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## INTRODUCTION

Hirschsprung's disease (HD) is a congenital aganglionosis of sub-mucosal and myenteric neuronal plexuses affecting distal sigmoid colon and rectum.<sup>1</sup> The description of the disease was reported by Harold Hirschsprung's in 1886. Since the first reconstructive procedure described by Swenson & Bill<sup>2</sup> in 1948, much improvement has been made in the surgical treatment of this disorder. Procedures like Souave<sup>3</sup>, Swensen<sup>2</sup> and Duhamel<sup>4</sup> procedure have been performed for its surgical treatment. Each procedure appears to be equally effective. Modified Duhamel procedure<sup>5</sup> is routinely being performed in the department of pediatrics surgery, The Children's Hospital & The Institute of Child Health Faisalabad. The purpose of this study was to evaluate the early complications of Martin's Modified Duhamel Procedure (MMDP) through the retrospective clinical audit of the record of 86 patients over the past one years from January 2017 – December 2017 in the department of pediatric surgery, The Children Hospital & institute of child health Faisalabad.

## MODIFIED DUHAMEL PROCEDURE; OUR EXPERIENCE FOR EARLY COMPLICATION AT THE CHILDREN HOSPITAL & THE INSTITUTE OF CHILD HEALTH, FAISALABAD.

**Muhammad Afzal Mirza<sup>1</sup>, Mohsin Riaz Askri<sup>2</sup>, Shumyala Maqbool<sup>3</sup>, Sarfraz Ahmad<sup>4</sup>**

**ABSTRACT... Objectives:** To evaluate the early complications of Martin's Modified Duhamel Procedure. **Design:** Retrospective study. **Period:** January 2017–December 2017. **Setting:** The Children Hospital & Institute of Child Health, Faisalabad. **Material and Methods:** This study included Eighty Six children who underwent Martin's modification of Duhamel's procedure for treatment of Hirschsprung's disease. **Results:** Early postoperative complications (with in 1<sup>st</sup> 30 days of operation) were observed in 86 patients. The complications noted were bleeding (n=3), wound infection (n=20), burst abdomen (n=5), anastomotic leak (n=8), intestinal obstruction (n=4), early post-operative constipation (n=6), enterocolitis (n=6), soiling (n=5) and mortality (n=2). **Conclusion:** Early post-operative complications in the series included bleeding, wound infection, burst abdomen, anastomotic leak, intestinal obstruction, constipation, enterocolitis, soiling and death. The complications rate in this study is comparable to the previous studies.

**Key words:** Early Complications, Hirschsprung's Disease Modified Duhamel's Procedure.

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## MATERIALS & METHODS

86 patients of Hirschsprung's disease treated with MDP were reviewed for early complications. The procedures were performed in the department of pediatric surgery, The Children's Hospital & The Institute of Child Health, Faisalabad from January 2017 – December 2017. All the patients in which the distribution of disease was localized to rectosigmoid region or extending upto transverse colon and have undergone histopathological confirmation by full thickness biopsies were included. All the patients of total colonic aganglionosis and all the neonates were excluded.

Complications occurring within 30 days of surgery were considered as early ones. Enterocolitis was defined as acute onset of fever, diarrhea, abdominal distension and increased white cell count. Intestinal obstruction was labeled as constipation, vomiting and increased bowel sounds in association with abdominal distension. Whereas the term soiling was considered as passage of fecal matter with or without gas

involuntarily. Constipation was defined as less than three spontaneous bowel movements per week, fecal abdominal mass and or rectal impaction.

**RESULTS**

Eight six patients of Hirschsprung’s diseases (HD) were treated by MMDP procedure. Out of these 69 (80%) were male and 17 (20%) female with male/female ratio of 4:1. The age at the time of surgery ranged from birth to 15 years with mean age is 5.7years as shown in (Table-I).

Age	Number of Patients	%Age
0 – 5years	71	82%
5 – 10years	10	12%
10 – 15years	5	6%

Table-I. Age at presentation

The distribution of disease was localized to recto-sigmoid region in 80 (93%) patients and extending up to transverse colon in 6 (7%) cases.

The early complications were recorded in their respective charts during their stay in the ward and follow up within 30 days. The same were reviewed and analyzed. The results are shown in table (Table-II).

Sr. No.	Complication	Number (n)	%age
	Bleeding PR	3	4%
	Wound Infection	20	23%
	Burst Abdomen	5	6%
	Anastomotic leak	8	9%
	Intestinal obstruction	4	5%
	Early Post Operative Constipation	6	7%
	Enterocolitis	6	7%
	Soiling	5	6%
	Mortality	2	3%

Table-II. Early complications following MMDP

In immediate postoperative period 3 patients had episodes of per rectum bleeding. They were successfully treated by conservative management. Abdominal wound infection occurred in 20 (23%) patients. Burst abdomen happened in 5 (6%) cases, managed by repair with tension sutures.

Anastomotic leak was seen in 8 (9%) patients. In such patient’s re-exploration with diverting colostomy was performed. Early intestinal obstruction occurred in 4 (5%) cases. These were managed conservatively and one underwent re-exploration. Signs and symptoms of enterocolitis were observed in 6 (7%) patients, who responded to conservative treatment. Two patients died post operatively due to septicemia.

**DISCUSSION**

Hirschsprung’s disease is common congenital anomaly. The therapeutic aim in HD is to preserve the function of anal sphincter. There are various surgical procedures<sup>2,3,4,5</sup> for definitive treatment of HD. The basis of these procedures is to remove the aganglionic segment and to pull through the normal bowel.

The choice of procedure depends upon surgeon’s preference and available facilities. Modified Duhamel procedure is the choice as a definitive treatment of HD in the department of pediatric surgery, The Children’s Hospital & The Institute of Child Health, Faisalabad. The Duhamel procedure implied complete division of the internal anal sphincter.<sup>4,6</sup> The Martin’s Modification<sup>5</sup> was used to take care of blind rectal pouch and its associated problems.

In this study 3(4%) patients had per rectal bleeding in the immediate postoperative period. These patients responded well to conservative measures which included rectal packing and blood transfusion.

The incidence of abdominal wound infection (23%) and burst abdomen (6%) in this series is higher than reported in the literature.<sup>8,9</sup> Poor nutritional status and presence of colostomy may be the causes in our patients.

Anastomotic leak has been reported to be 2-10%<sup>8,9,10</sup> in various studies. In our study it was 9%. All these patients underwent re-exploration with temporary diverting ileostomy. The leak healed by itself, which was confirmed by contrast study later on.

The incidence of early obstruction was 5% in our study as compared with 7-20%<sup>9,10,11</sup> in other studies.

Early postoperative constipation with incidence of 3-5% in MDP has been reported, which in our cases is 7%. The child ignores the sensation of feces until it is appreciated in neorectum and therefore, fail to empty the terminal bowel. The intensive toilet training is necessary in the initial few post-operative weeks to avoid such problem. The colon proximal to the point of resection may be considerably dilated and likely to empty incompletely due to colonic inertia. Partial sphincterotomy must be included in the distal resection so that internal anal achalasia be taken care of.<sup>11</sup>

Early postoperative soiling is a common problem because after resection most patients have large volume of liquid content.<sup>11</sup> With the passage of time the initial liquid contents become more solid and soiling is resolved. Five (6%) of our patients had soiling in the first month.

Postoperative enterocolitis is the dreadful complication of Hirschsprung's disease. Enterocolitis may occur immediately after the definitive pull through procedure or may occur after a few months.<sup>12-13</sup> The majority of postoperative deaths are related to enterocolitis.<sup>14</sup> The reported incidence of enterocolitis is 5-26%.<sup>15,16,17,18</sup> In our study the incidence was 7%. Five patients recovered on conservative measures. However two patients (2.3%) of enterocolitis developed severe septicemia and died. The mortality mentioned in literature is 3.4%.

## CONCLUSION

We conclude that the parameters studied in our series are comparable with other studies. Therefore MDP is recommended to be continued. However Further refinements can improve the outcome.

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## REFERENCES

- Adhi M, Khan S, Zafar H, Arshad M. Duhamel,s Procedure for adult Hirschsprung,s disease: <http://www.ncbi.nlm.nih.gov/pubmed/22630102J> Coll Physicians Surg Pak. 2012 Jun;22(6):395-7.
- Swenson O,Bill AH Jr. **Resection of rectum and rectosigmoid with preservation of the sphincter for benign spastic lesions producing megacolons: An experimental study.** Surgery 1948; 24:212-220.
- Soave F. **A new surgical technique for the treatment of Hirschsprung disease.**1964; 56:1007-1044.
- Duhamel B. **Retro rectal and transanal pull through procedure for treatment of Hirschsprung's Disease.** Dis Colon Rectum 1964; 7:455-8.
- Martin LW, Altemeier WA. **Clinical experience with a new operation (Modified Duhamel Procedure) for Hirschsprungs disease.** Ann Surg. Oct 1962; 156(4): 678-681.
- Grob M. **Intestinal obstruction in the newborn infant,** Arch Dis Child 1960, 35:40-50.
- Martin LW, Caudill DR. **A method of elimination of the blind rectal pouch in the Duhamel operation for Hirschsprung's disease.** Surgery 1967, 62:951-953.
- San Filippo JA, Allan JE, Jewett TC. **Definite surgical management of Hirschsprung's disease.** Arch Surg 1972, 105: 245-248.
- Hofmann S, Enger E. **Early complications of Hirschsprung's disease in the literature. In: Hirschsprung's disease.** Ed. Holschneider AM. New York, Hippocrates Verilog Stuttgart, Thieme Stratton Inc, 1982, pp 243-250.
- Livaditis A. **Hirschsprung's disease: Long term results of the original Duhamel operation.** J Pediatr Surg 1981, 16: 484-486.
- Agarwala S, Bhatnagar V, Mitra DK. **Long term follow up Hirschsprung's Disease: Early and late complications: Indian Pediatr.** 1996 May; 33(5):382-6.
- Levitt MA, Dickie B, Pena A. **Evaluation and treatment of the patient of Hirschsprung's disease who is not doing well after a pull through procedure.** Semin Pediatr Surg. 2010; 19(2): 146-53.
- Wu X, Feng J, Wei M, Guo X, Li R et al. **Patterns of post operative enterocolitis in children with Hirschsprung's disease combined with hypoganglionosis.** J Pediatr Surg. 2009; 44(7): 1401-4.
- Bourdelat D, Vrsansky P, Pages R, Duhamel B Duhamel operation 40 years after: A multicentric study. Eur J Pediatr Surg. 1997; 2:70-76.
- Ikeda K, Goto S **Diagnosis and treatment of**

Hirschsprung's disease in Japan. An analysis of 1628 patients Ann Surg.1984; 199:400-405.

16. Marty TL Gastrointestinal function after surgical correction of Hirschsprung's disease: long term follow-up in 135 patients. J Pediatr Surg. 1995; 30:655-658.

17. Jung PM Hirschsprung's disease: One surgeon's experience in one institution. J Pediatr Surg. 1995; 30:646-651.




18. Grosfeld JH, Ballantine VN, Csicsko JF A critical evaluation of the Duhamel operation for Hirschsprung's disease. Arch Surg. 1978; 113:454-460.

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*You cannot base your life on other people's expectations.*

– Stevie Wonder – ”

**AUTHORSHIP AND CONTRIBUTION DECLARATION**

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2	Mohsin Riaz Askri	Data collection, Manuscript writing, Proof reading.	
3	Shumyala Maqbool	Data analysis, References, Proof reading.	
4	Sarfraz Ahmad	Drafting Supervision	