Original

Comparison of Combination of Sclerotherapy and Tiersch's Procedure with Perineal Rectopexy with Mesh in Children

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Abstract

Introduction: Perineal rectopexy is a method for surgical treatment of rectal prolapse in children, but it is accomplished using different techniques. We investigated the combination therapy of Tiersch's operation and sclerotherapy and compared its outcome with mesh rectopexy with talc.

Materials and Methods: A total of 80 children with rectal prolapse were selected and divided in two groups. In the control group rectopexy was performed by perineal mesh rectopexy with talc. In the case group, injection of 30% saline and, Tiersch's operation were performed. The parameters used to compare the success of interventions were improvement of incontinence and constipation and a low rate of recurrence.

Result: Our results showed that the rate of improvement in constipation and incontinency was not significantly different in the two groups. The recurrence rate was 1.6 % in both groups in one year of follow up. Fifteen patients (37.5%) in the control group had severe anxiety and pain during the extraction of mesh. The length of hospitalization was 6.2± 0.94 in the controls and 0.86± 0.63 days in case group.

Conclusion: Our study suggests the combination perineal therapy (T+S) as an alternative approach for children who have limitations regarding talc rectopexy or the high hospital charges related to this approach.

Keywords

- Rectal Prolapse
- Sclerotherapy
- Rectopexy

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Introduction

Rectal prolapse in young children is a common disease which is treated conservatively. Although most cases of prolapse is mucosal, occasionally it is full thickness and therefore does not respond to nonsurgical treatments[1-2]. Many treatment options are available such as injection of sclerosant, abdominal or perineal surgical operations[3-5] and they have different success rates[6-8], the optimal management of this disease is still under debate.[9]

Here, we compared perineal mesh rectopexy with combination therapy of Tiersch's operation plus sclerotherapy (T+S) and discussed the success rate of these techniques and their related complications.

Materials and Methods

In a randomized controlled trial carried out in three large children hospitals in Iran from 2006 to April 2020;the effect of therapeutic interventions on two groups of children admitted for elective surgery of rectal prolapse; cases and controls were examined. Children were divided into 2 groups, children with odd hospital record numbers were assigned to the case group and those with even numbers were allocatedto the control group.

Inclusion criteria were as follows: 1- no response to conservative management(laxatives, high fiber diet, regular prompt defecation from a sitting position) 2- failure of conservative management as shown by recurrence of the prolapse and 3-Full thickness prolapse.

Exclusion criteria were as follows: children with medical diseases or a positive family history of pulmonary disease, lung cancer, skin or ovarian cancers.[10-11]

The study was approved by our hospital ethics committee and written consent was obtained.

Prolapse diagnosis was made clinically and we didn't use defecography or MRI in this study. On pre-operative evaluation, demographic data, prolapse duration, clinical findings (Protrusion, constipation, diarrhea, bleeding and incontinency), and duration of conservative management were collected.

Techniques:

With general anesthesia, in lithotomy position, after initial rectal examination, proctoscopy was performed. If rectum was loaded with hard stool, it was evacuated.

In the controls, with a 180º semi –circular incision of the posterior anal verge (between coccyx and anus), the presacral space was dissected up to the sacral promontory. A 20 cm mesh which was soaked in asbestos –free talc (Bryan Corp, Woburn, MA, USA),[13-14] was inserted in the pre sacral space[12] with the ending hanging out of the incision. It was extracted gradually (6 cm /day) from the 5th day of surgery.

In the case group, the anus was dilated using a loane retractor. A long 23- gauge needle was placed into the sub-mucosal plane approximately 4 cm from the anal verge and 2 ml of 30 percent solution was injected into each of three quadrants (3, 6 and 9 o'clock).[15] Sufficient sclerosant injection was achieved by bulging or blanching of the injection

site. Then, with two small incisions at 12 and 6 o'clock of the anal verge, a length of absorbable (0 caliber Vicryl) suture was threaded from the posterior incision to the anterior incision around the anus, just deep to the external sphincter muscle (ring formation). The suture was pulled and tied on a Hegar's dilator. Absorbable sutures were used to close the two incisions.[16]

On postoperative assessment, hospitalization length and post operative complications (infection, bleeding) were recorded. A one year follow up was carried out for all patients. The main comparative variables were improvement of incontinence and constipation and a low rate of recurrence.

For data analysis we used the SPSS software. Data regarding quantitative variables was expressed as mean ±SD and Mann- Whitney test was used for comparing the mean scores. Qualitative data and there relation to different operative techniques was assessed using chi- square and Fisher's exact test. P values less than 0.05 was considered significant

Results

All 80 children (40 cases and 40 controls) were evaluated. The mean age was 5.1± 0.09 (years) in controls and 4.82± 0.63 in cases (P>0.005). There was no significant difference in the sex of patients (male/female: 22/18 in controls, 26/14 in cases). Duration of prolapse prior to treatment was 14.2± 4.2 months in controls and 14.6± 3.7 months in cases; which was not significant. Duration of conservative management was 12.2±2.9 months in controls and 14.3± 1.9 months in cases (also not significant). Clinical findings of the patients are demonstrated in **Table 1.**

Table 1: Clinical findings of groups

P	Control [n (%)]	Case [n (%)]
Protrusion NS	40(100)	40(100)
Constipation NS	21(52.5)	26(65)
Diarrhea NS	2(5)	3(7.5)
Bleeding NS	1(2.5)	0(0)
Incontinence NS	5(12.5)	3(7.5)

Postoperative complication occurred only in 2 patients of the control group: 1 postoperative infection (2.5%) and 1 bleeding (2.5%) which were not significantly different.

15 patients (37.5%) in the control group had severe anxiety and pain during the extraction of mesh. The sweat test was positive in two patients.

Table 2 shows the success rate of different techniques.

Table 2: Success rate in children after surgery

Parameter P	Group (n)	Success rate [n (%)]
Constipation NS	Control (27)	26(96.6)
	Case (21)	20(96.6)
Incontinence NS	Control (3)	2 (66)
	Case (5)	5(100)
Recurrence NS	Control (40)	1 (1.6)
	Case (40)	1 (1.6)

The results showed that there was a higher but not significant resolution rate for incontinency in the case group.

Duration of Hospitalizationwas 6.2± 0.94 days in the controls and 0.86± 0.63 days in case the group (P:not significant).

Discussion

Although surgical sever rectal prolapse is commonly a disease of old age;[17-18] in children conservative management is the main treatment. However in some cases, surgical management is mandatory. Despite the progresses in modern surgery (laparoscopic rectopexy and injection [19]), choosing the surgical procedure for management of rectal prolapse is still a dilemma.

The basic underlying mechanism leading to rectal prolapse in children is stretching and weakening of the levator muscle complex surrounding the rectal wall. The most common predisposing causes are disorders of sacral nerve root innervations,chronic malnutrition, acquired muscular weakness associated with straining at defection and idiopathic prolapse which is the most common cause in our series.

As previously described by Nazem et al., [16]perineal mesh rectopexy is an alternative approach for abdominal operations in children. Sterile talc powder as a sclrosing agent had acceptable results with low rate of complication in treatment of rectal prolapse in children. Talc stimulates an inflammatory reaction in the perineal region and results in better adherence of the rectum to the sacrum.

However, we have three major limitations in mesh rectopexy with talk. Firstly, although the US Food and Drug Administration (FDA) considered the non-asbestiform talc as a safe agent,but there are some studies showing a preliminary link between talk and some types of cancers.[10-11] Secondly, some patients experienced a high degree of anxiety and pain during the extraction of mesh. Thirdly, the length of hospitalization and patient payment is also considerable in mesh rectopexy. Therefore, we used a combination therapy of T+S as an alternative approach for surgical treatment of rectal prolapse.

Our findings showed that length of hospitalization is shorter in T+S method and most patients can be discharged on the first day of operation. The rate of postoperative constipation was low in both methods, because in these approaches, the parasympathetic nerve fibers of lateral ligaments of rectum remain intact.[20]

Other findings of this study showed improvement of incontinency in patients especially in the T+S group. Incontinence in rectal prolapse can be related to pudendal nerve latency, external sphincter denervation, [21] persistent recto- anal inhibition, low rectal sensory thresholds, adaptation to distension[22]and hypermotiliy of sigmoid and descending colon.[23]

Although it seems that rectopexy by any method improves internal sphincter function, our findings show that the addition of narrowing of the anal canal by sclerotherapy had a better result.

On the other hand, prolonged follow up of cases treated by sclerotherapy shows a recurrence rate of 10% in two years[24] but in combination therapy, the results are comparable to other surgical techniques such as mesh rectopexy.[25-26]

Conclusion

Our study suggests the combination perineal therapy (T+S) as an alternative approach for children who have limitations regarding talc rectopexy or the high hospital charges related to this approach.

Ethical Consideration

In this study, principles of ethical and professional conduct of our hospital and university have been followed and Ethic number of Imam Hossein Hospital is 100125.

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Conflict of interests

There is no conflict of interest.

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