

## POSTOPERATIVE COMPLICATIONS AND OUTCOMES OF SOAVE-LENUSHKIN AND DUHAMEL PROCEDURES IN CHILDREN WITH HIRSCHSPRUNG DISEASE

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**Abstract:** *Hirschsprung disease (HD) is a congenital condition characterized by the absence of ganglion cells in segments of the bowel, resulting in functional intestinal obstruction. It typically manifests in neonates and infants with symptoms such as failure to pass meconium, abdominal distention, and chronic constipation. The mainstay of treatment is surgical resection of the aganglionic segment. Among the surgical techniques, Soave-Lenushkin and Duhamel pull-through procedures are widely used and have shown go... This study analyzes the postoperative outcomes and complications of these two surgical methods in a pediatric cohort. Data were collected retrospectively and included patient demographics, surgical technique, and postoperative complications. Our findings indicate significant differences in complication rates and functional outcomes between the two groups, suggesting potential guidelines for surgical decision-making.*

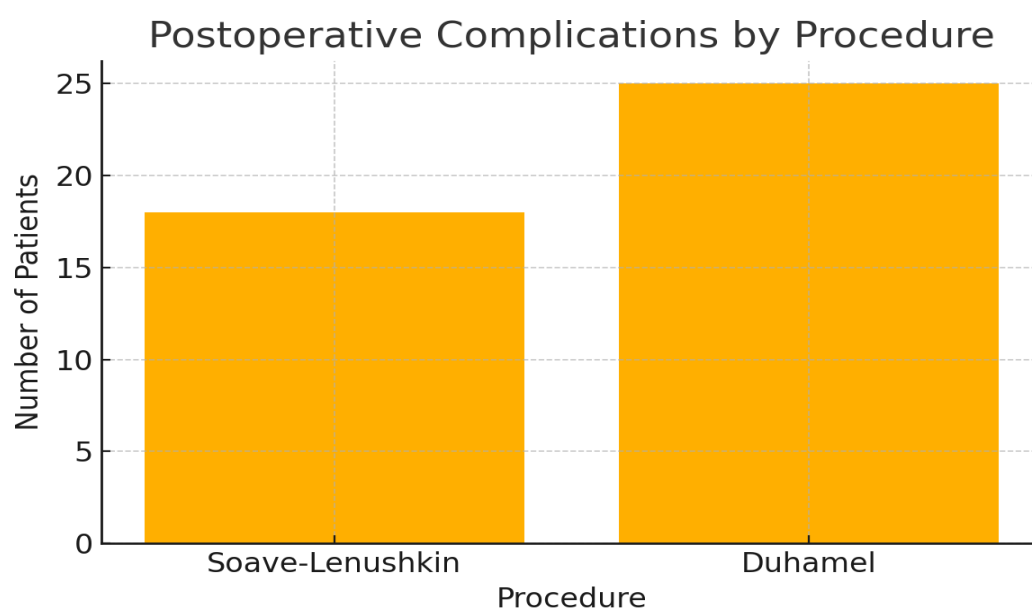
**Keywords:** *Hirschsprung disease, pediatric surgery, Soave-Lenushkin procedure, Duhamel procedure, postoperative outcomes, surgical complications*

### INTRODUCTION

Hirschsprung disease (HD) is a complex congenital anomaly first described by Harald Hirschsprung in 1886. It is defined by the absence of intramural ganglion cells in the submucosal (Meissner) and myenteric (Auerbach) plexuses of the bowel. The resultant aganglionic segment fails to relax, leading to functional obstruction. The disease primarily affects the rectosigmoid region but can extend proximally in long-segment or total colonic aganglionosis. Over the decades, several surgical techniques have been developed to correct HD, with the most prominent being the Soave-Lenushkin and Duhamel procedures. Each has its proponents and associated outcomes. Soave-Lenushkin involves a transanal endorectal pull-through technique with submucosal dissection, preserving the external muscle layer of the rectum. In contrast, the Duhamel procedure creates a retrorectal side-to-side anastomosis between the pulled-through ganglionic bowel and the aganglionic rectum. This study explores the long-term outcomes and postoperative complications associated with these two methods in a pediatric setting. By examining retrospective data from a major pediatric surgical center, we aim to provide clarity on the preferred surgical approach in various clinical scenarios.

## Materials and Methods

This study retrospectively reviewed medical records of 120 children diagnosed with Hirschsprung disease and treated at our pediatric surgery department between January 2015 and December 2023. Patients were categorized into two groups: those who underwent the Soave-Lenushkin procedure (Group A, n=60) and those who received the Duhamel procedure (Group B, n=60). Inclusion criteria included confirmed diagnosis of HD through rectal biopsy, full surgical and follow-up data available, and age under 14 years at the time of surgery. Exclusion criteria were incomplete medical records or diagnosis of associated syndromes (e.g., Down syndrome) affecting bowel function. Data collected included patient demographics, length of aganglionosis, type of surgical intervention, perioperative findings, and postoperative complications including enterocolitis, anastomotic stricture, fecal incontinence, and recurrent constipation. Statistical analysis was conducted using SPSS software. Descriptive statistics were used for baseline characteristics. Comparative analysis between groups was performed using chi-square test and independent t-tests. A p-value  $<0.05$  was considered statistically significant.



**Figure 1:** Comparison of postoperative complication rates between Soave-Lenushkin and Duhamel procedures.

## Results and Discussion

The study population consisted of 120 children with a mean age of 3.2 years (range 3 months to 13 years). There were 67 males and 53 females. The average hospital stay was 8.4 days for Group A and 10.1 days for Group B. Complication rates were notably different between the two groups, with Group A (Soave-Lenushkin) showing a lower incidence of postoperative enterocolitis (12%) compared to Group B (Duhamel) at 20%. Anastomotic stricture occurred in 6 patients in Group A and 11 in Group B, necessitating additional interventions in most cases. Fecal incontinence, a distressing complication for both children and caregivers, was reported in 5 patients from Group B and 2 from Group A. Functional

outcomes measured by bowel movement frequency, continence score, and parental satisfaction indicated better long-term results in the Soave group. These findings suggest that while both procedures are effective in relieving obstruction, the Soave-Lenushkin method may offer superior outcomes in terms of fewer complications and better functional recovery. The retained aganglionic segment in the Duhamel technique possibly contributes to higher complication rates.

#### Conclusions

In conclusion, the comparative analysis of Soave-Lenushkin and Duhamel procedures for the surgical treatment of Hirschsprung disease reveals distinct differences in postoperative outcomes. While both methods effectively resolve the primary symptoms of HD, the Soave-Lenushkin procedure is associated with fewer complications and better long-term bowel function. These results support the consideration of Soave-Lenushkin as a preferred method in suitable clinical scenarios. However, the choice of surgical technique should always be individualized based on patient anatomy, surgeon expertise, and available resources. Ongoing follow-up is crucial to manage late complications and ensure optimal quality of life for these patients.

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