Management of Rectal Prolapsed in Children at Medical City

Amier A. Ejrish
Associated professor in pediatric surgery, College of Medicin, University of Babylon
amierejrish@yahoo.com

Abstract

Background: Rectal prolapse is defined as circumferential descend or protrusion through the anus of one or more coats of the rectum. Prolapse can be either partial or complete, any condition which suddenly increase abdominal pressure may precipitate abnormal descend of bowel wall , the straining during defecation , and long periods of sitting on the toilet, allows stretching of the pelvic diaphragm and other less well-defined rectal suspensory structures which results in prolapse.

Aim : To evaluate the different type of treatment for rectal prolapse in children.

Patients & methods: This is prospective study of 80 patients of rectal prolapse was admitted at children welfare teaching hospital at medical city, were admitted to the pediatric surgical department from January 2014 to October 2015.

Results: In our study of 80 child with rectal prolapse the age of the patient ranging from 6months to 12 year .Most common age group of presentation was (1-3) year in 43 patient (53.7%) and main type 64 patients (80%) was partial thickness rectal prolapse .

Most common duration of prolapse was (1-3) months in forty patients (50.0%), all patients presented (100%) with protruding mass and 42 patients (52.5%) presented with incontinence .

Diarrhea was the common associated condition in 28 patients (35%),while constipation was the second associated condition in 24 patients(30%).Fifty patients (62.5%)respond to conservative treatment while 30 patients (37.5%) patients required surgical interference .

Thirty seven patients with age less than 3 years (74%) responded to conservative treatment and 15 patients (75%) who responded to injection sclerotherapy aged less than 3 years.

Twenty fife patients receive injection sclerotherapy , success rate after 2nd Injection was (77%) , about (75%) of them aged less than 3 year and (70%) of them was presented with partial thickness rectal prolapsed Six patients receive Thiersch operation with Success Rate 66.6% , five of them with full-thickness rectal prolapse &aged more than 3 years. No mortality was conducted in this study .

Conclusion

Conservative treatment still the best treatment for rectal prolapse because it carry good chance for healing specially in children younger than 3 year. Injection sclerotherapy is the best method for treatment in patients with age less than 3 year specially in partial thickness rectal prolapse.

Key wards: rectal prolapse, partial rectal prolapse,complete rectal prolapse

الخلاصة

هدف الدراسة:تقييم دور العلاج التحفظي في علاج هطول المستقيم في الأطفال .

الاساليب:

أجريت دراسات مستقبلية ل80حالة من للمرضى الذين يعانون هطول المستقيم في مركز مدينة الطب مستشفى حماية الطفل قسم جراحة الأطفال، بين يناير 2014- اكتوبر 2015.

النتائج:

تم علاج 80 طفل يعانون من هطول المستقيم وكانت اعمارهم تتراوح من 6 أشهر إلى 12 عاما.

وكانت الفئة العمرية الأكثر شيوعا من العمر (1-3) سنة في(53.7%) والنوع الرئيسي (80 ٪) كان سمك هبوط المستقيم جزئي.

وكانت مدة الأكثر شيوعا لهطول المستقيم (50٪)هي (1-3) شهر . وكان الإسهال السبب الأكثر شيوعا في 28 مريضا (35٪) في حين كان الإمساك السبب الثاني في 30 مريض (24٪).خمسون مريضا (62.5 ٪) استجابوا للعلاج التحفظي في حين أن ثلاثون مريضا(37.5%) تطلبوا التداخل الجراحي.سبعة وثلاثون (74٪) مريضا الذين اعمارهم أقل من 3 سنوات استجابوا للعلاج التحفظي وخمسة عشر (75٪) مريضا الذين استجابوا لعملية الحقن بمادة الكلوكوز (25٪) كانت أعمارهم اقل من 3 سنوات.

اجريت عملية الحقن بمادة الكلوكوز (25٪) لخمسة وعشرون من المرضى ، وكانت نسبة النجاح بعد الحقن الثاني (77٪) .
اجريت عملية الثيرش لست مرضى ، وكانت نسبة النجاح هي (66.6٪) .

الاستنتاجات

العلاج التحفظي لا يزال أفضل علاج ل هبوط المستقيم لأنها تحمل فرصة جيدة للشفاء وخاصة في الأطفال الذين تقل أعمارهم عن 3سنوات . عملية الحقن بمادة الكلوكوز (25٪) هو أفضل طريقة لعلاج المرضى الذين يعانون هطول المستقيم واعمارهم أقل من 3سنوات وخاصة اذا كان سمك هبوط المستقيم الجزئي.

الكلمات المفتاحية: هطول المستقيم، هطول المستقيم الجزئي، هطول المستقيم الكامل.

Introduction

Rectal prolapse is defined as circumferential descend or protrusion through the anus of one or more coats of the rectum.[Barton Hoxter, 1992] Prolapse can be either partial or complete. In partial prolapse the rectal mucosa protrudes only about 1 to 3 cm from the anal verge with characteristic radiating folds from the center of the anal aperture. In complete prolapse, the full thickness of the rectum is involved; 5 cm or more of the rectum protrudes, and the prolapse is distinguished by the circular folds of the mucosa.[Risto and Mikko, 2012; Richard, 1975] any condition which suddenly increase abdominal pressure may precipitate abnormal descend of bowel wall , the straining during defecation , and long periods of sitting on the toilet, allows stretching of the pelvic diaphragm and other less well-defined rectal suspensory structures which results in prolapse.[Norman,1995; Porter, 1962] Rectal prolapse has been associated with other conditions, including the following:

- Parasitic disease (eg, trichuriasis, or whipworm) and neoplastic disease [Adedayo & Nasiiro, 2004]
- Malnutrition (loss of ischiorectal fat pad) - Worldwide, this is possibly the most common condition associated with pediatric rectal prolapse; the loss of ischiorectal fat reduces perirectal support,Ulcerative colitis, Ehlers-Danlos syndrome, Meningomyelocele, Surgical repair of an ano-rectal malformation[Risto and Mikko, 2012], Fecal incontinence and diarrhea [Morson & Heinemann,1969; Nninghofen & Enck, 2003]
- Chronic constipation,Mental challenge ,Poor sacral root innervation (as observed in patients with spina bifida) [Katz *et al.,* 1987; Van Heest *et al.,* 2004]
- Bladder or cloacal exstrophy ,Scleroderma ,Hirsch sprung disease (especially in the ultra-short a ganglionic segment, which acts as a sub occlusion, favoring the appearance of rectal prolapse[Pearl *et al.,* 1989; Ponge & Bruley des Varannes, 2002]
- Rectal polyps (in which the polyp acts as a leading point for the intussusceptions) [Candela *et al.,* 2003]
- Cystic fibrosis: rectal prolapse is found in 20% of patients with cystic fibrosis and is the presenting symptom in one third of them. Potential mechanisms by which this condition predisposes an individual to prolapse include bulky bowel movements, coughing paroxysms, undernutrition and Shigellosis in neonates [Sanaka *et al.,* 2004; Park & Grand, 1981; Huskins *et al.,* 1994] In acute prolapse, reduction may occur spontaneously on standing up. If not, the prolapse must be reduced as soon as possible, There is spontaneous cure in most cases of recurrent

prolapse.[Norton, 2008]، Non-operative treatment is the primary course of action in most cases.

A change in defecation habits and provision of stool softeners may allow the pelvic musculature to resume its normal tone. In patients who are identified with cystic fibrosis, enzymatic supplementation and improving malnutrition may be all that is required to eliminate episodes of prolapse.[Ramanujam & Venkatesh, 1992], Most cases respond to conservative treatment within one year. Further management should focus on parental reassurance and education. Instruction on how to reduce a prolapse may prevent repeated presentations to the emergency department. The type of toilet that the child uses is also important. Time spent on the toilet should also be limited to minimize straining.[Abes & Sarihan, 2004] ,In cases with intractable prolapse and may be considered in patients who are not spontaneously cured in 12 to 18 months of follow-up. Patients older than 4 years of age require surgery much more often than younger children. [Risto and Mikko, 2012] The main purpose of surgical treatment for rectal prolapse is correction of the prolapsed rectum and recovery and prevention of the associated defecation dysfunction postoperatively. Therefore, when selecting surgical methods, the surgeon should understand the exact causative factors and anatomical variations.[Yoon, 2011] A great deal of debate surrounds the optimal surgical management of rectal prolapse. Currently, more than 130 operative procedures for the treatment of rectal prolapse are recognized. [Tou *et al.*, 2008], one of the important type of treatment was the Injection Sclerotherapy in this type of treatment The patient is placed in the lithotomy or left lateral position under general anesthesia. A 20-gauge spinal needle is introduced through the anal mucosa via a procto- or is externally introduced 2-3 cm from the anal margin, with a guiding finger in the anal canal, to a point several centimeters above the dentate line.The sclerosant Is circumferentially injected into the sub-mucosal and perirectal space as the needle is withdrawn. [Abes & Sarihan, 2004; Shah *et al.*, 2005] , with any type of compounds (30% saline, Deflux, 25% glucose, 5% sodium morrhuate) injected into the sub-mucosal or retro-rectal space produces an inflammatory response that theoretically prevents the rectum from sliding downward. [Zganjer *et al.*,2008] Other type of operative treatment for rectal prolapsed was Thiersh operation which include Perianal cerclage tightens the anal outlet and prevents prolapse from recurring while the musculature of the pelvic floor re-establishes its normal anatomic relationship. Perianal sutures are subcutaneously placed as a cerclage. The principle is to create a mechanical barrier to contain the prolapse and provoke an inflammatory response on the perirectal tissues to generate a fibrous ring rather than a toneless sphincter.[Ramanujam & Venkatesh, 1992; Zempsky & Rosenstein, 1988]

Modifications involving the use of knitted polypropylene mesh (Marlex mesh) or other non-absorbing materials have been described.[Lomas & Cooperman, 1972]

Patients should be followed until the wire is removed. Advantages include simplicity, effectiveness, and safety. Disadvantages are poor tolerance, rigidity, breakage, and infection. Infection has always been described as local and superficial.[Saleem & Al-Momani, 2006]، Endo-rectal cauterization or mucosal stripping may be effective. [El-Sibai & Shafik, 2002; Hight *et al.*, 1982] other type of operative treatment for rectal

prolapse by Ekehorn rectopexy by placing a mattress suture in the rectal ampulla from inside the rectum, through the lowest part of the sacrum and out through the skin, where it is tied externally.[Sander *et al.,* 1999] The suture is left in place for 10 days. This leads to local inflammation, which causes adhesions between the rectal wall and perirectal tissues (sacrorectopexy). It has recently been used in a group of children with good success. Its benefit probably derives from the inflammation and adhesions that are produced by the mattress sutures.[Schepens & Verhelst, 1993]

The Laparoscopic rectopexy Is an alternative to standard open rectopexy and is performed with two operating ports and a port for laparoscopic visualization. The rectum is mobilized and sutured to the periosteum of the sacral promontory in multiple locations with non-absorbable suture. The operation has been successfully completed in children as young as 10 months of age.[Koivusalo *et al.,* 2006; Tsugawa *et al.,* 2002] while Open posterior rectopexy Is yet another technique for rectal prolapse Through a natal cleft incision, the coccyx is removed, the muscular hiatus is narrowed, and the rectum is suspended from the cut edge of the sacrum so that it cannot slide downward. This maneuver immediately re-establishes the Levator ani suspensory mechanism and narrows the ano-rectal hiatus.[Ashcraft, 2005]

The complication of surgical treatment of rectal prolapse include post operative pain,bleeding from the injection site,perirectal abscess formation,potentiel for damage to bladder neck or presacral nerve plexus all of these are rare.[Rahman *et al.,* 2008]

Aim of study

1- To evaluate the different type of treatment in rectal prolapse in children.
2- Select the suitable method in management of partial & full thickness rectal prolapsed in children.

Patients & methods:

This is prospective study of 80 patients of rectal prolapse was conducted at Children Welfare teaching hospital at Medical City, who were admitted to the pediatric surgical department from January 2014 to October 2015. A total number of 80 patients of rectal prolapse were admitted to the hospital from outpatient clinic or managed as outpatients.

Data collecting form were prepared for collection of information including age, gender, family history, and presentation, association with diarrhea, constipation, neurological disorder & previous surgical operations. The following factors regarding rectal prolapse studied: type of prolapse (partial & full thickness), the duration of prolapse, frequency of attacks, reducibility, &the method of management (conservative, mucosoctomy, sub-mucosal injection of 25% glucose & Thiersh operation).All children received period of conservative treatment for(4-6) months which include: treatment of Infectious diarrhea or parasitic infestation ; a change in defecation habits and provision of stool softeners, focus on parental reassurance and education, instruction on how to reduce a prolapse, time spent on the toilet should also be limited to minimize straining ; Those who failed conservative treatment underwent surgical intervention for their rectal prolapse; The choice of procedure was based solely on the surgeon's experience and preference. Patients receive sub-mucosal injection, 20-gauge needle is introduced through the anal mucosa externally introduced 2-3 cm from the anal margin, with a guiding finger in the anal canal, to a point several centimeters above the dentate line, Around 2 ml of 25% glucose is injected into three site (two laterals and one posterior), repeat injection two week later if first

injection failed. Patients who failed injection underwent Thiersch operation by perianal sutures are subcutaneously placed as a cerclage.

Statistical analysis

Each patient assigned a serial identification number. The data were analyzed using Statistical Package for Social Sciences (SPSS) version 20.

- The continuous data were represented by median and range.
- The categorical data presented as frequency and percentage tables and figures.
- Using Chi-square test, Significant at 0.05 level.

Results

In this study of 80 children with rectal prolapse, the age of the patient ranging from 6 months to 12 years . Forty four patients (55%) were male and thirty six patients (45%) were female. Male to female ratio was (1.2:1). Figure1 **.**Most common age group of presentation was (1-3) year 43 patients (53.7%) , less than 1 year 5 patients (12.5) ,more than 5 year 15 patients (18.75 %) ,(3-5) years 7 patients(8.8%) the median age of presentation was 2.7 year. Table1 **.**Sixty four patients (80%) presented with partial thickness rectal prolapse and 16 patients (20%)presented with full thickness rectal prolapse . Figure2 forty patients (50.0%)presented with duration of prolapse of (1-3) months , 24 patients(30.0%) presented with(3-6) months duration , 11 patients (13.8%) presented(6-12) months duration and 5 patients (6.3%) more than 1 year duration, Median duration was 3.5 months (1 week – 1.5 years). Table2 All patients presented with protruding mass (100%) , 42 patients (52.5%) presented with incontinence, 24 patients (30%) presented with Skin excoriation, 19 patients (23.8 %) presented with Bleeding and 4 patients (5%) presented with tenismus . Figure3, Forty eight patients (60%), the prolapse reduce spontaneously, 30 patients(37.5%) require manual reduction, only 2 patients(2.5%) required reduction under anesthesia. Figure 4. Diarrhea was the common associated condition presented in 28 patients (35%), Constipation presented with 24 patients (30%) , Unknown etiology is found 14 patients (18%) , Neurological conditions in 5 patients (6.3%) and history of PSARP was found in 5 patients (6.3%).Table4 , Forty eight patients (75%) patients less than 3 year old presented with partial thickness rectal prolapse, while 11patients (68.8%) aged more than 3 year presented with full thickness rectal prolapse. Table5 Twenty three patients (35.9%) with diarrhea presented with partial thickness rectal prolapse, while 13patients(81.3%) with constipation presented with full thickness rectal prolapse, all patients with PSARP presented partial thickness rectal prolapse. Table5, Fifty patients (62.5%) respond to conservative treatment ,while 30 patients (37.5 %)required surgical treatment .table 6 , Four patients received mucosoctomy who were all patients of history of PSARP , one patient had recurrent prolapse require additional surgery, age of them more than 5 year , all with partial thickness rectal prolapse. Table6 , Twenty fife patients receive injection sclerotherapy, Success Rate after 1stInjection was 57.6% and after 2nd Injection was 77%. Table6, Six patients received Thiersch operation with Success Rate of 66.6%, two patients with Neurological conditions and had full thickness rectal prolapse , 3 patients with history of full-thickness rectal prolapse & age more than 3

year, 1 patients with history of frequent manual reduction with bleeding &age less than 3 year , two patients had recurrence & two patient develop postoperative pain . table6 , Thirty seven patients with age less than 3 year (74%) respond to Conservative treatment and 15 patients (75%) who response to injection sclerotherapy age was less than 3 year .table 7

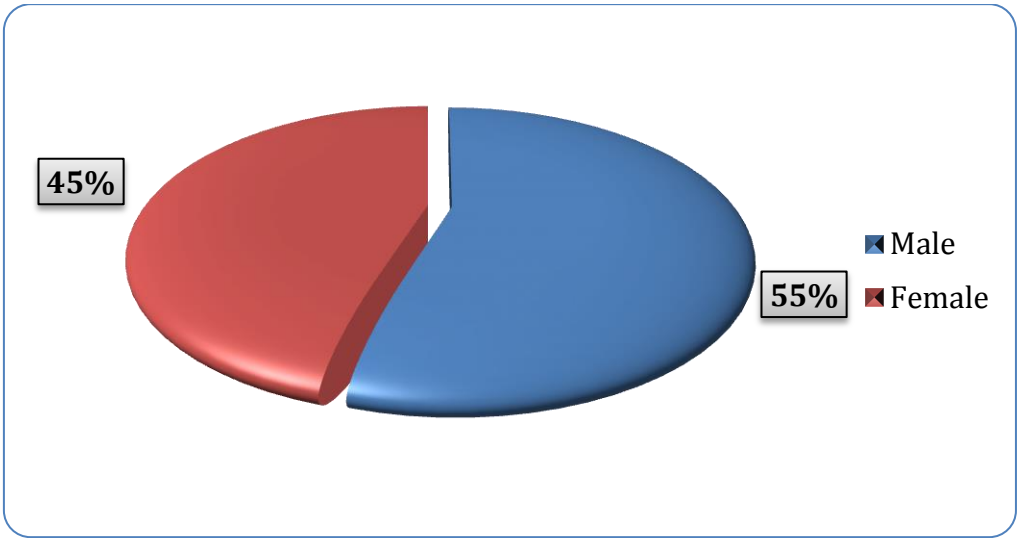

Figure 1: Percentage of patients with rectal prolapse according to their gender , N=80.

Table1: Number and percentage of cases with rectal prolapse according to their sex and age groups, N=80.

Variables	***Number***	***%***
Sex		
Male	44	55%
Female	36	45%
Age groups		
<1 year	10	12.5%
1-3 years	43	53.75%
3-5 years	7	8.8%
≥6 years	20	25%
Median (range)		**2.7** years (6 months - 12 years)

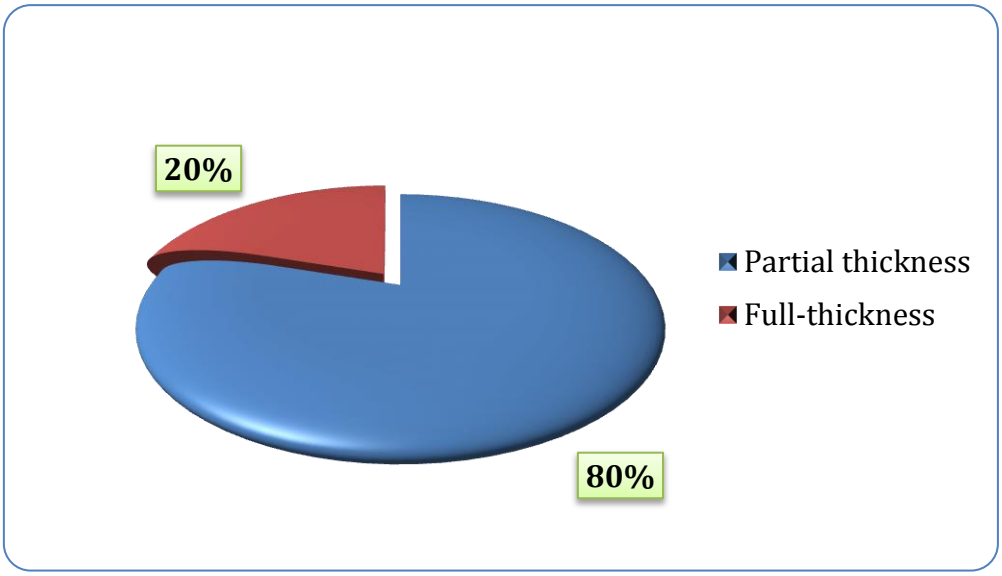

Figure2: Distribution of patients with rectal prolapse, according to its type, N=80.

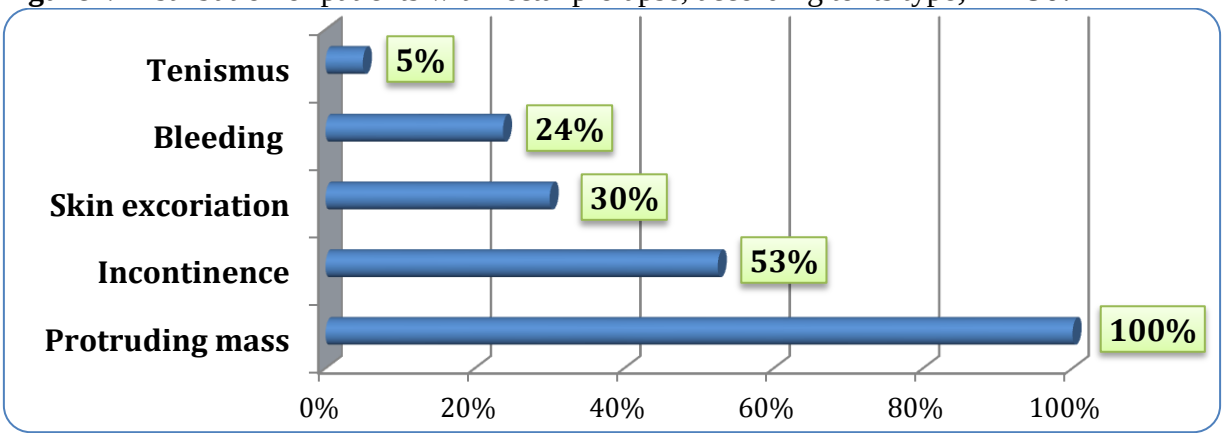

Figure3: Number and percentage of patients with rectal prolapse according to their presentation, N=80.

Table 3: Relation between presentation of patients with rectal prolapse and duration of prolapse, N=80.

Presentation	***Duration of prolapse No. (%)***		***Total No. (%)***	***p-value***
	<3 months N=40	*≥3 months N=40*		
Protruding mass	40 (100%)	40 (100%)	80 (100%)	1
Incontinence	19 (47.5%)	23 (57.5%)	42 (52.5%)	0.37
Skin excoriation	7 (17.5%)	17 (42.5%)	24 (30%)	**0.015***
Bleeding	3 (7.5%)	16 (40%)	19 (23.8%)	**0.001***
Tenismus	1 (2.5%)	3 (7.5%)	4 (5%)	0.305
Chi-square test, * Significant at 0.05 level				

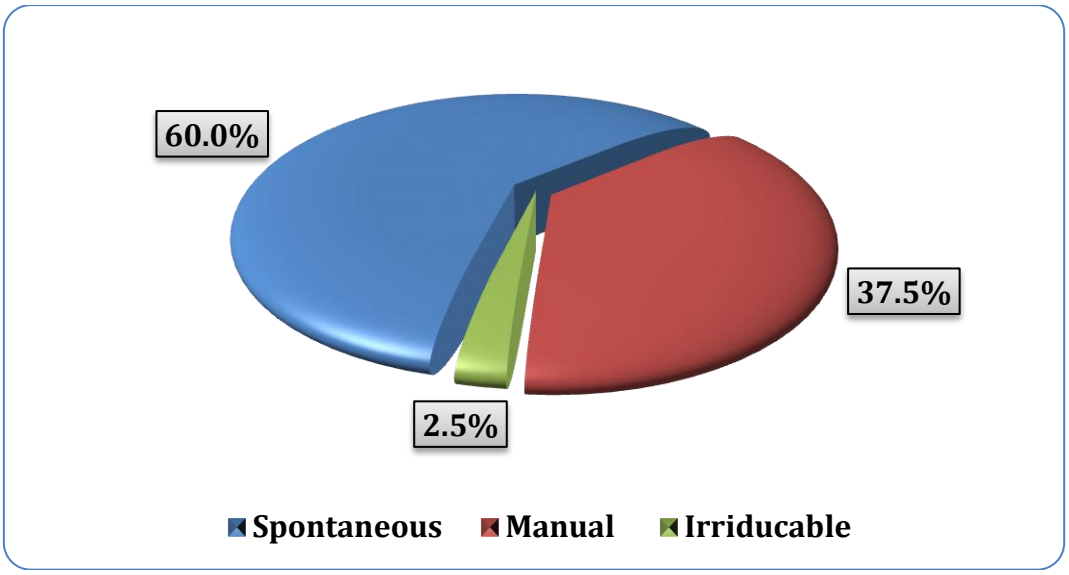

Figure 4 number and percentage of patients with rectal prolapse according to its reducibility, N=80.

Table 4: Number and percentage of patients with rectal prolapse according to associated conditions, N=80.

Associated conditions	Number	%
Diarrhea	28	35%
Constipation	24	30%
Unknown	14	18%
Neurological conditions	5	6%
Imperforated anus	5	6%
Rectal polyp	2	3%
Malnutrition	1	1%
Ulcerative colitis	1	1%

Table 5: Relation between types of rectal prolapse and associated conditions, N=80.

Associated conditions	***Prolapse No. (%)***		***Total No. (%)***	***p-value***
	Partial N=64	*Full-thickness N=16*		
Age groups				
<3 years	48 (75%)	5 (31.3%)	53 (66.3%)	**0.001***
≥ 3 years	16 (25%)	11 (68.8%)	27 (33.8%)	
Diarrhea	23 (35.9%)	5 (31.3%)	28 (35%)	0.725
Constipation	6 (9.4%)	13 (81.3%)	19 (23.8%)	**<0.001***
Unknown	11 (17.2%)	3 (18.8%)	14 (17.5%)	0.883
Neurological conditions	0 (0%)	5 (31.3%)	5 (6.3%)	**<0.001***
Imperforated anus	5 (7.8%)	0 (0%)	5 (6.3%)	0.248
Rectal polyp	2 (3.1%)	0 (0%)	2 (2.5%)	0.474
Malnutrition	1 (1.6%)	0 (0%)	1 (1.3%)	0.615
Ulcerative colitis	0 (0%)	1 (6.3%)	1 (1.3%)	**0.044***
Chi-square test, * Significant at 0.05 level				

Table.6 :Outcome of Various Treatments for Rectal Prolapse in Children

Management of Rectal Prolapse		No. of Patients	Complications	Recurrences of Prolapse	Success Rate (%)
Conservative approach		80	0	30	62.5%
Injection sclerotherapy	1st	26	0	11	57.6%
	2nd	11	0	6	77%
mucosectomy		4	0	1	75%
Thiersch operation		6	2(33.3%)	2	66.6%

Table 7 : Relation between age of patients and response to treatment of rectal prolapse

Management	***Age***		**Total NO.**	***p-value***
	≤3 year N=53	*>3 year N=27*		
Conservative treatment	37(74%)	13(26%)	50(62.5%)	**0.042***
Injection sclerotherapy	15(75%)	5(25%)	20 (77%)	**0.037***
Mucosectomy	0	4(100%)	4(75%)	0.258
Thiersch	1 (16.6%)	5(83.3%)	6(66.6)	0.305
Chi-square test, * Significant at 0.05 level				

Discussion

In this study we treat and follow up 80 patients of rectal prolapse in children at Child Welfare teaching hospital at Medical City, from January 2014 to October 2015. In this study we found rectal prolapse presented with male to female ratio(1.2:1) with slight male predominance , this result in agreement with that found by Antao *et al.,* [2005] who found the gender incidence is equal in children ; while it disagree with Sadighi *et al.,* [2003] who found male to female ratio (3:1) .

In our study we found Most common age group of presentation was (1-3) year (53.7%) with median age at presentation 2.7 year this result in agreement with that found by Antao *et al.,* [2005] who found median age at presentation was 2.6 year that is time of toilet training and may be related to several anatomic considerations, such as the vertical configuration of the sacrum, great mobility of the sigmoid colon, a loosely attached rectal mucosa to the underlying muscularis, and the absence of Houston's valves in approximately 75 percent of children younger than two year of age. [Siafakas *et al.,* 1999] In our study we found Diarrhea was the common associated condition presented (35%) while Constipation that presented with (30%) was the second associated condition , this result in agreement with that found by Ikram Ud-din [2006] , while Antao *et al.,* [2005] and Zempsky & Rosenstein [1988] did not agree with it who found constipation were the common associated condition of (53 %) and (30 %) respectively. this is due that rectal prolapse in developed countries is due to toilet training and cystic fibrosis while in developing countries the predisposing factors are diarrhea and parasitic disease.[Athar *et al.,* 2004]. In this study we found Fifty patients (62.5%) respond to conservative treatment ,while (37.5) required surgical treatment, this result is in agreement with that found by Antao et al [Antao *et al.,* 2005] who found response to conservative treatment of (55%) while Fehri M *et al*., [1988] and Baky & Sahar [2004] did not agree with it who found only (35%) ,(28%) respectively . In our study we found success rate after 1st injection was (57.6%) and after 2nd injection was (77%) without any complication this result in agreement with that found by Chan *et al.,* [1998] who found response to after 1st injection was (64%) and after 2nd injection was (84%). while Ali Bahador *et al.,* [2008] not agree with it who found response to after 1st injection was (90%) and after 2nd injection was (100%), this is due use of different sclerosant agent ,short duration of conservative treatment 2 to 8 week.

We found success rate after Thiersch operation of (66.6%) and this result in agreement with that found by Andrew *et al.,* [2010] who found response to Thiersch operation of (67%) of patients , while Antao *et al.,* [2005] found response to Thiersch operation of (20%) and injection with Thiersch of (90%).

We found response to conservative treatment in patients aged less than 3 years was (74 %) , this is agree with [Rahman *et al.,* 2008]

Conclusion

1. Conservative treatment still the best treatment for rectal prolapse because carry good chance for healing specially in children younger than 3year.
2. Conservative treatment must be used for period of 12-18 months with good result.
3. Mucosectomy was the treatment of choice for patients with rectal prolapse and PSARP.
4. Injection Sclerotherapy is the best method for treatment in patients with age less than 3 year specially in partial thickness rectal prolapse.
5. Thiersch operation still carry a risk of complication.

Recommendation

1. advice the surgeons and physicians to be patient giving longer duration for conservative treatment for one year as it carry good result without complication.
2. Our conservative approach attempts to identify any underlying condition, which is diarrhea & constipation in most cases, so advice to treat these causes and minimize straining at defecation, which is a common precipitating factor for rectal prolapse.
3. advice to use Injection Sclerotherapy as first line for management of rectal prolapse as it carry high success rate without complication, especially with patient age less than 3 year and patient with partial thickness rectal prolapse.

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