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The Choice of Surgical Treatment for Hirschsprung's Disease in Children

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ABSTRACT
The problems of surgical treatment of Hirschsprung's disease in children have been relevant for many decades. The main controversial issues that need to be addressed are the choice of surgical tactics, the development of new modified minimally invasive methods, as well as the improvement of existing methods of treatment. The results of 138 children with Hirschsprung's disease, aged 2 months to 11 years, who were treated at the TashPMI clinic from 2017 to 2022, were analyzed. The conducted studies allowed us to conclude that in the treatment of Hirschsprung's disease in children, preference should be given to minimally invasive transanal endorectal methods of relegation, since they are less traumatic, sparing, and most effective in terms of radical and physiological intervention. These operations are an alternative to wide-ranging traditional interventions characterized by technical complexity and relatively worse immediate and long-term treatment results.
KEYWORDS:*Hirschsprung's disease, surgical treatment, children.*

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INTRODUCTION

Hirschsprung's disease in children is a common pathology of the Central Asian region and, to this day, remains one of the most common severe congenital malformations of the abdominal organs in children that require extensive and sometimes complex reconstructive surgical interventions. Among congenital anomalies of the colon, Hirschsprung's disease in children has the highest proportion; the frequency of occurrence of this pathology, according to various authors, ranges from 1:4000 to 1:7000 live newborns and does not tend to decrease. Despite numerous methods for treating Hirschsprung's disease in children, statistics show that 30% of operated patients experience complications such as fecal incontinence, insolvency, anastomosis zone stenosis, or anal canal scarring in the early or late postoperative period [5, 7, 12].The reasons for unsatisfactory treatment results in most cases that do not allow achieving good functional indicators are: the patient's age; the presence of secondary changes against the background of prolonged colostasis, not only from the intestine but also from the body as a whole; an unjustified choice of the period of correction of the defect and the method and method of surgery; combined developmental anomalies; inadequate preoperative preparation and postoperative administration; and the incomplete rehabilitation of patients [2, 3, 11].

Many issues of surgical treatment of Hirschsprung's disease in children remain debatable; the solution of controversial issues underlies a reassessment of views on surgical tactics, the timing of surgical intervention, the development of new modified methods, and the improvement of known methods of radical correction of the defect [1, 4, 6, 8, 9, 10]. These and other unresolved issues should be aimed at developing and implementing diagnostic algorithms and treatment protocols that will allow early diagnosis of the disease, timely correction of the defect using modern minimally invasive interventions, reduce the development of complications, and achieve the maximum possible positive results not only in the near term but also in the long term postoperative treatment of Hirschsprung's disease in children.

The purpose of the study was to determine reasonable tactics and select an effective treatment method for Hirschsprung's disease in children.

MATERIALS AND METHODS

During the period from 2017 to 2022, 138 children aged 2 months to 11 years with various forms of Hirschsprung's disease were hospitalized at the children's surgery clinic of TashPMI (Table 1).

Table No. 1: Distribution of patients by age and method of surgery

№	Methods of operation	Age of patients (years)				Total
		0-3	4-6	7-10	11 years And above	
1.	Soave-Lenyushkina	42	21	5	4	72
2.	O. Swenson	3	4	1	-	8
3.	Swenson-like	4	2	3	1	10
4.	DelaTorre - Mandragon	28	16	2	2	48
Total		77	43	11	7	138

We used two groups of patients who underwent traditional open surgical interventions as well as minimally invasive video-assisted transanal endorectal interventions to conduct a comparative analysis of performed surgical interventions in Hirschsprung's disease and to determine a differentiated approach to the choice of a method of correction of the defect. Traditional open surgical interventions were performed with a significant length of the aganginary zone of the colon by the methods of Soave-Lenyushkin in 72 (52.2%) patients and O. Swenson in 8 (5.9%) observations. Minimally invasive video-assisted transanal endorectal interventions with resection of the aganglionic zone of the colon were performed in rectal and rectosigmoid forms of Hirschsprung's disease using the Swenson-like method in 10 (7.2%) patients. The endorectal method of proctoplasty De la Torre-Mandragon with resection of the agangliosis zone was performed in 48 (34.8%) patients with rectosigmoid form.

All patients, regardless of age and gender, underwent a comprehensive examination to determine the form of Hirschsprung's disease, which included clinical, laboratory, and biochemical studies; ultrasound scanning of the muscles of the external anal sphincter; irrigography—to determine the transitional pathological area of the colon between the aganglionic and expanded zones; balloon proctography—to determine the functional viability of the puborectal muscle and anorectal angle; and MSCT—the purpose of which was to determine the anatomical integrity of the pelvic muscles. Important importance in preparing patients for surgery was given to the decompression of the colon and its complete emptying, which was achieved by regular cleansing and siphon enemas.

RESULTS AND DISCUSSION

A retrospective analysis of the surgical interventions performed by us showed fundamental differences not only in the technique of execution, but also in the immediate and long-term results obtained after the operation. Thus, when performing abdominal-perineal proctoplasty by the Soave-Lenyushkin method in all patients with Hirschsprung's disease, the principal moment of surgical intervention was the intersection of the sigmoid colon and ensuring venous outflow while maintaining the vascularization of the muscular cylinder. In 18 (25%) patients, despite the control of complete demucosis and the absence of nerve damage during rectal dissection, an unsatisfactory result was noted in the form of postoperative anal incontinence in 8 (5.9%) cases, colorectal anastomosis stenosis in 7 (5.1%) cases, and a serous abscess in 3 (2.1%) cases.

Analyzing the results of the performed Soave-Lenyushkin operations, we concluded that postoperative anal incontinence was caused by increased pressure in the anal canal, the cause of which was the creation of a duplication of the serous-muscular layer of the rectum and an incomplete synergy of the fibers of the inner and outer sphincters of the rectum, which eventually led to the accumulation and prolonged stagnation of fecal masses, which was accompanied by involuntary discharge of intestinal contents to the outside. The appearance of colorectal anastomosis stenosis was caused by a postoperative inflammatory process at the site of fixation of the reduced intestine in the anus (Fig. 1).

Fig. 1. Colorectal anastomosis stenosis.

In our studies, the O. Swenson operation was performed on 8 patients. According to G. Henry et al. (2013), the classical technique of operation O. Swenson is considered to be the only truly therapeutic and logical one; it is performed mainly in patients with an extended aganglionic zone [7]. The principle of this technique was complete resection of the aganglionic zone with dissection of the rectum along its outer wall to the upper border of the external sphincter with preservation of venous outflow into the pelvis. Then the rectum was crossed obliquely with the imposition of a sealed coloanal anastomosis (Fig. 2).

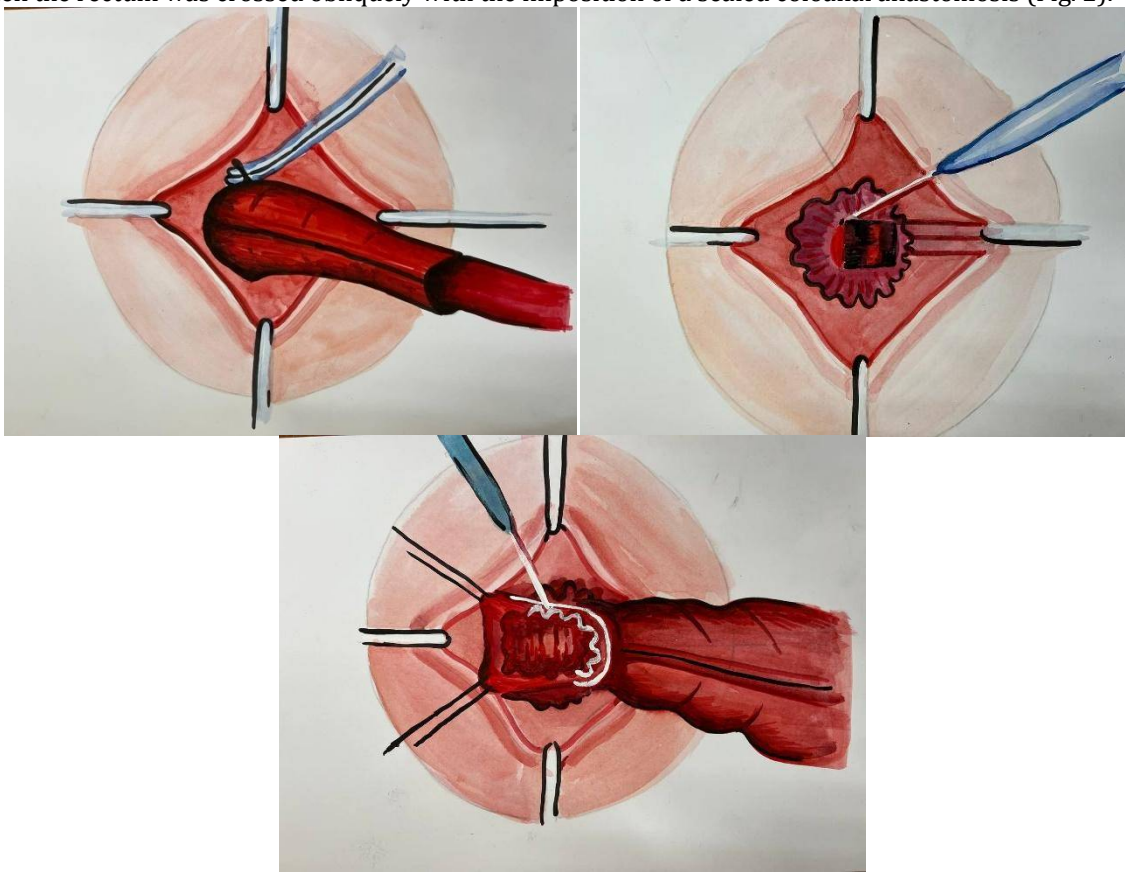
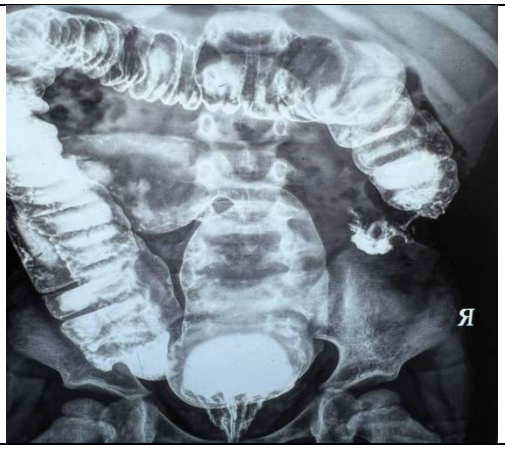


Fig. 2. O. Swenson operation (coloanal anastomosis).

Despite compliance with all the principles of the classical implementation of the O. Swenson operation, the results of treatment in our studies were not comforting, which was expressed in a high percentage of complications, such as stenosis of the anastomosis zone in 2 (1.4%) patients and the dysuric phenomenon in 1 (0.7%) of observations.

The video-assisted Swenson-like transanal endorectal method with resection of the agangliosis zone was performed in 10 patients with rectal and rectosigmoid forms of Hirschsprung's disease. We performed this surgical intervention based on the experience of conducting this technique by A.D. Morozov et al.

(2016), the essence of which is that after intraperitoneal rectal discharge, a circular incision is made from the side of the mucous membrane of the anal canal (above the toothed line by 1 cm) for the entire thickness of the intestinal wall, and then the excision of the serous-muscular case, which retains the aganglionic fibers, is performed [11]. The peculiarity of this technique, according to the authors, is that the rectosigmoid part of the colon is allocated as high as possible, as long as it allows fixing the descending colon, while it is necessary to carry out reliable vascular ligation (Fig. 3).



Before the operation

After surgery (after 6 months)

Fig. 3. Irrigation before and after surgery.

The use of the Swenson-like correction method has shown its effectiveness from the position that this technique is performed without first applying a sigmostome, and the results obtained in our observations were evaluated as good and satisfactory in 90% of patients.

The endorectal method of proctoplasty De la Torre - Mandragon with resection of the aganglionic zone of the colon was performed in 48 (34.8%) patients with rectal and recto-sigmoid forms of Hirschsprung's disease. This method of surgical intervention was performed mainly in children of the younger age group, since the most important stage of the De la Torre - Mandragon method is transanaldemucosation of the mucous membrane of the serous-muscular cylinder of the rectum from the perineum side in a technical aspect, they proceed more favorably. In older children, due to the long duration of the disease and significant changes in the mucous membrane of the rectum, it does not allow performing a full-fledged transanaldemucosation without traumatic errors and in technical execution it presents certain difficulties.

The next stage of the operation De la Torre - Mandragon, was the isolation of the mucous membrane of the anal canal in the proximal direction to the peritoneum, followed by mobilization of the rectum and sigmoid colon, to bring them down through the anus. Then, above the site of agangliosis, the colon was crossed over the transitional expanded zone of the pathological site and a coloanal anastomosis was applied (Fig. 4.).

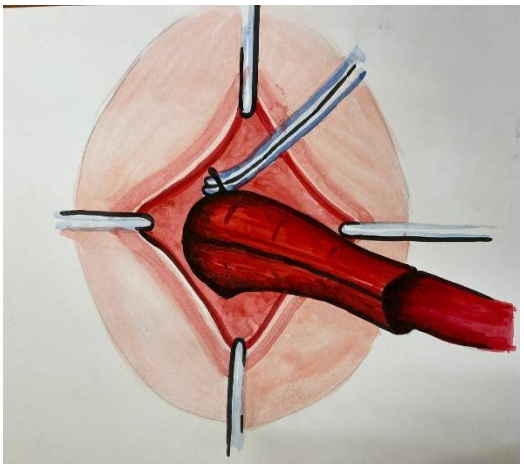


Fig. 4. Stages of operation De la Torre - Mandragon.

In the immediate postoperative period and follow-up in the catamnesis, it was shown that the De la Torre-Mandragon method is effective but not without certain drawbacks, such as pain manifesting for a certain time during the act of defecation, as revealed in 9 (6.5%) observations. In 1 (0.7%) patient, a fatal outcome was noted, the cause of which was the divergence of the anastomosis sutures, which led to the development of diffuse purulent-fecal peritonitis.

The advantages of this method are:performing surgery without laparotomy access;minimal trauma during mobilization of the sigmoid and rectum;the possibility of early rehabilitation in the postoperative period;and good and functionally satisfactory treatment results.The treatment of complications that occurred directly in the immediate and long-term periods was carried out comprehensively with the use of rehabilitation measures aimed at normalizing the function of the colon and the entire digestive tract.

To reduce the liquid consistency of intestinal contents and retention of feces during postoperative anal incontinence, patients were selected for a diet and prescribed "Bifolak®-Zinc" (probiotics + zinc), whose reception contributed to the normalization of microflora in the intestine and increased the bioavailability of prescribed drugs. Contact intraanal electrical stimulation of the sphincter apparatus was mandatory for patients. Also, the complex of measures of postoperative conservative therapy included therapeutic herbal training enemas, vitamin therapy, and immunotherapy prescriptions using the drug "ImmunoComplex®."

Colorectal anastomosis stenosis after traditional open interventions was resolved as a result of daily boujerations (the duration of which depended on the severity of the stenosis) in 10 (7.2%) cases; in 4 (2.9%) patients, surgical interventions were performed due to the ineffectiveness of boujerations—excision of stenosis sites.

CONCLUSION

Thus, our studies allow us to conclude that in the treatment of Hirschsprung's disease in children, preference should be given to minimally invasive transanal endorectal methods of relegation since they are less traumatic, sparing, and most effective in terms of radical and physiological intervention. Traditional broad surgical interventions are characterized by technical complexity, insufficient functionality, and comparatively worse immediate and long-term treatment results, sometimes requiring repeated surgical corrections and long-term rehabilitation measures.

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