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Original Article

Laparoscopy-Assisted Swenson Pull-Through in Hirschsprung Disease: Experiences in Dhaka Medical College and Hospital

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Abstract

Background: Hirschsprung disease (HD) is a congenital disorder characterized by absence of ganglion cells in the distal bowel. Minimally invasive approaches such as laparoscopy-assisted pull-through (LAPT) have gained popularity due to better visualization and reduced morbidity.

Objective: To evaluate the outcomes of laparoscopy-assisted Swenson pull-through in children with HD.

Methods: This prospective study included 16 patients aged 1–7 years who underwent laparoscopy-assisted Swenson pull-through. All patients had a prior transverse colostomy. Operative time, postoperative outcomes and complications were analyzed.

Results: The median age was 3.5 years, with 6 females and 10 males. Operative time ranged from 90 to 130 minutes. Oral feeding was initiated on postoperative day (POD) 1–2. Complications included constipation (n=1), enterocolitis (n=1), abdominal distension (n=1), urinary retention (n=1), wound infection occurred in(n=1) after laparoscopy and (n=2) after gut closure. All complications were managed conservatively. One patient required re-catheterization due to urinary retention after laparoscopy. Hospital stays ranged from 5 to 7 days. No mortality was observed.

Conclusion: Laparoscopy-assisted Swenson pull-through is a safe and effective procedure for HD with low complication rates and good continence outcomes.

Keywords: Hirschsprung disease, Swenson pull-through, laparoscopy, pediatric surgery, Dhaka medical college and hospital.

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Introduction

Hirschsprung disease (HD) is a developmental disorder caused by failure of neural crest cell migration, resulting in aganglionosis of the distal bowel [1]. Surgical management aims to resect the aganglionic segment and restore bowel continuity [2].

The Swenson procedure remains one of the standard techniques for definitive management [3]. With advances in minimally invasive surgery, laparoscopy-assisted pull-through (LAPT) procedures have shown improved outcomes in terms of visualization, minimal trauma, and faster recovery [4–6].

This study presents our experience with laparoscopy-assisted Swenson pull-through in pediatric patients with HD.

Materials and Methods

This prospective observational study was conducted in pediatric surgery department of Dhaka medical college and hospital, Bangladesh from January 2023 to December 2024.

Patient Selection

- Total patients: 16 with histologically confirmed Hirschsprung disease
- Age range: 1–7 years
- Sex: 10 males, 6 females
- All patients had a prior transverse colostomy
- Patient with total colonic aganglinosis and other associated congenital anomalies excluded from study

Surgical Technique

Laparoscopy-assisted Swenson pull-through was performed in all patients under general anesthesia. The aganglionic segment was identified under intra operative frozen section facilities and mobilization of colon was done laparoscopically, and resected. A transanal Swenson

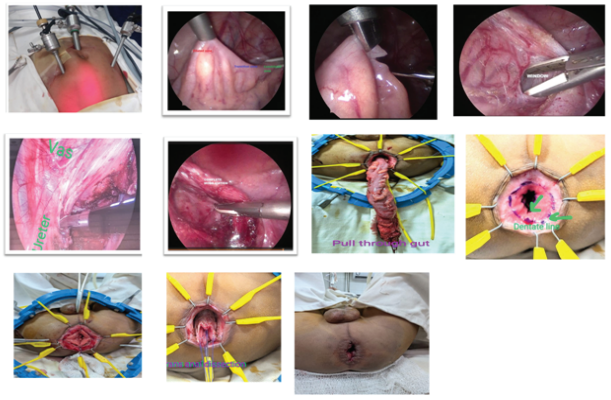


Fig: pictures of operative state of laparoscopy assisted Pull through

Postoperative Care

- Urinary catheter removal: postoperative day (POD) 2–3
- Hospital discharge: POD 5–7
- Colostomy closure: 2–4 months later

Outcome Measures

- Complications
- Functional outcomes (continence, constipation)

Statistical Analysis

Data were analyzed descriptively using mean, median, and percentages.

Results

Patient Characteristics

Table 1: Demographic Profile

Variable	Value
Total patients	16
Age range	1–7 years
Median age	3.5 years
Male	10 (62.5%)
Female	6 (37.5%)

Operative and Postoperative Details

Table 2: Operative Parameters

Parameter	Findings
Procedure	LAPT (Swenson)
Operative time	90–130 minutes
Mean operative time	110 minutes
Frozen section	Performed in all cases
Feeding initiation	POD 1–2
Catheter removal	POD 3
Stoma closure	2–6 months

Table 3: Postoperative Complications

Complication	Frequency	Management
Constipation	1	Conservative
Enterocolitis	1	Conservative
Abdominal distension	1	Conservative
Urinary retention	1	Re-catheterization
Wound infection	1after LAPT,2after gut closure	Conservative
Fecal incontinence	0	-
Mortality	0	—

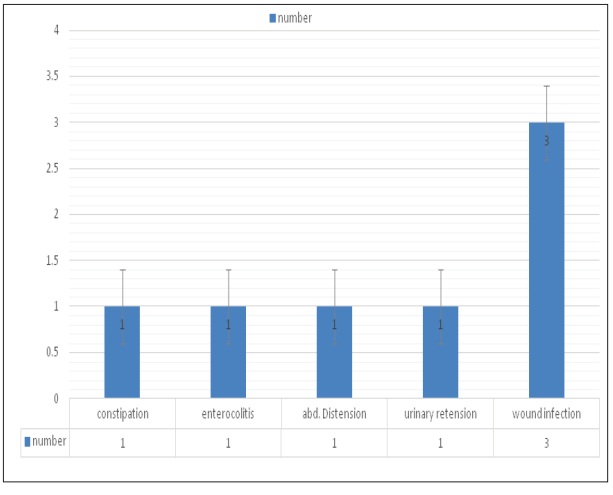


Figure 2:Diagram showing postoperative complications

Clinical Course

One patient developed postoperative constipation, which responded to conservative management like rectal wash and oral laxative. One patient developed intestinal obstruction, also managed conservatively with NPO, I V fluid and injectable antibiotics. Urinary retention occurred in one patient requiring re-catheterization.

Wound infection occurred in one patient following laparoscopy and in three patients after colostomy closure. All infections were treated conservatively.

No patients developed fecal incontinence during follow-up.

Discussion

The laparoscopic-assisted Swenson pull-through combines the advantages of minimally invasive surgery with the effectiveness of the traditional Swenson technique [9–11]. Routine use of frozen section biopsy ensured accurate identification of the transition zone, reducing the risk of residual aganglionosis.

The operative time in this study (90–130 minutes) is comparable to previously reported series [12,13]. Early initiation of feeding (POD 1–2) reflects the benefits of minimally invasive surgery.

Postoperative complications such as constipation and intestinal obstruction were minimal and managed without reoperation, consistent with other studies [14,15].

The absence of fecal incontinence in this series is particularly encouraging, as continence remains a major concern following pull-through procedures [16–18].

Wound infection rates were low and comparable to published data [19]. The staged approach with prior colostomy may have contributed to reduced postoperative morbidity [20].

LIMITATIONS

- Small sample size
- Short follow-up period
- Single-center study

Conclusion

Laparoscopic-assisted Swenson pull-through is a safe, feasible, and effective surgical option for Hirschsprung disease. It offers good functional outcomes with minimal complications and good continence results.

DECLARATIONS

Ethical Approval:

Approved by Institutional Review Board

Consent:

Informed consent was obtained from guardians

Conflict of Interest:

None declared

Funding:

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References

1. Swenson O, Early history of Hirschsprung disease. J Pediatr Surg. 2002;37(7):1005-1014.
2. Luis De La Torre, Ortega A. Transanal versus open endorectal pull-through for Hirschsprung disease. J Pediatr Surg. 2000;35(11):1630-1632.
3. Swenson O, Bill AH Jr. Resection of the rectum and rectosigmoid with preservation of the sphincter for benign spastic lesions producing megacolon. Surgery. 1948;24(2):212-220.
4. Georgeson KE, Fuenfer MM, Hardin WD. Primary laparoscopic pull-through for Hirschsprung disease in infants and children. J Pediatr Surg. 1995;30(7):1017-1022.
5. Jacob C. Langer. Hirschsprung disease. Curr Opin Pediatr. 2013;25(3):368-374.
6. Teitelbaum DH, Coran AG, Weitzman JJ, et al. A decade of experience with the primary pull-through for Hirschsprung disease in the newborn period: a multicenter analysis of outcomes. Ann Surg. 2000;232(3):372-380.
7. Holschneider AM, Puri P. Hirschsprung's disease and allied disorders. 3rd ed. Berlin: Springer; 2008.
8. Marc A. Levitt, Peña A. Operative management of Hirschsprung disease. Semin Pediatr Surg. 2012;21(4):336-343.
9. Marty TL, Seo T, Sullivan JJ, Matlak ME, Black RE, Johnson DG. Laparoscopic-assisted Swenson pull-through in Hirschsprung disease. J Pediatr Surg. 1995;30(7):1010-1012.
10. De La Torre L. Transanal endorectal pull-through for Hirschsprung disease: current trends. Eur J Pediatr Surg. 2015;25(1):35-40.
11. Nasr A, Langer JC. Evolution of the technique in the transanal pull-through for Hirschsprung disease: effect on outcome. J Pediatr Surg. 2007;42(1):36-39.
12. Elhalaby EA, Coran AG, Blane CE, Hirschl RB, Teitelbaum DH. One-stage neonatal pull-through for Hirschsprung disease. J Pediatr Surg. 1995;30(7):1021-1025.
13. Kim AC, Langer JC, Pastor AC, Zhang L, Sloots CE, Hamilton NA. Endorectal pull-through for Hirschsprung disease: laparoscopic versus open approach. J Pediatr Surg. 2010;45(6):1213-1216.
14. Stensrud KJ, Emblem R, Bjørnland K. Functional outcome after operation for Hirschsprung disease. Translated long-term follow-up study. Pediatr Surg Int. 2015;31(8):741-746.

15. Ralls MW, Freeman JJ, Rabah R, Coran AG, Teitelbaum DH. Redefining the post-operative anatomy of Hirschsprung disease: functional outcomes after pull-through surgery. J Pediatr Surg. 2014;49(10):1568-1574.

16. Bai Y, Chen H, Hao J, Huang Y, Wang W. Long-term outcomes and quality of life after surgery for Hirschsprung disease. Pediatr Surg Int. 2017;33(12):1325-1332.

17. Singh SJ, Croaker GD, Manglick P, Wong CL, Athanasakos H, Elliott E, et al. Hirschsprung disease: the Australian Paediatric Surveillance Unit's experience. Pediatr Surg Int. 2003;19(4):247-250.

18. Menezes M, Puri P. Long-term clinical outcome in patients with Hirschsprung disease and associated Down syndrome. J Pediatr Surg. 2005;40(5):810-812.

19. Dasgupta R, Langer JC. Evaluation and management of persistent problems after surgery for Hirschsprung disease in a child. Semin Pediatr Surg. 2004;13(4):273-282.

20. Grosfeld JL, Rescorla FJ, West KW, Vane DW. Changing trends in the diagnosis and treatment of Hirschsprung disease in infants and children. Pediatrics. 1994;93(3):419-423.