoroplasty of the anterior portion of the external sphincter.

In 5 (3.8%) children with complete infection of the anal canal in the postoperative period, a rather complicated and traumatic intervention was performed - reimplantation of the anal canal.

Reconstructive surgeries for recurrent H-fistula were performed in 5 (4.9%) children, including 4 patients - anterior reanorectoplasty (Fig. 5) and 1 patient - excision of the H-fistula according to Lenyushkin.

In the first years of mastering the methods of surgical treatment of recurrent forms of ARM in 23 (17.7%) children, we used abdominal-perineal reanorectoplasty (APRARP) with rectal demucosis (see Table 5. Fig. 6), from which we were forced to withdraw due to the high failure rate. The defects in these children belonged to the low and intermediate forms. In particular, fecal incontinence due to correction of the vestibular fistula was found in 4 children,

perineal fistula - in 6, rectourethral fistula into the bulbar urethra - in 5, recurrence of rectovestibular H-fistula - in 1 child, cloaca with a common channel <4 cm - in 2 , non-perforated anus - in 5 children.



Figure 5. Anterior reanorectoplasty. Explanations in the text.

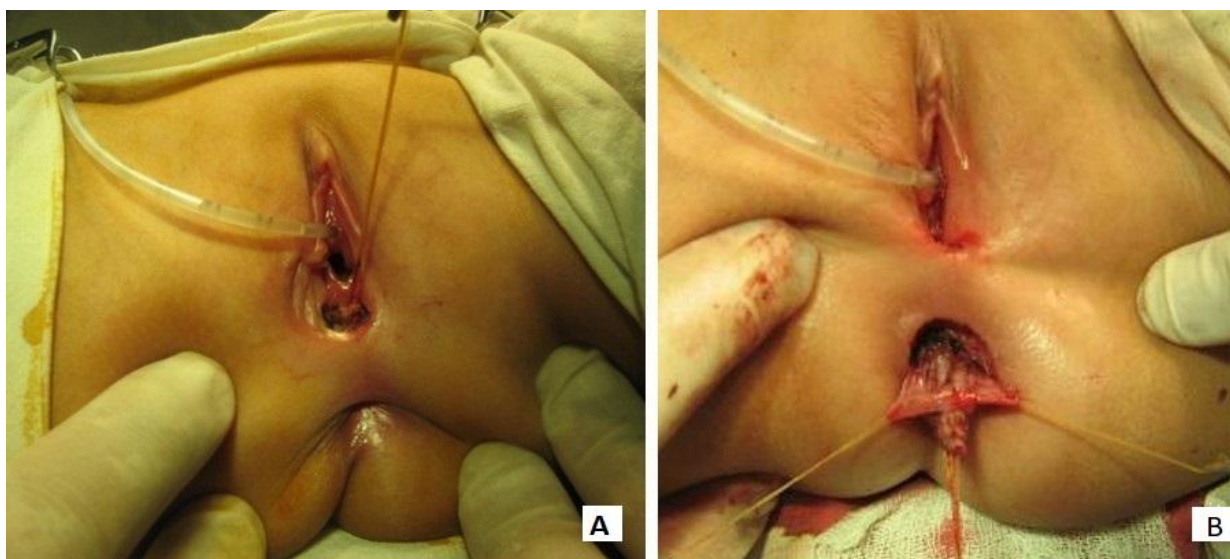


Figure: 6. Anterior reanorectoplasty: a) mobilization of the fistula; b) the wall of the rectum with a fistula is brought down beyond the anal canal.

Therefore, when carrying out APRARP, in most cases, we supplemented the intervention with an operation modified by A. I. Lyonyushkin, which consists in removing and fixing the lowered rectum outside the anal ring by 4-5 cm in order to protect the skin wound (Fig. 7. 8). After 10-14 days, we cut off the stump, and fix the mucous membrane to the edge of the skin wound.

Figure: 7. APRARP: stage of rectal demucosation. Fixation of the descended rectum outside the anal ring.

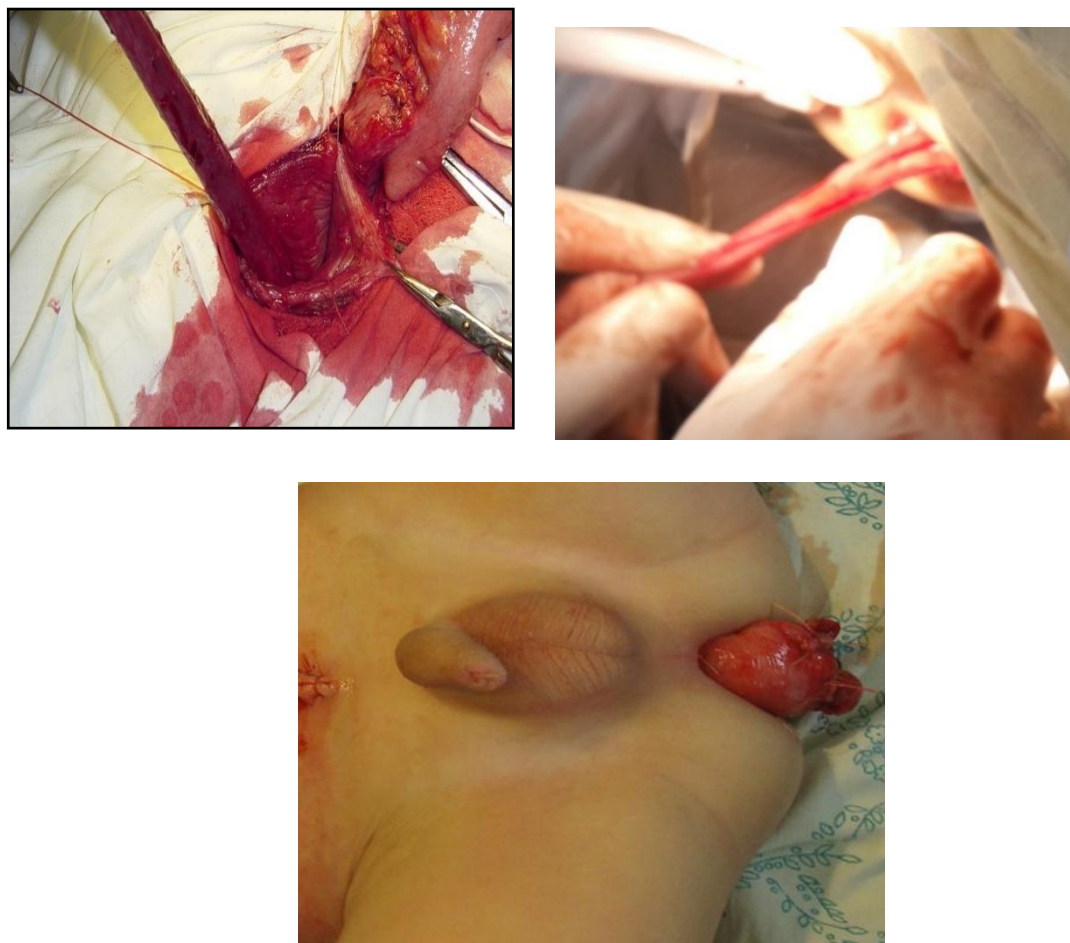


Figure: 8. APRARP: fixation of the reduced rectum outside the anal ring.

Conclusions:

1. 130 children with relapses of ARM after previous primary radical interventions for this malformation. There were 68 boys (52.3%), and 62 girls (47.7%). Children were aged from 6 months to 15 years, while almost half of the patients (61; 46.9%) were operated on again before the age of 3 years and only 17 (13.1%) children were operated on in adolescence.

2. Large clinical groups of pathology accounted for 118 (90.8%) cases, while rare / local forms - only 12 (9.2%). Among the recurrent forms of ARM, vestibular fistula prevailed, which occurred in 39 (30.0%) children, whereas in patients with initially identified ARM, this form of anomaly was found only in 14.6%. Further, in terms of the frequency of occurrence in the structure of recurrent forms of ARM, atresia without fistula (22.3%), perineal fistula (18.5%), rectourethral fistula (10.8%) and stenosis of the anus (6.2%) were occupied. Other forms of defect have occurred in isolated cases.

3. In children with a relapse of the disease, there were low and intermediate forms of the defect, including intermediate forms (rectourethral fistulas in the bulbar or prostatic part of the

urethra, cloaca with a common channel less than 3 cm) - in 22 (16.9%) children, low forms (perineal, vestibular fistula, H-fistula, non-perforated anus) - in 108 (83.1%).

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