

# Modified Duhamel Pull through Procedure in patients with Hirschsprung's Disease

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## ABSTRACT

**Background:** Hirschsprung's Disease (HD) is one of the most common congenital conditions seen by pediatric surgeons. The curative surgery consists of total or subtotal resection of aganglionic segment followed by pull through of normally innervated intestine.

**Aim:** To determine the early post operative outcome in terms of complications regarding Modified Duhamel Pull Through Procedure in patients with H.D.

**Methods:** A descriptive series of cases was carried out in the Paediatric Surgery Department of the Sheikh Zayed Medical Institute in Lahore. After obtaining the approval of the Ethics Review Board, 75 cases of HD were selected for study. Demographic details including (age, gender, weight) and follow up till three months postoperatively done for early complications such as (wound infection, intestinal obstruction, constipation, anorectal stenosis & enterocolitis). After data collection SPSS 20 was used for analysis.

**Results:** Seventy five patients were the included in this study, mean age of children were 5.7± 2.6 yrs. Male & female were 68% & 32% respectively. The average patient weight was 17.8±7.6 kilograms. Most common complication was enterocolitis seen in 50%cases. Only 8 children had surgical site infection.

**Conclusion:** We have concluded that modified Duhamel is an easy and safe operative technique with the few known post-operative complications.

**Key words:** H.D; Modified Duhamel; Complication

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## INTRODUCTION

H.D is one of the most common causes of gut obstruction in newborns or infants<sup>1,2</sup>. In western literature its reported incidence is one in five thousand neonates with clear male predominance.<sup>3</sup> Neonates with H.D fail to pass meconium in majority of cases during first 48 hours while older children can present with chronic constipation or Hirschsprung associated enterocolitis (HAEC). Digital rectal examination typically reveals explosive discharge of gas & fecal material on withdrawal. The diagnosis is made on history, clinical examination, radiological tests, manometry & histopathology findings.<sup>4</sup> Different procedure were introduced for therapy but most common procedures include (Swenson, Soave & Duhamel). Each procedure have known complications even in experienced hands<sup>5</sup>.

Bernard Duhamel first described retro-rectal dissection with pull through of ganglionic colon and anastomosis of both ganglionic and aganglionic parts, which was actually designed to decrease pelvic dissection and therefore became a definitive procedure. This procedure is further modified by Martin<sup>6</sup>.

The Modified Duhamel procedure in patients with HD using GIA linear cutter is being routinely performed in our department. The objective of present study is see the early complication after MDP. The aim of this study is to know the early post operative complications of Modified Duhamel procedure, which proved to have less post operative complications than other pull through procedures in the complications than other pull through procedures in the

international literature but no local study is available. So I want to conduct this study to produce evidence-based literature for our population.

## MATERIAL & METHODS

A descriptive series of cases was carried out in the Paediatric Surgery Department of the Sheikh Zayed Medical Institute in Lahore. After obtaining the approval of the Ethics Review Board, 75 cases of HD were selected for present study. This study was conducted from August 2011 to January 2012. Patients more than 10 months of age and weight over 10 kg were enrolled. Patients with acute features of intestinal obstruction, perforation, enterocolitis, redo operation and associated abnormalities were excluded. An informed consent was taken for the procedure of Modified Duhamel's operation. Demographic details including (age, gender, weight) were recorded in self structured proforma. Single surgeon was performed all the cases of MDP. Steps includes: (a) preparation of patient from nipple to toe & exploration of abdomen under general anesthesia (b) mobilization of ganglionic portion of intestine (c) creation of retro-rectal spaced (d) opening of posterior rectal wall with half moon incision (e) stay suture at 4 site & anchoring of pull through ganglionic bowel with stay suture (f) anastomosis (g) linear cutter stepper used for side to side anastomosis and creation of common channel (h) drain placement and abdominal closure. All the patients were followed for three months for post-operative complication like (wound infection, intestinal obstruction, constipation, anorectal stenosis & enterocolitis). self structured preformed used for data collection & SPSS 20 was used for data analysis.

## RESULTS

Seventy five patients were the included in this study. Age of patients in study was ranges from 1 to 15 years with mean

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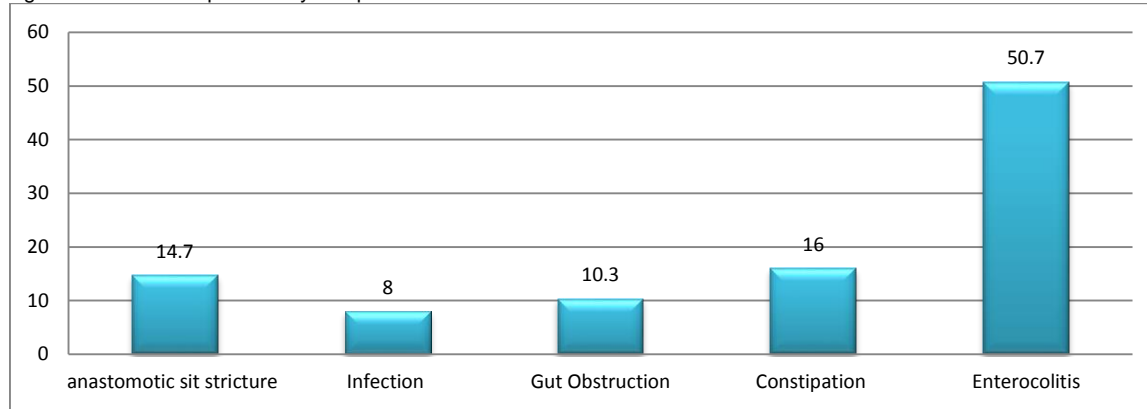
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age of children were 5.7±2.6 yrs. Male & female were 68% & 32% respectively. The average patient weight was 17.8±7.6 kilograms shown in table 1. Most common complication was enterocolitis seen in 50%. Only 8 children had surgical site infection. Other complications were included; intestinal obstruction & constipation details are given in table figure 1.

Table 1: Distribution of patients by age, Gender, Weight

Age	5.7±2.6
Gender	n=75
Male	51(68%)
Female	24(32%)
Weight	17.8±7.6

Fig. 1: Distribution of patients by complications



## DISCUSSION

Surprisingly, few studies have been found on modified Duhamel procedure outcome in published literature; however it is the most commonly done operation for H.D at any pediatric surgical center. Initially two Kocher clamps were applied to crush the common wall, as Duhamel suggested in 1956, is no longer used<sup>7</sup>. The technical modification was made to the procedure with introduction of GIA stapler for division & sealing of common wall edges<sup>8</sup>.

We found male female ratio almost 2:1, similar gender distribution was found by Iqbal and colleagues<sup>9</sup>. Another study was conducted by Orr & Scobie, they reported that male female ratio is 4:1. Results of both studies for disease occurrence in male female children were comparable.<sup>10</sup>In our study the average weight of children undergoing above mention procedure 17.8±7.6. A review by Kothari and their colleagues found the weight ranges between 4 to 22 kilograms at the time of surgery for H.D. our results were also comparable with Canty TG et al<sup>11,12</sup>.

We noted that Hirschsprung associated enterocolitis was the cause of readmission in half of the patients, anastomosis leak seen in 14.4% case. Similar results were shown by yanagihara and colleagues & found anastomotic leak in 16.6% patients<sup>13</sup>. These results were comparable with present study results. Iqbal et al, found that post Duhamel surgical site infection was 17.7%<sup>9</sup>. The rate of infection was higher in above mention study, however we found only 8% case who develop surgical site infection after Duhamel operation.

## CONCLUSION

On the above discussion it is concluded that Modified Duhamel Procedure for Hirschsprung's disease is quite safe. It has less postoperative complications.

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