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Comparative study between Duhamel and endorectal pull through in hirschsprung's disease

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Abstract

Background: The surgery for Hirschsprung's disease is changed from multistage surgery to single stage. The present study compared Duhamel and endorectal pull through in hirschsprung disease.

Materials & Methods: The present study was conducted on 48 patients with Hirschsprung's disease of both genders. Patients were divided into 2 groups of 24 each. Group I patients underwent Modified Duhamel's procedure and group II patients underwent transanal endorectal pull-through procedure. Parameters such as blood loss, operating time and intra-operative complications etc. were recorded.

Results: Group I patients underwent Modified Duhamel's procedure and group II patients underwent transanal endorectal pull-through procedure. Mean operative time in group I was 146.2 minutes and in group II was 143.6 minutes, recovery days were 20.4 and 19.1 in both groups and hospital stay was 13.7 days and 12.8 days respectively. The difference was non-significant ($P>0.05$). Blood loss was seen in 2 and 3 in group I and II respectively, continence in 2 and 1 in both genders respectively and frequent stool passing in 3 and 2 in group I and II respectively. The difference was non-significant ($P>0.05$).

Conclusion: Authors found both techniques equally effective in management of cases. The choice of treatment depends upon surgeon's choice and conditions.

Keywords: Endo rectal, Duhamel's, hirschsprung's disease

Introduction

The Hirschsprung's disease (HD) is characterized by absence of ganglion cells in the Myenteric and Meissner's plexus with nerve bundle hyperplasia. The surgery for HD is changed from multistage surgery to single stage^[1]. Further, till date the superiority of either Duhamel, Swenson or soave procedure is comparable. It is unclear if one of these techniques yields significantly better general (execution and timing of procedures) or and disease-specific outcomes. Most of the pediatric surgeons are stick to the surgical procedures of their choice^[2]. In the Duhamel procedure, a section of aganglionic rectum is left in situ and anastomosed to pulled down segment of ganglionic colon (side-to-side) as a pouch reservoir. Duhamel procedure has gained popularity due to technical ease, minimal anal stretching and better visibility in entire procedure^[3].

The patients with HD were mostly diagnosed in the neonatal period. The clinical presentation was distended abdomen, delayed passage of meconium and vomiting, older children often present with chronic constipation, and approximately 10% of patients with HD present with enterocolitis. The Duhamel pull-through for HD was introduced in 1960 and has been used at our center since 1969 as a one-, two- or three-stage procedure^[4]. The present study compared duhamel and endorectal pull through in hirschsprung disease.

Materials & Methods

The present study was conducted in the department of general surgery. It comprised of 48 patients with Hirschsprung's disease of both genders. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 24 each. Group I patients underwent Modified Duhamel's procedure and group II patients underwent transanal endorectal pull-through procedure. Parameters such as blood loss, operating time and intra-operative complications etc. were recorded. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

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Results

Table 1: Age distribution of patients in both the groups

Age (in years)	Mean ± SD	Group 1	Group 2
		36.2 ± 12.8	14.4 ± 8.2
t value		2.7	
value		0.012	

Table 2: Distribution of patients

Total-48		
Groups	Group I (Duhamel's)	Group II (Transanal endorectal pull through)
Number	24	24

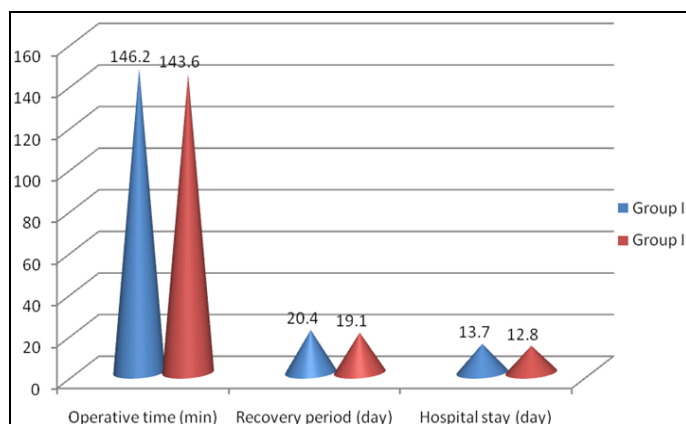
Table 2 shows that group I patients underwent Modified Duhamel's procedure and group II patients underwent transanal endorectal pull-through procedure.

Table 3: Comparison of parameters

Parameters	Group I	Group II	P value
Operative time (min)	146.2	143.6	0.91
Recovery period (day)	20.4	19.1	0.93
Hospital stay (day)	13.7	12.8	0.71

Table 3, graph I shows that mean operative time in group I was 146.2 minutes and in group II was 143.6 minutes, recovery days were 20.4 and 19.1 in both groups and hospital stay was 13.7 days and 12.8 days respectively. The difference was non-

significant ($P>0.05$).

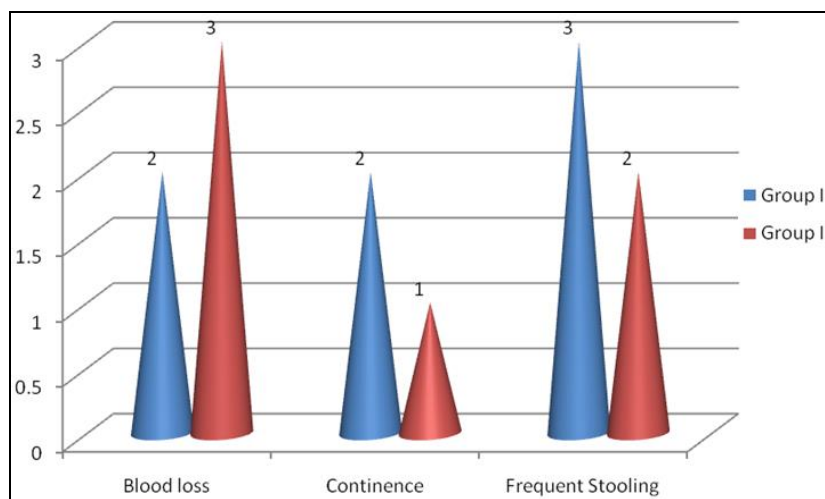


Graph I: Comparison of parameters

Table 4: Clinical features

Parameters	Group I	Group II	P value
Blood loss	2	3	0.95
Continence	2	1	0.90
Frequent stool passing	3	2	0.78

Table 4, graph II shows that blood loss was seen in 2 and 3 in group I and II respectively, continence in 2 and 1 in both genders respectively and frequent stool passing in 3 and 2 in group I and II respectively. The difference was non-significant ($P>0.05$).



Graph II: Clinical features

Discussion

The incidence of HD is 1 in 5,000 live births. The HD was first described in 1886, since than many procedures has been described for its management [5]. In recent years laparoscopy has evolved in the management of HD from extramucosal biopsy to primary definitive management. Drawbacks to this procedure were the lack of seromuscular guiding biopsies, which results in removing an unnecessarily large or small segment of bowel [6]. Further, mobilizing the rectum without dissection of the mesentery and peritoneal reflections makes this technically difficult and colanal anastomosis under tension with absence of the natural anorectal angle. The Duhamel operation is best suited for a "failed" Swenson operation, long-segment HD and total colonic aganglionosis. It is also useful in cases of difficult mucosectomy viz repetitive attack of enterocolitis make the dissection difficult and grossly dilated hypertrophic rectum [7].

The present study compared Duhamel and endorectal pull through in hirschsprung disease.

In present study, group I patients underwent Modified Duhamel's procedure and group II patients underwent transanal endorectal pull-through procedure. Singh *et al.* [8] found that mean age of surgery was 6.0±0.23 months comparable in both groups (ranged 3 m-5 yrs). Mean operative time, blood loss and hospital stay with range were 80±0.30 (70-100 minutes), 50±0.20 (40-90 ml) and 6±0.21 (3-12 days) less in LADPT cases compared with open Duhamel (p value .008, 0.0067 and .009 respectively). Per-operative one left ureteric injury occurred in LADPT. In one year of follow-up revision LADPT (for neuronal intestinal dysplasia) and reexploration due to small bowel stricture were needed in one patient each, there was one death due to fulminant enterocolitis.

We found that mean operative time in group I was 146.2

minutes and in group II was 143.6 minutes, recovery days were 20.4 and 19.1 in both groups and hospital stay was 13.7 days and 12.8 days respectively. Antao *et al.*^[9] conducted comparative study between transanal endorectal pull-through and modified Duhamel's procedure in management of Hirschsprung's disease. This randomized prospective study was done on 20 patients with Hirschsprung's disease during the period from January 2016 to January 2018, group A included 10 patients underwent modified Duhamel's procedure compared to group B 10 patients underwent trans-anal endorectal pull-through procedure. The two techniques were nearly equivalent in the post-operative outcomes.

We observed that blood loss was seen in 2 and 3 in group I and II respectively, continence in 2 and 1 in both genders respectively and frequent stool passing in 3 and 2 in group I and II respectively. Hadidi *et al.*^[10] found that mean ages at surgery were 4.67, 14.61, and 13.28 months, respectively. Patients in the LTEPT group had significant shorter operating times (195 versus 257 versus 291 minutes, $P = .03$), earlier start of feeding (1.2 versus 3.1 versus 4.7 days, $P < .01$), and shorter length of hospital stay (4.4 versus 6.8 versus 9.7 days, $P < .011$). Overall complications rate was lower in the LTEPT (14%) than in the LSD (31.2%) and LTD (29.7%) groups. Postoperative enterocolitis incidence was 3%-4% in the Duhamel groups and none in LTEPT. Long-term outcome showed less constipation and better continence for age in the LTEPT group at the 1-year follow-up.

The most common early complications occurred during the first month following surgery; were anastomotic leakage, wound infection, hemorrhage and anastomotic stricture. In present study the most common early complication after Modified Duhamel's was anastomotic leakage that was treated conservatively in 2 patients and required colostomy in one patient.

Arts *et al.* found that the experience of the main surgeon has a major effect on the long-term out-comes after HD operations.¹¹

Conclusion

Authors found both techniques equally affective in management of cases. The choice of treatment depends upon surgeon's choice and conditions.

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