

## Risk Factors and Clinical Characteristics of Rectal Prolapse in Young Patients

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### Abstract

**Background:** Rectal prolapse is a relatively common condition in children and elderly patients but uncommon in young adults less than 30 years old. The aim of this study is to identify risk factors and characteristics of rectal prolapse in this group of young patients and determine surgical outcome.

**Methods:** Adult patients younger than 30 years old with rectal prolapse treated surgically between September 1994 and September 2012 were identified from an IRB approved database. Demographics, risk factors, associated conditions, clinical characteristics, surgical management and follow-up were recorded.

**Results:** Forty-four (females 32) patients were identified with a mean age of 23 years old. Eighteen (41%) had chronic psychiatric diseases requiring treatment and these patients experienced significantly more constipation than non-psychiatric patients (83% vs. 50%;  $P=0.024$ ). Thirteen (30%) patients had previous pelvic surgery. The most common symptom at presentation was a prolapsed rectum in 40 (91%) and hematochezia in 24 (55%). Twenty-four (55%) underwent a laparoscopic rectopexy, 14 (32%) open abdominal repair, and 6 (14%) had perineal surgery. The most common procedure was resection rectopexy in 21 (48%; 7 open; 14 laparoscopic). At a median follow-up of 11 (range 1-165) months, 6 patients (14%) developed a recurrence; 3 (13%) after laparoscopic, 2(14%) after open abdominal and 1(17%) after perineal surgery.

**Conclusions:** Medically induced constipation in psychiatric patients and possible pelvic floor weakness in patients with previous pelvic surgery may be contributing factors. Abdominal repair is the most common procedure with recurrence rates that are comparable to published literature for older individuals.

**Keywords:** Rectal prolapse; Young patients; Risk factors; Surgical management; Laparoscopic surgery

### Introduction

Rectal prolapse (RP) is a chronic disturbing condition and frequently occurs in elderly women [1]. Patients usually present with one or more of the following: a mass effect, obstructed defecation, fecal incontinence, and hematochezia. Some associated factors related to RP that have been reported in the literature are elderly patients, multiparous females, pelvic floor dysfunction, perineal injury, or other conditions [2]. RP may be also associated with anatomical abnormalities including loose attachment of the rectum to the sacrum, lax lateral ligaments, redundant sigmoid colon, patulous anus and diastasis of the levator ani muscles. In addition, RP can be seen in children. Functional defecation disorders and prolonged straining associated with constipation are noted to be frequent causes for prolapse in children [3]. RP among young adults less than 30 years old is uncommon and the literature is scant in this group.

Generally, surgical techniques for rectal prolapse can be categorized into abdominal and perineal procedures. The former are known to have lower recurrences and better outcomes. The latter are frequently performed in patients unfit for abdominal surgery. In recent years, the laparoscopic approach has become popular [4]. The exact approach for RP repair continues to evolve and is not definitive.

Since RP is rarely seen in young adults under 30 years old, this study was designed to investigate the risk factors in this group of patients with RP, their surgical treatment, and outcomes.

### Patients and Methods

#### Patients

This study was approved by the Cleveland Clinic Institutional Review Board (IRB). Data was obtained on all adult patients less than 30 years old with RP treated surgically at the Cleveland Clinic from September 1994 to September 2012. Both paper charts and electronic medical records were carefully reviewed to confirm all data in the database including demographics, risk factors, clinical characteristics and surgical procedures. Patients with underlying parasitic infection were excluded from this study.

#### Demographic and clinical characteristics

Recorded demographic characteristics included age, gender, and body mass index (BMI). Potential risk factors analyzed were: patient history of chronic psychiatric diseases, previous pelvic surgery, redundant rectosigmoid colon (found intraoperatively), irritable bowel syndrome (IBS), inflammatory bowel disease (IBD) or colitis, obstetric history for females, medication use, and family history of RP or gastrointestinal (GI) disease. We also looked at comorbidities related to RP including uterovaginal prolapse, solitary rectal ulcer syndrome

and Ehlers-Danlos syndrome (EDS). The diagnosis of RP was based on the surgeon viewing the RP or RP seen on radiographic evaluation. Recorded clinical characteristics included preoperative symptoms and examinations associated with RP. The extent of RP was divided as follows: RP grade I (internal prolapse, not visible), grade II (visible prolapse with spontaneous reposition), grade III (prolapse, reposition needed), and grade IV (prolapse, reposition not feasible) [5].

### Surgical management and follow-up

Surgical interventions included suture rectopexy, mesh rectopexy, sigmoid resection and rectopexy, perineal proctosigmoidectomy (Altemeier), rectal mucosectomy (Delorme), and Stapled Transanal Rectal Resection (STARR). Also recorded was the duration of hospital stay, complications, follow-up time, and mortalities. The follow-up duration was calculated from the operation date to the day of last follow-up either in clinic or by phone interview. After discharge, all patients were followed for recurrence, and the current health status of some patients was updated by phone interviews.

### Statistical analysis

Descriptive statistics were performed for all variables. These include the mean and standard deviation for continuous variables and frequencies for categorical factors. Comparisons of categorical factors were made with chi-square or Fisher's exact tests. Differences were statistically significant when P value was less than 0.05(2-sided). All analyses were performed with SPSS 15.0 software.

## Results

### Demographics and clinical characteristics

A total of 44 young patients (32 female 73%) were identified for this study. The demographics and clinical factors that were analyzed are listed in Table 1. The mean age was 23 years old (range 16 to 29 years). The most common symptom at presentation was a prolapsed rectum in 40 (91%) patients, defecatory straining or obstruction in 34 (77%) patients, constipation in 28 (64%) patients, and hematochezia in 24 (55%) patients. Colonoscopy (n=23, 52%), anorectal manometry (n=20, 45%), and defecography (n=16, 36%) were used to evaluate RP preoperatively.

### Risk factors for RP in young patients

Twenty-seven (61%) patients were noted to have a redundant rectosigmoid colon intraoperatively (indicated in the operative note) (Table 2). Thirteen (30%) patients had previous pelvic surgery which included previous surgery for RP, uterovaginal or vaginal prolapse, hysterectomy, rectocele repair, and deep abscess/fistula procedures. Eighteen (41%) patients had comorbidities pertaining to RP: 10 (23%) had a solitary rectal ulcer, 4 (9%) had uterovaginal prolapse and 3 (7%) patients had EDS. Eighteen (41%) patients had chronic psychiatric diseases requiring medication treatment. In patients with psychiatric disease, constipation was a common complaint (83% vs. 50%; P=0.024) and laxative use was more prevalent compared to those without psychiatric disease (56% vs. 23%; P=0.028, table 3). There were no differences in defecatory straining or obstruction, abdominal or anal pain, or hematochezia symptoms between the two groups. There was no perioperative mortality.

Factors	Total Population(N=44)
Age at index surgery, mean ± SD (yrs)	23±4
Gender	
Male	12(27%)
Female	32(73%)
BMI (kg/m <sup>2</sup> ), mean ± SD	22.4±4.2
Rectal prolapse stage	
I(Internal prolapse)	5(11%)
II(Visible prolapse with spontaneous Reposition)	33(75%)
III(Prolapse, reposition needed)	6(14%)
IV(Prolapse, reposition not feasible)	0(0%)
Symptoms	
Feelings of prolapse without defecating	4(9%)
Feeling of a bulge in the rectum during defecation Constipation	40(91%)
Diarrhea	28(64%)
Defecatory straining or obstruction	14(32%)
Abdominal or anal pain	34(77%)
Frequency of abdominal pain	23(52%)
Intermittent	
Consistent	40(91%)
Stool frequency	4(9%)
>1 time/daily	
1 time/daily	12(27%)
1 time/every 2 or 3 days	4(9%)
1 time/weekly	19(43%)
Blood discharge	9(20%)
Mucus discharge	24(55%)
Fecal incontinence	7(16%)
Examinations	9(20%)
Defecography	
Anorectal mamometry	16(36%)
Colonoscopy	20(45%)
Pelvic MRI or CT	23(52%)
Air contrast barium enema	6(14%)
Age at index surgery, mean ± SD (yrs)	5(11%)

**Table 1:** Demographic and clinical characteristics

Factors	Total Population(N=44)
Chronic psychiatric diseases	18(41%)
Previous pelvic surgery	13(30%)
Redundant rectosigmoid colon	27(61%)
IBS	6(14%)
IBD or colitis	9(20%)
Family history of GI diseases	10(23%)
Family history of rectal prolapse	1(2%)
Obstetric history*	8(25%)
Medication history	
Psychiatric medication	19(43%)
Laxatives	16(36%)
Comorbidities	
Uterovaginal prolapse	4(9%)
Solitary rectal ulcer	10(23%)
Ehlers-Danlos syndrome	3(7%)
*Percentage based on 32 female patients	

**Table 2:** Risk factors of rectal prolapse

Factors	Patients with Psychiatric disease(N=18)	Patients without Psychiatric disease(N=26)	P value
Gender			
Male	3(17%)	9(35%)	
Female	15(83%)	17(65%)	0.303
Constipation	15(83%)	13(50%)	0.024
Defecatory straining or obstruction	16(89%)	18(69%)	0.161
Abdominal or anal pain	11(61%)	12(46%)	0.329
Blood discharge	12(67%)	12(46%)	0.179
Laxatives	10(56%)	6(23%)	0.028

**Table 3:** Characteristics in the patients with psychiatric disease

### Surgical management and complications

Of the 44 patients, 24 (55%) underwent a laparoscopic rectopexy, 14 (32%) had an open abdominal repair, and 6 (14%) had perineal surgery. Four patients in the laparoscopic group had robotic assisted laparoscopic rectopexy. The most common procedure was resection rectopexy in 21 patients as listed in table 4 (48%; 7 open; 14 laparoscopic). The median duration of hospital stay was 5 (range 2-17) days. At a median follow-up of 11 (range 1-165) months, 6 patients (14%) developed a recurrence, 3 (13%) after laparoscopic surgery, 2

(14%) after open abdominal surgery, and 1(17%) after perineal surgery. Complications were seen in 4: 2 (5%) recurrent rectal ulcer, 1 (2%) small bowel obstruction, and 1 (2%) with urinary retention.

Factors	Total Population(N=44)
Median duration from rectal prolapse diagnosis to surgery(months)(range)	4(0.5-48)
Median duration of hospital stay (days)(range)	5(2-17)
Surgery approach	
Open	14(32%)
Suture rectopexy	4(29%)
Mesh rectopexy	3(21%)
Resection and rectopexy	7(50%)
Laparoscopic	24(55%)
Suture rectopexy	3(13%)
Mesh rectopexy	7(29%)
Resection and rectopexy	14(58%)
Perineal	6(14%)
Rectosigmoidectomy(Altemeier)	1(17%)
Rectal mucosectomy(Delorme)	4(67%)
Stapled Transanal Rectal Resection(STARR)	1(17%)
Recurrent rectal prolapse*	6(14%)
Open	2(14%)
Laparoscopic	3(13%)
Perineal	1(17%)
Complications	4(9%)
Recurrent rectal ulcer	2(5%)
Small bowel obstruction	1(2%)
Urinary retention	1(2%)
Median duration of follow-up(months)(range)	11(1-165)
Mortality	0(0%)

**Table 4:** Surgery and complications of rectal prolapse

### Discussion

RP either internal or protruding through the anal canal is common in children and elderly patients. Interestingly, RP is rare in young adults less than 30 years old. To date, the exact cause of RP is not completely understood. Marceau et al. studied risk factors for RP in patients under 50 years of age and reported 50% had severe psychiatric disease that required chronic medication (neuroleptics or antidepressants) which may induce severe constipation [6]. Similarly, our study found that 18 (41%) patients had chronic psychiatric

diseases requiring medical treatment. These patients experienced significantly more constipation and needed more laxatives than non-psychiatric patients.

Of the 44 young patients, 61% were found intraoperatively to have a redundant rectosigmoid colon, and some of the patients in addition had symptoms of constipation. We found that 30% had previous pelvic surgery. These surgeries may result in pelvic floor weakness and contribute to the occurrence of RP. Interestingly, we found one patient with hidradenitis suppurativa (HS) who had a continuous deep abscess with a fistula and she had several surgeries to address it. Finally she developed a RP in between undergoing treatments for HS. It is unclear if this patient's HS and the surgical treatment contributed to RP, but the RP did occur while the prolonged treatment was on going. Perhaps damage to support structures during debridement of deep tissue may have occurred to predispose to the RP.

Considering other possible conditions associated with RP, some patients (9%) had uterovaginal prolapse mostly associated with an obstetric history or previous pelvic surgery. In our study group, 3(7%) of the patients had EDS. EDS is a connective tissue disorder characterized by skin hyperextensibility, abnormal wound healing, and joint hypermobility. This disease has a wide spectrum of gastrointestinal manifestations ranging from life threatening spontaneous perforation of the intestine and massive gastrointestinal bleeding to a more benign involvement such as RP, hernias, intestinal diverticula. Our data showed similar occurrences of RP and EDS to that reported in other studies involving young patients [7].

The chief clinical feature of RP is a protruding mass following defecation. At times, the prolapse may occur spontaneously upon standing or coughing [2]. Other symptoms that may coexist include constipation, incomplete evacuation, rectal bleeding, rectal pain, incontinence, urgency and tenesmus [8]. Similarly, the most common symptom at presentation in our study was a prolapsed rectum in 91% of patients mostly associated with defecatory straining or outlet obstructive symptoms in 77% of patients. Constipation and hematochezia were also commonly observed. In addition, we noticed rectal bleeding in 55% and this may have been caused by a solitary rectal ulcer in some as it was seen in 23% of our patients. One study also has reported that bleeding can commonly be seen in 90% patients with underlying rectal ulcer associated with rectal prolapse [9].

Numerous surgical procedures have been described for the treatment of RP. The choice of the initial treatment is based on the assessment, age, comorbidities, the stage and workup of prolapse. Laparoscopic abdominal surgery for the treatment of RP has been highlighted because of the potential benefits of a minimally invasive approach, including less pain, shorter hospital stay, faster recovery, and fewer complications, compared with open abdominal surgery [10]. One study reported the rate of recurrent prolapse was significantly higher for perineal procedures than that for abdominal procedures [11]. According to these studies, laparoscopic surgery is a safe and feasible approach in patients with RP [12,13]. In our study, the most common procedure was laparoscopic rectopexy with or without resection in young patients. The recurrence rate was similar compared to published literature for older individuals [11]. The majority of the young patients underwent rectopexy with resection, per surgeon's choice, mostly based on the findings of a redundant rectosigmoid colon intraoperatively. It has been speculated that a sigmoid resection may increase the morbidity due to potential complications secondary to performing an anastomosis, although it also may provide improvement for constipation symptoms [14]. In

our study the complication rate was low and there was no mortality. Therefore, laparoscopic rectopexy with or without resection appears to be a safe and effective surgical option for young patients.

In recent years, robotic assisted laparoscopic rectopexy has been added to the surgical repertoire for RP in our hospital. One study focused on robotic rectopexy for rectal prolapse and demonstrated longer operative time and greater cost but excellent visualization and suturing as well as equivalent operative outcomes to laparoscopy [15]. Although only 4 of 44 patients had a robot-assisted laparoscopic rectopexy in our study group, there were no complications and no recurrences noted. Because of the small number of patients who had the robotic approach, it is difficult to assess the role of robotic assisted surgery for this group but it may become more popular in the future.

The limitation of this study is its retrospective nature. Although the data was collected in a prospective database, some data points required chart review. Additionally, a longer follow-up period is desirable to determine if over time the recurrence rates will increase.

In conclusion, medically induced constipation in psychiatric patients and possible pelvic floor weakness in patients with previous pelvic surgery may be important contributing factors for young adults who develop RP. The laparoscopic approach appears to be a safe and effective surgical option for young patients. Long-term follow-up and a larger sample size would optimally improve the data to definitively enable reporting of the recurrence rate and optimal surgical procedure.

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