

Short-term outcome of posterior anorectal myectomy for treatment of children with intractable idiopathic constipation

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Purpose Many children with idiopathic constipation (IC) fail to improve with bowel management program. The role of surgical treatment in this subset of patients with intractable IC is still controversial. The aim of this study was to assess the outcome of anorectal myectomy in treatment of intractable IC.

Patients and methods Twenty-five patients with intractable IC were included in this study after failure of bowel management program for at least 1 year. Work-up was made to exclude all other causes of chronic constipation. All patients were selected for internal sphincter myectomy. Patients were followed for at least 6 months postoperatively. Clinical improvement was evaluated by number of bowel motions per week, weaning of laxatives, soiling, child's own feedback, and overall parent satisfaction.

Results Study included 25 children with a mean age of 6.3 ± 1.6 years, suffering from constipation for a mean of 32.9 ± 8.5 months, with failed trials of bowel management

program for at least 12 months. All children were subjected to anorectal myectomy with a mean follow-up of 12.4 months. Children's feedback showed a mean of 79.1% improvement. Postoperative parent satisfaction had a mean of 75.9%.

Conclusion Anorectal myectomy is an effective and technically simple procedure in selected patients with intractable IC. *Ann Pediatr Surg* 13:26–28 © 2017 Annals of Pediatric Surgery.

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Introduction

Constipation is common among children, accounting for about 3–5% of all visits to pediatricians. Idiopathic (functional) constipation (IC) is an umbrella term that encompasses a group of disorders associated with persistent, difficult, infrequent defecation without evidence of a structural or biochemical explanation [1]. IC is a costly, complex, multifactorial, and prevalent condition that requires early recognition and aggressive treatment to prevent chronicity [2].

Many children with constipation fail to respond or rapidly relapse after bowel management program for IC [3,4]. Surgery can usually produce a good functional result in dysfunction of the colon secondary to lesions like aganglionosis or focal motility disorder. However, its role in treating IC is more controversial [3]. Surgical options include rectosigmoidectomy, sigmoidectomy, antegrade continent enema, sacral nerve stimulators, botulinum toxin injection, and anorectal myectomy.

Anorectal myectomy was first described for the diagnosis and treatment of short-segment Hirschsprung's disease (HD). Later, Bentley [5] introduced it as a surgical treatment of IC.

The aim of this study was to assess the outcome of posterior internal sphincter myectomy for treatment of the children with intractable IC.

Patients and methods

This prospective study included 25 consecutive children admitted in Pediatric Surgery Unit, Department of

Surgery, Tanta University Hospital and other affiliated hospitals between January 2014 and January 2016. All children presenting with intractable IC that did not respond to classic bowel management program (diet, laxatives, and/or enema) for at least 12 months or more were included in the study. The study protocol was fully approved by the Tanta University Ethical Research Committee (approval number: TUH 41020014) and an informed consent was taken from the parents of all patients.

A full history was taken including age, sex, onset of constipation, bowel motions (BMs) per week, laxative dose, soiling, and method and duration of medical treatment. Children were thoroughly investigated for an organic cause for constipation using contrast enema, colonic motility study, and anorectal manometry if needed.

All patients were selected for internal sphincter myectomy. Patients were followed for at least 6 months postoperatively. Clinical improvement was evaluated by number of BMs per week, weaning of laxatives, soiling, child own feedback, and overall parent satisfaction.

Technique of anorectal myectomy

Bowel preparation started 1 day before surgery by allowing clear fluids only, two or three enemas till the effluent is clear, and oral metronidazole syrup three times a day.

Under general anesthesia, in lithotomy position a lone-star anal retractor, traction silk stitches, or anal speculum

was used to visualize the posterior anorectal wall. A small transverse 0.5 cm width incision was made at 6 O'clock position, starting 1 cm above dentate line. Submucosal plane then created and mucosal flap was elevated using silk traction sutures.

Dissection of the internal sphincter was performed in the intersphincteric plane, the incision was extended proximally to include the rectal muscle for 3–5 cm. Then, 0.5–1 cm width and 3–5 cm length muscle strip was removed with its distal end including a part of internal anal sphincter. Hemostasis secured with bipolar coagulation and the mucosal incision was closed with vicryl 4–0 sutures. Proximal and distal ends were marked and sent for histopathological examination. All children started oral clear fluids 2 h postoperatively and discharged home at the same day. Patients were followed weekly in the first month then monthly for 6 months.

Results

The study included 25 (male = 14, female = 11) children with a mean age of 6.3 ± 1.6 years, suffering from constipation for a mean of 32.9 ± 8.5 months, with failed trails of bowel management program for at least 12 months with a mean of 16.1 ± 4.7 months, with a mean laxative dose of 3.9 ± 1.3 normal dose was used, all have less than one BM (0.75 ± 0.26) per week, and all suffer from cumbersome soiling (Table 1).

All children were subjected to contrast enema, colonic motility study, and anorectal manometry to preclude a primary cause for constipation. Histological examination of the myectomy specimen showed normal ganglion cells in 20 (80%) children. Whereas, we had hypoganglionosis in three (12%) and aganglionosis in two (8%) children.

All children were subjected to anorectal myectomy. Mean follow-up was 12.4 ± 4.6 months, postoperative BM showed evident improvement with a mean of 2.6 ± 1.3 motions/week, mean laxative dose was reduced to 0.8 ± 1.1 of normal dose, and soiling disappeared in 20 (80%) children. Whereas, only four (16%) children showed no improvement of BM or soiling and one child had transient soiling stopped after 8 months spontaneously.

Children's feedback showed a mean of $79.1 \pm 3.2\%$ improvement as 19 out of 25 (76%) children gave themselves 80% or more. Postoperative parent satisfaction had a mean of $75.9 \pm 3.4\%$. Parents expressed themselves as more than 80% satisfied in 18 out of 25 (72%) children (Table 1). No significant postoperative complications were noted All patients were discharged home at the same operative day.

Overall, there was an improvement in 84% of the children after 6 months' follow-up, with 48% of those showing an excellent and 36% partial improvement results. Four (16%) of the patients continued to have severe constipation 6 months after posterior myectomy (Table 2).

Discussion

Bowel management program including nutritional support, laxatives, and enemas are the first line of treatment

Table 1 Preoperative and postoperative clinical findings in our patients

	Preoperative	Postoperative
Bowel motions/week	12 children/one BM per week 13 children/less than once per week	One child/six BM per week One child/five BM per week 12 children/three BM per week Seven children/two BM per week Four children/less than one BM per week
Laxative dose normal dose*	7/3 child 6/3 children 5/4 children 4/4 children 3/10 children 2/1 child	4/2 child 3/2 child 2/1 child 1/8 children No laxatives/12 children
Child feedback/10		10/9 children 9/3 children 8/7 children 1/2 child 0/4 children
Parents satisfaction/10		10/10 children 9/4 children 8/4 children 7/2 children 4/1 child 0/4 children
Soiling	All	4/25

*Normal laxative dose.

of chronic IC and ~85% of cases could improve or cure by conservative bowel program. Recently IC in children is becoming more prevalent, increasing number of chronically constipated patient are referred to pediatric surgeons for evaluation and treatment. It is time to take a look at the diagnostic and therapeutic role of anorectal myectomy for such conditions [6,7].

This study included 25 children with constipation for a mean of 32.9 ± 8.5 months, with failed trails of bowel management program for at least 12 months with a mean of 16.1 ± 4.7 months, which was significantly higher than in a study by Redkar *et al.* [8] in which 1 month was considered for refractory constipation. Whereas, in the study by Mousavi *et al.* [9] the mean duration of constipation before myectomy was 28.4 (range: 3–71) months. We believed that, we could not judge the efficiency of the bowel management program before at least 1 year as we used the trial and error method to adjust the dose of laxative.

The histological examination of the myectomy specimens in 20 (80%) children showed normal ganglion cells. Whereas, we had hypoganglionosis in three (12%) and aganglionosis in two (8%) children. These results were in agreement with Mousavi *et al.* [9]; they included 44 patients of intractable IC managed by myectomy, and confirmed that 32 (72.7%) children showed normal ganglion cells and four (9.1%) had aganglionosis. However, our results were significantly different from Redkar *et al.* [8], who found 10/28 of their patients with aganglionosis and only seven children with normal ganglion cells. In addition, our results were significantly different from those of Peyvasht *et al.* [10], who found 30/48 of their patients with aganglionosis and only seven of

Table 2 Clinical outcome

Result	n (%)
Excellent ^a	12 (48)
Partial improvement ^b	9 (36)
No improvement	4 (16)
Total	25 (100)

^aRegular bowel habit with no diet management nor laxative.

^bRegular bowel habit with diet management and small dose laxative.

them showed normal ganglion cells. Both of these studies were referring IC to a ultrashort segment HD.

Preoperative contrast enema showed rectal dilatation in all of our cases. A narrow segment was detected in two cases with highly suspicious of low cone position, which after histological examination was confirmed as HD; this result was highly accepted among the majority of series [11–13]. We explained this as Barium enema may suggest the presence of ultrashort segment HD but may not indicate precisely the extent of the diseases, and in some instances, a constricting segment may not be demonstrable. Thus, although the diagnosis may be suspected by history as well as contrast enema, confirmation can be made only by the histological examination of the rectum.

Clinical improvement was evaluated objectively by number of BMs per week, weaning of laxatives, soiling, and child's own feedback and overall parent satisfaction. Postoperative BM showed evident improvement and the mean laxative dose was reduced to 0.8 ± 1.1 of normal dose, and soiling disappeared in 20 (80%) children. Children's feedback showed a mean of $79.1 \pm 3.2\%$ improvement with postoperative parent satisfaction had a mean of $75.9 \pm 3.4\%$.

In this study we confirmed that, there was an improvement in 84% of the children after 6 months' follow-up; only four (16%) of the patients continued to have severe constipation 6 months after posterior myectomy. This result was similar to that of Redkar *et al.* [8], who showed improvement in bowel habit in 92.86% of patients after myectomy; the Freeman [14] studies, who showed improvement in bowel habit in 85.7% of 61 children who had anorectal myectomies; and Peyvasht *et al.* [8], who confirmed that 85% of their patients were improved after myectomy. However, our results were slightly better than that of Mousavi *et al.* [9], who showed improvement only in 68.2% of his IC patients. Moreover, De Caluwé

et al. [3] in their study have reported 2–6 years follow-up of 15 patients after myectomy with seven of these 15 patients had regular BMs without any medication and six needed small doses of laxatives. Whereas, in the study by Doodnath and Puri [6] on 24 patients with internal anal sphincter achalasia, 62.5% of cases showed regular BMs after myectomy.

Conclusion

We concluded that, anorectal myectomy is an effective and simple procedure in selected patients with chronic refractory constipation, for both diagnostic and therapeutic purposes. However, the technique requires further studies with larger number of patients and longer follow-up periods to draw more precise and final conclusions.

Acknowledgements

Conflicts of interest

There are no conflicts of interest.

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