



# **Comparison of Complication Regarding Modified Duhamel Procedure for Hirschsprung's Disease in Male to Female Children**

**Masoom Ali Shah <sup>a\*</sup>#**

<sup>a</sup> *Pediatric Surgery Department, Peoples University of Medical and Health Sciences for Women (PUMHSW), Nawabshah, Pakistan.*

## **Author's contribution**

*The sole author designed, analyzed, interpreted and prepared the manuscript.*

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## **ABSTRACT**

**Aim:** To compare the complications regarding modified Duhamel procedure in male to female children for Hirschsprung's disease (HSCR).

**Methodology:** This comparative retrospective study was done at pediatric surgery department PUMHSW Nawabshah during Jun 2019-Aug 2020. Sample size was selected as 70 patients and divided it into two groups. Group A contain 45 male children while group B also consists of 25 female children. The children between the age of 2-15 year, both sexes and confirm Hirschsprung's disease was included in this study while the children below 2 years. The study was approved by ethical review board PUMHSW Nawabshah. Written informed consent was obtained from parents or guardians of the participants.

**Results:** There were 64.28% (n=45) male and 35.72% (25) female patients (Fig 1). The mean weight of patients in male was  $17.8 \pm 7.6$  kg while in female was  $15.6 \pm 6.27$  kg (Fig 2). In the distribution of patients by complications, anorectal stenosis was present in 13.33% (n=6) in male while 12% (n=3) in female children. Wound infection was present in 8.88% (n=4) in male and 8% (n=2) in female children. Intestinal obstruction was present in 11.11% (n=5) and 12% (n=3) in male and female children respectively.

**Conclusion:** It was concluded that modified Duhamel Procedure for Hirschsprung's disease has less postoperative complications in both male and females moreover there is no significant difference of postoperative complications in both sexes.

<sup>#</sup> Assistant Professor;

\*Corresponding author: E-mail: trainingandteachinginstitute@gmail.com;

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## 1. INTRODUCTION

Constipation is one of the most common gastrointestinal problems in children. Constipation occurs when the colon absorbs too much of water or if the contraction of colonic muscle are slow or sluggish, causing the stool to move through the colonic too slowly, as a result stool become hard and dry [1,2]. Hirschsprung's Disease (HD) is a congenital condition, which is characterized by the absence of Ganglion cells in submucosal (Meissner's) plexus and the intermuscular (Auerbach's) plexus<sup>3,4</sup>. Hirschsprung's Disease is actually caused by the failure of vagal neural crest cells to migrate distally from upper and of alimentary tract or due to failure of maturation or degeneration of neural cells in altered micro environment [5]. Hirschsprung's Disease the incidence is 1: 5000 births. It is 4 times more common in boys than in girls [6]. Older children typically present with chronic constipation, abdominal distention, emesis and failure to thrive. Some of them patient present with enterocolitis [7]. Initial diagnosis for workup of HD is constrict enema, the classic finding is transition zone [8]. After diagnosis surgery is normally the treatment option in the form of different pull through procedures, most of them being two stage procedures. The complication rate generally range from 4-16% [9]. In 1956 Bernard Duhamel first described retrorectal dissection with pull through of ganglionic colon and anastomosis of both ganglionic and aganglionic parts [10]. This procedure is further modified using gastrointestinal stapler (GIA) to create anastomosis. The long term outcome of this procedure depends on level of retrorectal incision and length of blind rectal pouch [11]. The aim of this study is to know the early post operative complications of this procedure in male and female child.

## 2. MATERIALS AND METHODS

This study was done at pediatric surgery department PUMHSW Nawabshah during Jun 2019-Aug 2020. Sample size was selected as 70 patients and divided it into two group. Group A contain 45 male children while group B consists of 25 female children. The children between the age of 2-15 year, both sexes and confirm

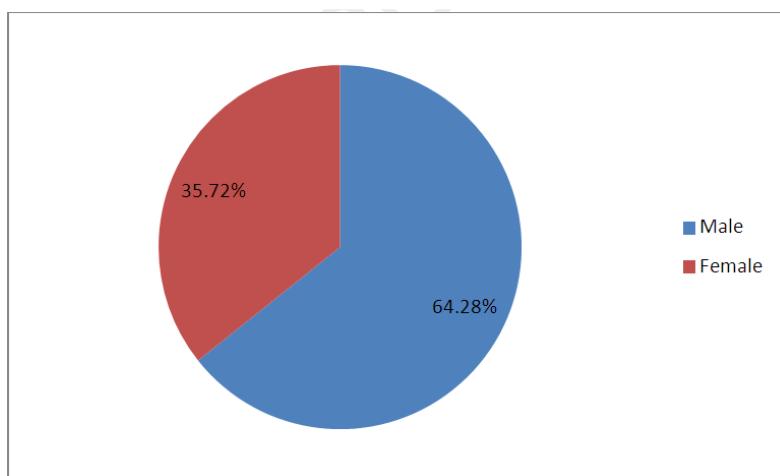
Hirschsprung's disease was included in this study while the children below 2 years and with comorbidity were excluded from the study. Anastomosis was done with the help of 75mm GIA linear cutting stapler. A drain was placed through the anastomosis in the pulled through segment. Follow up was done till ninety days postoperatively.

## 3. RESULTS

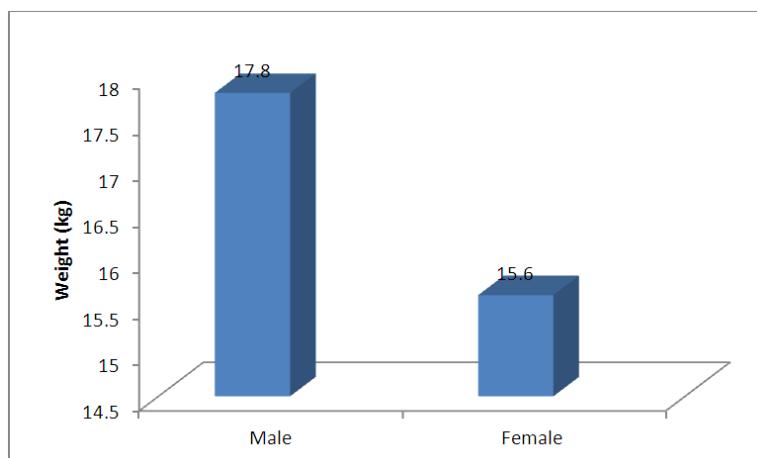
The mean age of the patients was  $6.2 \pm 3.1$  years and  $5.9 \pm 2.6$  years in male and female children respectively. There were 64.28% (n=45) male and 35.72% (25) female patients (Fig 1). The mean weight of patients in male was  $17.8 \pm 7.6$  kg while in female was  $15.6 \pm 6.27$  kg (Fig 2). In the distribution of patients by complications, anorectal stenosis was present in 13.33% (n=6) in male while 12% (n=3) in female children. Wound infection was present in 8.88% (n=4) in male and 8% (n=2) in female children. Intestinal obstruction was present in 11.11% (n=5) and 12% (n=3) in male and female children respectively. Constipation was present in 15.55% in male while 16% (n=4) in female children. Enterocolitis was found in 51.11% (n=23) in male and 52% (n=13) in female children (Table 1).

## 4. DISCUSSION

The Duhamel Procedure is widely used for definitive treatment of Hirschsprungs disease. Hirschsprungs disease is a congenital disorder characterized by the absence of ganglion cells in the distal bowel, which results in functional obstruction, most commonly in the newborn period. Although many types of pull through procedures have been described, the most commonly performed operations in North America have been the Swenson, Duhamel, and soave (or endorectal) pullthrough procedures. Clinical presentation is variable, newborns present with failure to pass meconium with distended abdomen and bilious vomiting. About 98% of full term newborn pass meconium within 48 hours but these children has history of delayed passage. The features like fecal incontinence, fecal urgency and stool withholding behavior are usually not present in HD while it is common in functional constipation [12,13].



**Fig. 1. Distribution of patients by sex**



**Fig. 2. Weight of Male and female children**

**Table 1. Distribution of patients by Complications (n=70)**

Complications	Male (n=45)		Female (n=25)		P value
	No.	%age	No.	%age	
Anorectal stenosis	6	13.33	3	12	0.43
Wound infection	4	8.88	2	8	0.51
Intestinal obstruction	5	11.11	3	12	0.49
Constipation	7	15.55	4	16	0.53
Enterocolitis	23	51.11	13	52	0.49

In our study there were 64.28% male and 35.72% female patients. As compared with the study of Mirza et al there were 70.6% male and 29.4% female patients [12]. The results of our study are comparable with other national and international studies. In our study Modified Duhamel Procedure was performed in 70 patients. Out of them 25 Patients (35.72%) were females. According to Saadai 128 male to female ratio in classic Hirschsprung Disease is 4:1 in

favor of males. So in both studies males are affected more than females [6].

Handaya et al, performed modified Duhamel procedure and his result were very similar to our series. 16.6% of their patients developed enterocolitis while in our study it was observed 51.5% and 52% in male and female children respectively, which is in contrast with the above study [14]. In our study wound infection was

found in 8.88 and 8% in male and female children respectively. As compared with another study wound infection was found in 17.60% patients [15]. In our study intestinal obstruction was found in 11.11% in male while 12% in female children. As compared with another study Intestinal obstruction was found in 5.8% patients [16]. In our study enterocolitis was found in 50.7% Patients. As compared with other study enterocolitis was found in 11.6% patients [8].

#### 4. CONCLUSION

It was concluded that modified Duhamel Procedure for Hirschsprung's disease has less postoperative complications in both male and females moreover there is no significant difference of postoperative complications in both sexes.

#### CONSENT AND ETHICAL APPROVAL

The study was approved by ethical review board PUMHSW Nawabshah. Written informed consent was obtained from parents or guardians of the participants.

#### COMPETING INTERESTS

Author has declared that no competing interests exist.

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