

Single Stage Transanal Swenson Procedure for Hirschsprung's Disease: Our Early Experience

Pardeep Bhatia^a, Preet Mohan Singh^b, Vaibhav Sharma^c, Manu Kohli^d

^aAssistant Professor ^b2nd Year Resident ^c3rd Year Resident, ^dAssistant Professor, Department of Surgery, Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar, Punjab 143501, India.

Abstract

Objective: Hirschsprung's disease is one of the common causes of obstruction in children. Transanal endorectal pull-through represents the latest development in the concept of the minimally invasive surgery for Hirschsprung's disease. In this study, we present our early experience with single stage transanal pull through in children diagnosed with Hirschsprung's Disease on radioimaging. *Design:* Retrospective study of children with single stage transanal pull-through done for Hirschsprung's disease in our institute from Oct 2013 to January 2016. *Material and Method:* 12 boys with age remaining 1 month to 2 years who presented with Hirschsprung's disease were studied. The selection criteria included radiological transition zone at rectosigmoid, no evidence of enterocolitis or sepsis and no associated major anomaly. Pre-operative bowel preparation was done using warm saline until effective decompression of the bowel was achieved. Single stage transanal endorectal pull-through was done in these patients. The follow-up period ranged from 6 months to 2 years. *Results:* 12 male patients with a mean age of 8.7 months (range 1 month to 2 years) underwent transanal endorectal pull through. The mean operating time was 73 min (range 60 to 120 min). The average length of bowel resected was 15.5 cm (range - 10 to 18 cm). Post-operatively patients passed first stool between 2nd and 3rd day. Oral feeding was resumed on 5th to 6th post-operative day. The average post-operative duration of stay in hospital was 10 days. The first rectal examination was performed under anaesthesia

three weeks after the operation for the assessment of anastomotic site for any stricture, stenosis or any pus discharge. There after patients were followed up every 15 days for 3 months and assessed for pattern of stooling, enterocolitis and weight gain. After 3 months follow up was done at monthly interval. No mortality occurred in the series. *Conclusion:* Advancement in pediatric anaesthesia, availability of pediatric surgical expertise, improvement in pre-operative and post-operative management and nursing care has made single stage transanal pull-through in children a feasible option. The early results are comparable to single stage or multistage surgery in older children.

Keywords: Hirschsprung's Disease; Transanal Pull Through; Single Stage Surgery.

Introduction

Hirschsprung's disease is a form of functional intestinal obstruction caused by absence of ganglion cells in myenteric and submucosal plexuses of intestine which results in absent peristalsis in the affected bowel [1]. Early diagnosis can be made in the neonatal period when a baby presents with the triad of delayed passage of meconium, abdominal distension and bilious vomiting. Late presentation in childhood varies from chronic constipation, abdominal distension, failure to thrive and recurrent enterocolitis. The mainstay of investigation is contrast enema and rectal biopsy which confirms the diagnosis [2,3].

Surgical intervention is the only treatment of this clinical entity. Until recently, these operations were performed as multistage procedures, the first stage being the placement of a diverting colostomy and levelling colonic biopsies. The second stage was

Corresponding Author: Preet Mohan Singh, 2nd Year Resident, Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar, Punjab 143501, India.

E-mail: preetmohan.preetmohansingh@gmail.com

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performed later to remove the aganglionic segment and pull through the normal ganglionic colon. The stoma was closed at the third operation [4].

Over the past two decades, it has been increasingly recognized that the routine use of a colostomy is unnecessary; and an increasing number of pediatric surgeons perform the reconstruction as a single stage procedure at an early age. Single stage management of Hirschsprung's disease avoids colostomy and its related complications including the social stigma of a stoma. The minimal invasion, short operating time and hospital stay with encouraging early results at affordable cost makes it the obvious choice over traditional multistage procedures [5].

Material and Method

The study was conducted between Oct 2013 to Jan 2016 which included a total of 12 patients with rectosigmoid Hirschsprung's disease in which single stage trans-anal Swenson procedure was done. None of the selected patients had previous surgery or any associated anomaly. The diagnosis was confirmed by contrast radiological examination in all patients with X-ray finding of narrow distal segment with a transition zone and a proximal dilated segment.

The patients were included in the study only if the radiological transition zone was evident at the rectosigmoid or midsigmoid region. Besides rectosigmoid disease, the other selection criteria for the study were, a good general condition, ability to decompress the colon on pre-operative wash-outs, and the absence of pre-operative enterocolitis. Pre-operative bowel preparation was done using warm saline until effective decompression of the bowel was achieved. Single stage transanal pull-through was done in these patients.

Surgical Technique

After the induction of general anaesthesia, the patients were given injection ceftazidime intravenously. Foleys catheter was kept per urethra and nasogastric tube placed. The patient was placed in lithotomy position and everting sutures around anus were taken to expose the anal mucosa. The anal mucosa was incised circumferentially using needle

tip cautery approx 1 cm from the dentate line. Dissection was started in the submucosal plane for about 1-2 cm and then converted to full thickness of rectal wall first posteriorly and circumferentially. The rectum was mobilized by working on the surface of the rectal wall using cautery. The dissection could be performed easily once peritoneal reflection was reached, allowing mobilization of the rectum and sigmoid colon out of anus leaving a muscular cuff of 1-2 cm. the dissection was continued till the transition and the proximal dilated colon were clearly identified. The aganglionic colonic segment was resected 3-5 cm proximal to the transition zone and a full thickness colo-anal anastomosis was performed with vicryl 5-0. Nearly 12-16 stiches were taken to complete colo-anal anastomosis. Antibiotic soaked paraffin gauze was kept as anal pack and everting sutures were removed.

The patients were kept nil by mouth for 5-6 days depending on bowel recovery. The feeding was slowly advanced to normal and patients were discharged on 10th post-operative day. None of the patients had post-operative bleeding, urethral injury, anastomotic leak or retraction of anastomotic site. The first rectal examination was performed under anaesthesia three weeks after the operation for the assessment of anastomotic site for any stricture, stenosis or any pus discharge. There after patients were followed up every 15 days for 3 months and assessed for pattern of stooling, enterocolitis and weight gain. After 3 months follow up was done at monthly interval.

Results

This study included 12 children with rectosigmoid Hirschsprung's disease. All the patients were male with age ranging from 1 month to 2 years (Mean 8.7 months). All cases were operated as planned transanal endorectal pull through. The level of aganglionosis in all the cases was rectosigmoid. The mean operating time was 73 minutes. The minimum operating time was 40 minutes and the longest operating time was 120 minutes in one case which required abdominal exploration to mobilize the colon. The mean length resected in the present series is 15.5 cm. The resected specimen included the constricted part, transitional zone and some part of the normal colon.

Table 1: Comparison of operative findings with other studies

	Present study(n=12)	Ali (n=28) ¹¹	Hassan (n=42) ¹²
Operating time	73 min	90 min	80 min
Length of bowel resected	15.5 cm	14-35 cm	20.8 (15-30cm)

Table 2: Comparison of postoperative complications with other studies

	Present Study(n=12)	Ali (n=28) ¹¹	Hassan (n=42) ¹²
Enterocolitis	Nil	4 (14.3%)	5(11.9%)
Perianal excoriation	4 (33.3%)	18 (64.3%)	11 (26%)
Anastomotic leak	Nil	1 (3.6%)	nil
Anstomotic Stricture	Nil	2 (7.1%)	2 (4.8%)

The average time of the first passage of stool post operatively was 2.4 days. Oral feeding was resumed on 5th to 6th post operative day. The average post operative duration of stay in hospital was 11 days. No mortality occurred in the series.

None of the patients had post-operative bleeding, urethral injury, anastomotic leak or retraction of anastomotic site. Four patients developed perianal excoriation and were managed with frequent application of zinc oxide cream, however one patient required application of local steroid ointment. None of the patients had residual disease left after the pull through procedure. None of our patients required readmission for the treatment of enterocolitis. Constipation was seen in one of the patient and was managed with laxatives.

Discussion

Hirschsprung's disease is one of the most common causes of intestinal obstruction in newborns [6,7]. There have been considerable advances in the management and correction of Hirschsprung's disease since Swenson first described the pathological basis. In the past many of these children presented late with malnutrition, sepsis and colonic distension.

Standard surgical teaching has advocated that, at the time of diagnosis, a proximal diverting colostomy should be performed and the child be allowed to grow before performing a definitive pull-through. This allows decompression of the dilated proximal colon and improved nutritional support. Also, it was believed that performing the operation on an older child made the pull-through technically easier. The multistage procedures work well for patients but they are associated with some morbidity and a lengthy course of treatment period in hospital due to the necessity for multiple admissions. It is also a source of psychological trauma to both patients and families.

In modern practice, diagnosis of Hirschsprung's disease can be made early in life, giving an opportunity to operate on the patients while they are still young, healthy, before even having attacks of enterocolitis and becoming malnourished. A single

stage pull-through procedure offers the advantages of shorter overall hospital stay, decreased morbidity, avoids colostomy and no disruption of intestinal continuity. Delayed intestinal continuity as a consequence of multistage procedure is thought to retard development of ano-rectal continence [8]. In our study the average length of bowel resected was 15.5 cm, which is comparable to other studies done.

In the initial description of transanal endorectal pull through procedure, a long seromuscular cuff that reached the peritoneal reflection was left. This long cuff is often blamed for post-operative obstructive symptoms, constipation and enterocolitis. To avoid this problem, a few authors have used a shorter mucosectomy with a shorter muscular cuff measuring 1-2 cm above the dentate line. A similar technique was used in this study.

One of the major issues in the transanal approach is the significant stretching of the anal sphincters during surgery with its potential impact on continence in later life. However, this is only transient and bowel movements became normal in majority of cases within a period of 2 weeks to 3 months. Van Leeuwen et al [9] have reported that anorectal manometric studies were similar in both patients undergoing transanal endorectal pull-through and conventional procedures.

Enterocolitis has been considered as one of the main problems in patients with Hirschsprung's disease both before and after definite treatment [10]. The incidence of post pull-through enterocolitis reported in the literature varies widely with some studies reporting rates as high as 32 to 42%. Hackman et al studied the risk factors for post-operative enterocolitis and found that both the presence of anastomotic leak or stricture and the development of post-operative intestinal obstruction secondary to adhesions increased the relative risk and subsequent enterocolitis by approximately 3 fold.

Long seromuscular cuff and a high coloanal anastomosis are associated with increased risk of post-operative enterocolitis. In this study, 2 patients developed enterocolitis and were managed with intravenous fluids, rectal wash and intravenous antibiotics. (Vancomycin and Metrogl).

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