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COMPARISON OF ABDOMINOPERINEAL PROCTOPLASTY TECHNIQUES IN CHILDREN WITH HIRSCHSPRUNG'S DISEASE ACCORDING TO THE CLAVIEN–DINDO CLASSIFICATION

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Abstract

This article compares the outcomes of two types of abdominoperineal proctoplasty—Soave–Boley and Soave–Lenyushkin techniques—in children with Hirschsprung's disease based on the Clavien–Dindo classification of surgical complications. Analysis of complication severity allows for an objective assessment of surgical safety. According to the obtained results, most complications in the Soave–Boley group corresponded to Clavien–Dindo grades I–II, whereas grade III complications were relatively more frequent in the Soave–Lenyushkin group. The Clavien–Dindo classification proved to be a reliable and reproducible method for comparing surgical techniques.

The article was based on archival records from 2010 to 2025 and the authors' own clinical observations conducted at the Department of General Surgery of the Khorezm Regional Multidisciplinary Children's Medical Center and the Department of General Surgery of Urgench State Medical Institute.

Keywords: Hirschsprung's disease, abdominoperineal proctoplasty, Soave–Boley, Soave–Lenyushkin, Clavien–Dindo, pediatric surgery, complications.

Introduction

Hirschsprung's disease (aganglionosis of the colon) is a severe congenital developmental disorder characterized by the absence of intramural enteric nerve ganglion cells in the distal segment of the large intestine. This condition leads to impaired intestinal peristalsis, functional bowel obstruction, as well as suprastenotic dilatation of the colonic segment proximal to the aganglionic zone and the development of hypertrophic changes in its walls.

Hirschsprung's disease most commonly involves the aganglionic segment of the rectum and sigmoid colon, accounting for approximately 80–85% of cases. According to contemporary studies, the incidence of the disease is around 1 in 5,000 live births, with a male predominance, occurring approximately four times more frequently in boys than in girls.

The primary method of treatment for Hirschsprung's disease is surgical and consists of resection of the aganglionic segment and the suprastenotically dilated portion of the intestine, followed by the creation of a colorectal anastomosis. Despite significant advances in pediatric coloproctology, timely

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diagnosis and effective treatment of Hirschsprung's disease in children of different age groups remain relevant and challenging issues. In clinical practice, several modifications of proctoplasty are employed. When evaluating their clinical effectiveness, not only the final clinical outcome but also the severity of postoperative complications is of major importance. Therefore, the assessment of complications using a standardized classification system is essential.

Despite numerous scientific studies, postoperative complications—particularly enterocolitis, fecal incontinence, and encopresis—remain relatively frequent. Unsatisfactory treatment outcomes are often associated with inappropriate timing of surgical intervention, insufficient preoperative preparation, suboptimal selection of the surgical technique, as well as inadequate postoperative rehabilitation and dynamic follow-up.

Therefore, despite the introduction of modern diagnostic and surgical treatment methods into clinical practice, the problem of managing Hirschsprung's disease remains relevant to this day.

The Clavien–Dindo classification allows postoperative complications to be graded from I to V according to their clinical severity and the required therapeutic interventions. This system is widely used for the objective comparison of different surgical techniques.

Aim of the study:

To compare postoperative complications following the Soave–Boley and Soave–Lenyushkin procedures in children with Hirschsprung's disease according to the Clavien–Dindo classification grades and to determine which technique is clinically safer.

Materials and Methods:

This study had a retrospective and prospective design and included a total of 24 patients with Hirschsprung's disease who underwent surgical treatment using the Soave–Boley or Soave–Lenyushkin techniques between 2010 and 2025 at the Department of General Surgery of Urgench State Medical Institute and the Department of General Surgery of the Khorezm Regional Multidisciplinary Children's Medical Center.

Characteristic	**Value**
Mean age	3.3 years
Sex	
Male	19
Female	5
Anatomical form	
Rectal	8
Rectosigmoid	13
Subtotal	3

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For comparative analysis, the patients were divided into two groups. The main group consisted of 16 children who underwent surgical treatment using the Soave–Boley technique, while the control group included 8 patients operated on using the Soave–Lenyushkin technique. The mean age of the patients was 3.3 years. The majority of patients were boys (n = 19), while girls accounted for 5 cases.

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Regarding anatomical forms of the disease, the rectosigmoid type was predominant (13 cases), followed by the rectal form in 8 patients and the subtotal form in 3 children (Table 1). Postoperative complications were assessed according to the Clavien–Dindo classification. For each patient, only the most severe complication was taken into account.

Statistical analysis was performed using Fisher's exact test for categorical variables. Differences were considered statistically significant at $p < 0.05$. The distribution of complications by severity grades between the groups was statistically compared using the χ^2 test or Fisher's exact test, depending on the sample size. Statistical significance was accepted at $p < 0.05$.

Results:

Postoperative complications were analyzed according to the Clavien–Dindo classification grades. The analysis demonstrated the following findings:

Complication	Main group (Soave–Boley, n = 16)	Control group (Soave–Lenyushkin, n = 8)	Treatment performed	Clavien–Dindo grade
Coloanal anastomotic leakage	1	0	Relaparotomy + redo coloanal anastomosis	IIIb (surgery under general anesthesia)
Chronic colitis	2	3	Pharmacological treatment	II
Chronic constipation	1	2	Pharmacological treatment	II
Intestinal dysfunction	1	2	Pharmacological treatment	II
Exacerbation of enterocolitis	0	3	Pharmacological treatment	II
Anastomotic stenosis	0	2	Bougienage without general anesthesia	IIIa
Adhesive disease	0	1	Relaparotomy + adhesiolysis	IIIb (surgery under general anesthesia)

Table 2.1. Classification of complications in the main and control groups according to the Clavien–Dindo system

Postoperative complications and their management are presented in Table 2.1. In the main group, one patient developed coloanal anastomotic leakage, which required relaparotomy and redo coloanal anastomosis (Clavien–Dindo grade IIIb). In the control group, cases of anastomotic stenosis (grade IIIa) and relaparotomy due to adhesive disease (grade IIIb) were observed. Complications requiring pharmacological treatment occurred more frequently in the control group.

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Complication grade	Soave–Boley (n = 16)	Soave–Lenyushkin (n = 8)	p (Fisher's exact test)
I	0	0	—
II	4 (25.0%)	6 (75.0%)	0.032
IIIa	0	2 (25.0%)	—
IIIb	1 (6.25%)	1 (12.5%)	—
IV	0	0	—
V	0	0	—
Severe (≥ III)	1 (6.25%)	3 (37.5%)	**< 0.05***
All complications	5 (31.25%)	8 (100%)	0.002

Data are presented as number (%).
*Statistically significant difference.

Table 2.2. Assessment of postoperative complications after abdominoperineal proctoplasty according to the Clavien–Dindo classification using Fisher's exact test

Data are presented as number (percentage). Differences between the groups were assessed using Fisher's exact test. For each patient, only the most severe complication was considered in accordance with the Clavien–Dindo classification.

The difference in severe complications (≥ grade III) was statistically significant ($p < 0.05$).

In the main group, postoperative complications were identified in 5 patients (31.25%), whereas in the control group, complications of varying severity were observed in all 8 patients (100%) ($p = 0.002$).

According to the Clavien–Dindo classification, grade II complications occurred significantly more frequently in the control group (75.0% vs. 25.0%; $p = 0.032$). Severe postoperative complications (≥ grade III) were observed in 1 patient (6.25%) in the main group and in 3 patients (37.5%) in the control group ($p < 0.05$).

In the main group, one patient developed coloanal anastomotic leakage requiring relaparotomy and redo coloanal anastomosis (grade IIIb). In the control group, two cases of anastomotic stenosis (grade IIIa) and one case requiring relaparotomy due to adhesive disease (grade IIIb) were recorded.

Discussion

The results of the study demonstrated that the Soave–Boley technique is safer compared with the Soave–Lenyushkin technique. In the control group, not only the overall number of postoperative complications but also the frequency of severe complications was higher. This finding may be associated with the greater traumatic nature of the surgical technique and its impact on the process of functional recovery.

The use of the Clavien–Dindo classification enabled objective and internationally comparable assessment of postoperative complications, thereby enhancing the scientific value of the study findings.

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Conclusion

The Soave–Boley technique in the surgical treatment of Hirschsprung's disease in children is characterized by a lower incidence of postoperative complications and a reduced frequency of severe complications. This technique may be recommended as a safe and effective surgical option in clinical practice.

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