Original Article

Success of Loop Stoma over Divided Stoma in Case of Hirschsprung Disease

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ABSTRACT

Objective: The aim of this study is to determine the role of truly divided stoma and loop stoma in the initial management of Hirschsprung disease.

Study Design: Descriptive/ Cross-sectional study

Place and Duration of Study: This study was conducted at the Murshid Hospital & Health Care/ NICH, Karachi. March 2021 to Dec 2021.

Materials and Methods: Total 160 patients of Hirschsprung disease were presented in this study. After obtaining informed written consent from the parents of the children detailed demographics were recorded. Children were divided in two groups. Group I received divided stoma in 80 cases and group II received loop stoma in 80 children. Outcomes among both groups were compared in terms complications and effectiveness. SPSS 21.0 was used to analyze all data.

Results: There was no any significant difference of age in both groups. In group I 50 children were males and 30 were females while in group II 42 males and 38 females. Most of the children in both groups had short segment HD. In group I 4 patients had family history of HD and in group II 3 patients had family history of HD. Post-treatment efficacy of loop stoma was higher found in 67 (83.8%) cases as compared to divided stoma in 55 (68.8%) children. Frequency of complications(bowel obstruction, Anastomotic stricture, soiling, constipation, transition zone proximal to the splenic flexure) were higher in divided stoma found in 12 (15%) as compared to loop stoma in 8 (10%) cases. Post-operative hospitalization was lower in loop stoma 2.1±4.11 days as compared to divided stoma 5.0 ±2.6 days.

Conclusion: When compared to the divided stoma, we came to the conclusion that the Loop stoma requires less time in the hospital and has a lower risk of problems. According to the findings of our study, children with HD may benefit more from having a loop stoma than a split stoma.

Key Words: Loop Stoma, Hirschsprung Disease, Children with HD

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INTRODUCTION

Hirschsprung's illness is characterized by a congenital absence of ganglion cells in the distal bowel's submucosal (Meissner's) and myenteric plexus.[1] Because the male-to-female ratio is substantially larger for this illness, it is the most common cause of distal bowel obstruction in both newborns and young children. This is because males are more likely to be affected than females. [2] Hirschsprung disease can be categorized as either short-segment (recto-sigmoid) or long-segment HD.

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Long segment HD is subdivided into long segment colonic aganglionosis, full colonic aganglionosis, and small bowel aganglionosis, amongst other subtypes. [3] The endorectal pull-through, also known as an ERP, is the most recent surgical treatment to be added to the list of those that have been described for final surgery. This method, which was initially described in 1998 by De la Torre-Mondragon and J.A. Ortega -Salgado, has now developed into the standard surgical treatment for short segment Hirschsprung's illness all over the world. [4,5] ERP is a technique that requires only a small amount of surgical intervention and produces reliable outcomes. In both single- and multicentric studies, it was proven to be risk-free, simple to master, and free of any potential hazards connected with laparotomy and stoma. This was the case.[6,7]

Even while HD is most commonly diagnosed in newborns, some individuals do not show their symptoms until much later in life, most commonly as severe and protracted constipation [8]. The failure to pass meconium within the first 48 hours of life is the most common sign of this condition, affecting between 80% and 90% of individuals. Other symptoms of

intestinal obstruction, such as abdominal distension (present in 76% of patients), vomiting of bile (present in 69% of patients), and an intolerance to food (present in 9), are also prevalent.

HD affects approximately 1-2 babies out of every 10,000 newborns around the world [9]. The vast majority of people are capable, with the assistance of medical treatment, of leading fruitful lives as mature adults [10]. Based on the findings of a survey conducted over the entirety of Japan, it was anticipated that HD will affect 1 in 5000 live births over the course of 30 years. When the entire colon was examined, the ratio of males to females came very close to being 1:1 [8].

This illness may be accompanied by abnormalities in the cardiovascular system, the neurological system, the digestive system, or the urinary system. Trisomy 21, usually referred to as Down syndrome, is the chromosomal abnormality that occurs in approximately 10% of these patients [11]. Avoiding issues needs timely diagnosis (e.g., enterocolitis and colonic rupture).

From May 1980 to September 1981, a total of 10 cases of HD were recorded in Bahrain by Romani and Khan, with an incidence rate of 1 per 4000 live births [11.] During this time period, HD had a prevalence rate of 0%. There is a scarcity of published literature on HD [12], despite the fact that the number of babies being born in Bahrain has increased since then.

At facilities specialising in paediatric surgery, colostomies have been carried out in a number of different ways over the years. The most common types of colostomy that are performed for the stepwise correction of HD are the loop colostomy and the split colostomy, particularly in male newborns. Each method has perks and drawbacks, and which one is the superior strategy is still up for discussion. [2,3] The key feature that sets these two approaches apart from one another is the associated difficulties. As a result, this study was carried out to get a better understanding of the frequency with which particular issues arise with each approach.

MATERIALS AND METHODS

This descriptive/cross-sectional study was conducted at Murshid Hospital & Health Care / NICH, Karachi and comprised of 160 children with Hirschsprung disease. Patients who had pre-operative death, had the ultimate operation performed in another facility, or had undergone difficult surgery more than once were excluded from this research.

Children as young as one month and as old as seven years were included. The data gathering process involved the utilization of the patient's medical records, the notes taken in the operating room, the discharge summaries, and the patient questionnaires (all of which were filled out by members of the surgical team). The data collection took into account the patient's age at the time of diagnosis and surgery, as well as the patient's gender, the type of surgery performed, the length of hospital stay, perioperative complications (including intraoperative to six months post-surgery), and late complications (from six months post definitive surgery).

Histological testing, performed with either a rectal suction biopsy or a full-thickness rectal biopsy, provided conclusive evidence that HD was present. All of the patients were given a contrast enema so that the degree and length of diseased intestine could be determined, and so that the surgical planning could be aided by this information. The children were split up into their respective groups. Each of the children in Group I had a divided stoma (figure 1), while each of the children in Group II received a loop stoma (figure 2). The patient's reaction to rectal washouts and the surgeon's personal preference in the most recent cases were the primary considerations taken into account when determining whether or not to create a stoma for the individual.

Quantitative evaluations were performed using an Excel spreadsheet to tabulate the collected data. The P-value was determined by applying the t-test to 2 independent means. In order for the result to be considered statistically significant, the value needed to be less than 0.05.

RESULTS

There was no any significant difference of age in both groups. In group I 50 children were males and 30 were females while in group II 42 males and 38 females. Most of the children in both groups had short segment HD. In group I 4 patients had family history of HD and in group II 3 patients had family history of HD (table 1).

Table No.1: Detailed demographics of enrolled cases

Variables	Group I	Group II
Mean age (weeks)	8.2±6.23	7.4±8.38
Mean gestational age (weeks)	37.1±5.27	36.1±3.50
Gender		
Male	50 (62.5%)	42 (52.5%)
Female	30 (37.5%)	38 (47.5%)
HD Type		
Short	53 (66.3%)	57 (71.3%)
Long	17 (21.3%)	20 (25%)
Other	10 (12.5%)	3 (3.8%)
Family history of HD		
Yes	4 (5%)	3 (3.8%)
No	76 (95%)	77 (96.2%)

Frequency of complications (bowel obstruction, Anastomotic stricture, soiling, constipation, and transition zone proximal to the splenic flexure) were higher in divided stoma found in 12 (15%) as compared to loop stoma in 8 (10%) cases. (Figure-3).

Figure No.1: Presentation of truly divided stoma.

Figure No.2: Presentation of loop stoma

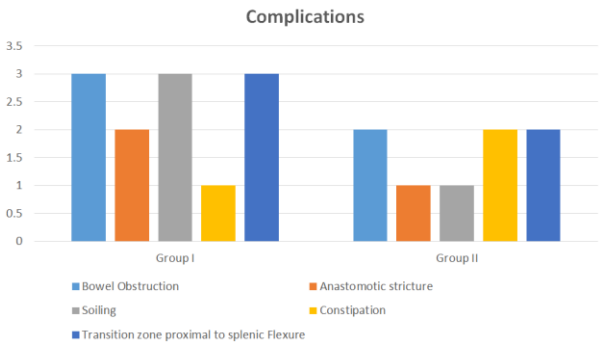

Figure No.1: Comparison of complications in both groups

Post-operative hospitalization was lower in loop stoma 2.1±4.11 days as compared to divided stoma 5.0 ±2.6 days (table 2).

Table No.2: Hospital stay among both groups

Variables	Group I	Group II	P Value
Mean Hospitalization (days)	5.0 ±2.6	2.1±4.11	<0.005

DISCUSSION

Hirschsprung's disease is a common contributor to the intestinal blockage that occurs in infants (HD). Histology [13] is frequently considered the gold standard when it comes to diagnosis. The use of a contrast enema that reveals the whole expanse of the diseased intestine is essential for facilitating both the diagnosis and the planning of the surgical procedure. [13]

It has been suggested that fitting a stoma bag on the proximal stoma of a divided sigmoid colostomy, which prevents the development of urinary tract infection, megarectum, and wound infection, is possible if a sufficient skin bridge is present between the proximal stoma and the distal mucous fistula. This would mean that the development of urinary tract infection, megarectum, and wound infection would not It is possible that radiological investigations and the risk of prolapse will both be improved with a divided sigmoid colostomy. [14] However, a loop colostomy delivers better cosmetic effects due to the ease with which it may be created and closed as well as its smaller incision.

When it comes to complications, many surgeons believe that the length of time a stoma is in use is more important than the structure of the stoma itself. As a result, a stoma that is well-constructed but only needs to be used momentarily is less likely to result in any complications. One study found that there was no significant difference between the two types of stomas in cases where the loop stoma was closed before it divided (2–4 months). [15] Between the two groups, we did not find any variations in the length of the stoma that were statistically significant. The finding that there is no link between treatment duration and complications is refuted by these findings.

A recent study indicated that individuals who had a loop colostomy were more likely to develop prolapse than those who had a divided colostomy. However, there was no difference in the incidence of other complications such as UTIs or megarectum between the two groups of patients.[16] The risk of prolapse, on the other hand, is more significantly connected with the prolapse level than it is with the type of colostomy. Stomas that are found in a moving colon are more likely to prolapse than stomas that are found in a colon that is stationary. However, all of the documented occurrences of prolapse were discovered in the transverse colon group, and other studies that compared loop and divided (split) colostomy in children found no

difference in the frequency of issues between the two groups (23% vs. 16%, respectively, P=.389).[17]
Twelve (15%) of the patients in our study developed complications due to their divided stoma, while only eight (10%) of the patients developed complications due to their loop stoma. These consequences included intestinal obstruction, anastomotic stricture, soiling, constipation, transition zone proximal to the splenic flexure, and constipation. Another study discovered that the incidence of skin excoriation and prolapse was larger in the loop colostomy group as compared to the divided colostomy group. The majority of cases involving loop colostomies occurred in the transverse colon.[18] When undertaking ARM procedures, surgeons frequently choose to do divided colostomies due to the increased danger of faecal impaction in the distal loop (also known as a fecaloma or megarectum) and urinary tract contamination. In the investigations that we conducted as well as in other published series, there were no discernible differences between the two stomas in terms of fecaloma or urinary tract infections. One study found that people who had rectourinary fistulas did not have a significantly higher risk of developing urinary tract infections when compared to people who did not have the condition. This was the case even after the researchers took into account other factors that might contribute to the development of the condition. [19]

In summary, the loop colostomy is preferred to the divided colostomy due to its shorter operating length and decreased risk of complications. This is because of the following: Our findings lead us to the conclusion that HD patients may benefit more from having a loop colostomy as opposed to a divided colostomy. [Citation needed] Colostomy is a frequent therapy, but despite its prevalence, it is still a delicate procedure that necessitates the expertise of trained surgeons in addition to vigilant aftercare to prevent complications. By completing the necessary repairs and closing the colostomy as quickly as feasible, morbidity rates can be lowered. [20,21].

CONCLUSION

When compared to the divided stoma, we came to the conclusion that the Loop stoma requires less time in the hospital and has a lower risk of problems. According to the findings of our study, children with HD may benefit more from having a loop stoma than a split stoma.

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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