

## Evaluation of Open Abdominal Ventral Rectopexy for Management of Complete Rectal Prolapse in Adult Male Patients

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### Abstract

**Background:** Circumferential full-thickness protrusion of the rectal wall through the anus is not an uncommon surgical problem that is known as complete rectal prolapse. Many factors were accused for the pathogenesis of this clinical problem, such as straight rectum, weak fascial attachments of the rectum against the sacrum, a long redundant sigmoid colon, deep Douglas pouch, and a weak anus. Neurological illnesses, connective tissue disorders, and high parity were also found to be causes for rectal prolapse. In addition, rectal prolapse occurs more at the extremes of age. The multifactorial etiologies of this disease resulted in a difficulty in planning for the proper treatment which is required to restore both anatomical and functional outcomes.

**Aim of Study:** To evaluate open abdominal Ventral Rectopexy (VR) for management of rectal prolapse in adult male patients regarding recurrence and post-operative complications.

**Patients and Methods:** This is a retrospective study that included all adult male patients who underwent open VR for complete rectal prolapse in Colorectal Surgery Unit, Alexandria Main University Hospital during the period from January 2014 to December 2017. Data was retrieved through patients' files regarding pre-operative, operative and post-operative data, including pre-operative and post-operative Wexner score. Post-operative early and late complications were also reported. Post-operative urinary dysfunction (using International Prostate Symptom Score), sexual activity (using International Index for Erectile Function) and patients' satisfaction (using a scale from 1-5) were determined by communication with the patients through their contact numbers.

**Results:** Thirty five patients were included in the study with a mean age of  $36.3 \pm 12.9$  years. Four patients (11.4%) had recurrence after a mean of  $7.8 \pm 3.4$  months. Out of 14 patients who reported pre-operative constipation, 10 patients reported improvement, while two patients reported newly developed constipation. Post-operatively, there was significant improvement of continence status. Patients showed satisfactory results regarding post-operative urinary dysfunction and sexual activity. Thirty patients (85.7%) were satisfied by the results of the operation.

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**Conclusions:** Ventral rectopexy for management of complete rectal prolapse in male patients seems to be safe and effective, with low recurrence rate and high patients' satisfaction regarding improved fecal incontinence, urinary dysfunction and maintained sexual activity. Prospective randomized control trials may be necessary to substantiate our results.

**Key Words:** Complete rectal prolapse – Ventral rectopexy – Wexner score – International index for erectile function.

### Introduction

**CIRCUMFERENTIAL** full-thickness protrusion of the rectal wall through the anus is not an uncommon surgical problem that is known as complete rectal prolapse [1]. Many factors were accused for the pathogenesis of this clinical problem, such as straight rectum, weak fascial attachments of the rectum against the sacrum, a long redundant sigmoid colon, deep Douglas pouch, and a weak anus [2]. Neurological illnesses, connective tissue disorders, and high parity were also found to be causes for rectal prolapse [3]. In addition, rectal prolapse occurs more at the extremes of age [4]. The multifactorial etiologies of this disease resulted in a difficulty in planning for the proper treatment which is required to restore both anatomical and functional outcomes [5].

Several procedures have been described to treat full thickness rectal prolapse [2]. The ultimate goals of all surgical procedures are to correct the anatomical abnormality and to treat the accompanying symptoms of incontinence, constipation and pain and consequently improve the quality of life of these patients [6]. Ideal procedures should be associated with the lowest possible complications and a low rate of recurrence [7]. Surgical management of complete rectal prolapse could be achieved through either perineal or abdominal approaches [1,2]. However, due to the high recurrence rate that

was reported with the perineal approach, it is only recommended for patients who are not candidates for an abdominal operation [1]. Accordingly, abdominal procedures with their low recurrence rate are generally accepted as the preferable choice for most patients with complete rectal prolapsed [2, 5-7].

Rectopexy has become the procedure of choice in cases of total rectal prolapse [8]. The described abdominal techniques differ as regard approach, extent of rectal mobilization, addition or omission of a sigmoid resection, excision or not of the pouch of Douglas, methods used for mesh fixation, and type, size, nature and number of meshes used for the fixation [2].

Since its first description by Orr in 1953, and the modification introduced by Loygues in 1984 [9], Ventral Rectopexy (VR) has gained momentum in recent years as an operation for both full-thickness and internal rectal prolapsed [2]. Dissection is performed anterior to the rectum and the mesh is fixed to the rectal wall and suspended to the sacrum [10]. VR was widely used for female patients. On the other hand, in order to eliminate the small risk of autonomic nerve damage during pelvic dissection, many surgeons prefer the perineal procedures for male patients [11]. In the literature, only few reports are present about the results of VR in male patients [11-13].

The aim of our study is to evaluate open abdominal ventral rectopexy for management of rectal prolapse in adult male patients in terms of recurrence and post-operative complications.

### Patients and Methods

This study followed a retrospective design. It included all adult male patients who were complaining of complete rectal prolapse, admitted to the Colorectal Surgery Unit, Alexandria Main University Hospital, during the period spanning from January 2014 to December 2017 and underwent open abdominal VR. Patients who underwent previous abdominal surgery for rectal prolapse were excluded in order not to confuse the results.

Files of patients were reviewed, and the following data were retrieved: Demographic and clinical data of the patients including age, body mass index, clinical presentations, and preoperative Wexner score [14]. Operative details included surgical technique, operative time and intraoperative complications. Post-operative data included early post-operative complications, recurrence, and post-

operative Wexner score [14]. Patients were communicated through their contact number in their files and specific questions concerning the impact of the operation on sexual function and on urinary symptoms after surgery. A validated International Index for Erectile Function (IIEF)-5 [15] and the International Prostate Symptom Score (IPSS) [16] were used to assess the possible impact of the operation on sexual and urinary function. Finally, the patients were asked about their postoperative satisfaction on a scale from 1 to 5 where 1 is strongly unsatisfied and 5 is strongly satisfied. We considered 4 to be the minimum score of patients' satisfaction.

#### Outcomes:

##### Primary endpoints:

- **Recurrence:** As detected by the surgeon in the outpatient clinic after the operation and recorded in the patients' files.
- Impact of the operation on sexual function by interpreting the IIEF-5 score and the IPSS by asking the patients to fill them using the proper way accepted by the patients during our communication with them through their contact numbers.
- Incontinence reassessment, in comparison with the pre-operative status using Wexner score recorded in the patients' files.

##### Secondary endpoints:

- Patient's satisfaction by asking him to determine his level of post-operative satisfaction from 1 to 5 (1 is strongly unsatisfied, 2 is unsatisfied, 3 is neutral, 4 is satisfied, and 5 is strongly satisfied).

The statistical analysis of data was done using the Statistical Package for Social Sciences (SPSS version 25; SPSS Inc., Chicago, Illinois, USA). Descriptive statistics were applied (frequency and percentage for categorical variables, range, mean and SD for quantitative variables). Independent variable *t*-test and paired *t*-test were applied to test the significance of differences. A statistically significant difference was considered at *p*-values less than 0.05.

The research was approved by the Institutional Research Board of College of Medicine, Alexandria University (IRB 00007555) and precautions were taken to conceal the identity of patients.

### Results

The study included 44 male patients (mean age  $36.3 \pm 12.9$  years) who underwent abdominal VR for complete rectal prolapse. Follow-up data and

data regarding post-operative urinary symptoms, sexual activity and patients' satisfaction were completed in only 35 patients Fig. (1). Nine patients were missed in follow-up or not completing the questions regarding functional results and patients' satisfaction as 4 patients had mental retardation, 3 patients could not be reached using the registered contact number, one patient refused to share in the research and one patient died due to myocardial infarction 14 months after the operation. These patients with missed data were excluded from the study. Four patients had previous surgical intervention to treat their rectal prolapse but all through perineal approach. Pre-operative data of the patients are shown in (Table 1).

All patients were operated by colorectal consultants. Polypropylene mesh 30 \* 30 (Ethicon, Ohio, USA) was used in all patients. The mean time of the VR operation was 118±23 minutes. No intraoperative complications or difficulties were encountered nor major bleeding. Four patients showed minor early post-operative complications and were treated successfully by conservative measures. Two patients complained of transient retrograde ejaculation and improved spontaneously after 3 and 4 months. There was no recorded post-operative mortality among patients included in the study. Regarding the late post-operative complications, 4 out of 35 patients (11.4%) had recurrence after a mean of 7.8±3.4 months. These patients underwent another surgical repair of their prolapse by perineal approach. There was improvement regarding the constipation after the operation in 10 patients out of 14 who reported pre-operative constipation. On the other hand, two patients reported newly developed constipation after the operation. Operative data and post-operative complications are shown in (Table 2).

Regarding the post-operative functional results, there was significant improvement ( $p < 0.001$ ) of continence status as shown in improvement of post-operative Wexner score ( $2.1 \pm 1.8$ ) compared to pre-operative score ( $8.1 \pm 3.6$ ). Patients with long standing rectal prolapse showed less improvement compared to patients with short duration of prolapse. Pre-operative functional results regarding urinary symptoms and sexual activity were not reported in most of the reviewed files, so we could not compare post-operative to pre-operative results. However, post-operative results that were recorded by the patients were satisfactory. Patients' satisfaction was considered when the score is 4 or more. Thirty patients (85.7%) were satisfied post-operatively. Results regarding post-operative functional results and patients' satisfaction were studied

for patients who were 40 years or less compared to patients who were above 40 years. These results are shown in (Table 3).

Table (1): Demographic and clinical data of the patients.

	Patients completed follow-up N=35
<i>Age (years):</i>	
Range	18-70
Mean	36.3
SD	13.6
<i>Body mass index (kg/m<sup>2</sup>):</i>	
Range	20.1-37.8
Mean	27.8
SD	3.9
<i>Duration of symptoms (months):</i>	
Range	3-22
Mean	8.5
SD	4.7
Associated constipation, n (%)	14 (40%)
Previous operations for prolapse, n (%)	4 (11.4%)
<i>Follow-up time (months):</i>	
Range	23-54
Mean	35.5
SD	17.5
<i>Pre-operative Wexner score:</i>	
Range	2-15
Mean	8.1
SD	3.6

Table (2): Operative data and post-operative data of the patients.

	Patients completed follow-up N=35
<i>Operation time (min):</i>	
Range	90-148
Mean	118
SD	23
<i>In-hospital stay (days):</i>	
Range	2-6
Mean	3.1
SD	1.3
<i>Early post-operative complications n (%):</i>	
Chest infection	1 (2.9)
Urinary tract infection	1 (2.9)
Urinary retention	1 (2.9)
Superficial wound infection	1 (2.9)
Retrograde ejaculation	2 (5.7)
<i>Late post-operative complications:</i>	
Constipation, n (%)	6 (17.1)
Recurrence, n (%)	4 (11.4)

Table (3): Post-operative functional results and patients' satisfaction of the patients.

	Age <40 No=22	Age >40 No=13	p-value
<i>Wexner score:</i>			
Range	0-4	0-7	0.077
Mean	1.6	2.9	
SD	1.2	2.3	
<i>IIEF-5 score:</i>			
Range	16-25	12-24	0.121
Mean	22.6	18.7	
SD	5.9	8.6	
<i>IPSS score:</i>			
Range	1-11	4-18	0.017
Mean	5.3	9.4	
SD	3.7	6.0	
<i>Patients' satisfaction:</i>			
Range	2-5	3-5	0.480
Mean	4.5	4.3	
SD	0.8	0.8	

IIEF-5 score is "International Index of Erectile Function".  
IPSS is "International Prostate Symptom Score".

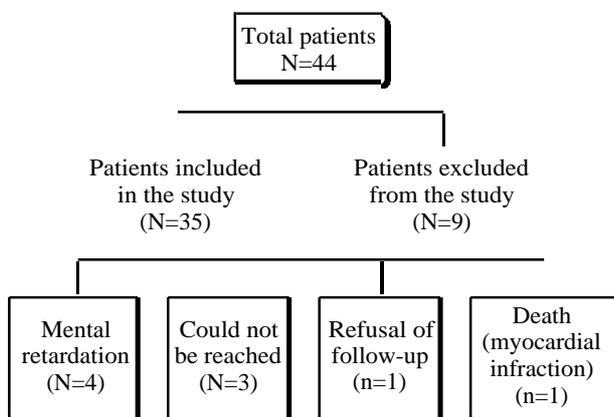


Fig. (1): Flow chart of the studied patients.

## Discussion

The incidence of rectal prolapse in Egypt is quite different from what is written in the literature. It has been always reported that rectal prolapse occurs more commonly in women than men, at a ratio of about 6:1 [17,18]. In Egypt, rectal prolapse predominantly affects young males [19,20]. Although the exact cause is not clear, some studies attributed this pattern of incidence to intestinal schistosomiasis, a parasitic endemic disease in Egypt that predominantly affects young males [20-22]. Hussein et al., [20] concluded that schistosomiasis patients suffer from pelvic floor myopathic changes contributing to rectal prolapse pathogenesis in young males. They reported that immunohistochemical findings suggest immunologic mechanism for this myopathy. However, in a recent study by Abou-

Zeid et al., [19], they found that 57% of their male patients suffering of complete rectal prolapsed never contracted schistosomiasis. They concluded that schistosomiasis should not be considered the main cause of rectal prolapse among young Egyptian males. They suggested that childhood prolapse, probably resulting from malnutrition, recurrent parasitic infections and diarrhea, all common in lower socioeconomic classes, induce straining and prolapse that continues through adult life.

Because of the risk of autonomic nerve damage during pelvic dissection, the traditional approach to complete rectal prolapse in men has been perineal [11]. Nowadays, abdominal ventral rectopexy techniques are the gold standard for the treatment of full-thickness complete rectal prolapse because they are associated with a lower rate of long-term recurrence than perineal procedures [2,11,23]. Still the risk of post-operative urinary dysfunctions and sexual activity impairment in male patients greatly influences the surgeons' decision and the patients' choice.

Patients in our study showed satisfactory post-operative results regarding urinary functions and sexual activity. Patients under 40 years showed better results than older patients, however the difference between young and old patients was not significant. Similar results were reported by Rautio et al., [13] who concluded that patients under 40 years had good functional results in urinary functions and sexual activity. Owaisat et al., [12] performed a study that included men of median age 35 years that underwent laparoscopic ventral mesh rectopexy for external rectal prolapse. Their study revealed that there were no reported cases of new onset impotence, and there was one case of transient retrograde ejaculation lasting for 3 months. The improvement of post-operative results regarding urinary functions and sexual activity compared to older studies may be attributed to the use of autonomic nerve sparing procedure, described by D'Hoore and Penninckx [24], so that male patients complaining from complete rectal prolapse can be operated through an abdominal approach resulting in low risk of damage to autonomic nerves and less sexual dysfunction.

In our study, 14 patients (40%) had constipation in the pre-operative period. Ten patients (71.4%) reported improvement after the operation. This may be attributed to the fact that anterior rectopexy prevents the internal invagination of the rectal wall and hence allows the passage of stools in a normal way. Samaranayake et al., [23] found that VR reported a decrease in the post-operative constipation

rate estimated to be 23%. Jonkers et al., [25] reported a significant reduction in constipation after ventral rectopexy, being 23% compared to 55% pre-operatively. Nevertheless, two patients (5.7%) in our study reported newly developed constipation after the operation. Constipation is a known complication after rectopexy [26,27]. The pathophysiology of constipation after rectopexy remains unclear. It may be attributed to acquired anorectal dysfunction or pre-operative colonic state [26]. Faucheron et al., [2], in their meta-analysis that included 12 studies with 574 patients, reported that improvement of constipation ranged from 3%-72% of the patients and worsening or new onset occurred in 0%-20%. The incidence (5.7%) of newly developed constipation after VR in our study may be very accepted compared to what is reported in the literature [23,27]. We think that the only anterior dissection and fixation of the mesh in VR to the rectum may prevent the excessive adhesions that is associated with other types of rectopexy.

Wexner score showed significant improvement after VR in our patients. It was noticed that patients with long standing rectal prolapse had less improvement compared to patients with short duration of rectal prolapse.

Faucheron et al., [2] reported that incontinence improved in 31 %-84% of patients who presented with fecal incontinence. Rautio et al., [13] and Owais et al., [12] reported that patients under 40 had good functional results in terms of anal continence.

The relation between anal sphincter functions and rectal prolapse is not fully understood. It is possible that the external prolapse is caused by an initial weakness of the pelvic floor muscles. On the other hand, rectal prolapse can lead to poor anal sphincteric functions. This may be explained by the fact that it may lead to stretching or injury to the nerve supply and subsequent denervation of the pelvic floor [28]. In addition, there is direct and repetitive damage to the anal sphincters due to chronic stretching [29]. Consequently, it seems wise to treat rectal prolapse as early as possible to avoid its possible impact on sphincteric function and to have the best possible outcome of the operation.

In this study, 85.7% of patients declared their satisfaction after the operation. This may be due to the good results regarding continence status, constipation, in addition to the lower rate of complications. However, we think that impairment of sexual activity, even in a minimum degree, remains the main factor to determine patients' satisfaction

after the surgery. Patients who were unsatisfied in our study were those who had less index for erectile function and to a lesser extent the recurrence.

The limitations of our study include being of a retrospective research design and also being conducted in a single-center.

#### Conclusions:

Ventral rectopexy for management of complete rectal prolapse in male patients seems to be a safe and an effective procedure, with low recurrence rate and high patients' post-operative satisfaction regarding improved urinary dysfunction and maintained sexual activity. Prospective randomized control trials may be necessary to substantiate our results.

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## تقييم عملية التثبيت الأمامي للمستقيم عن طريق فتح البطن لعلاج السقوط الشرجي الكامل عند الذكور البالغين

هدف البحث: تقييم عملية التثبيت الأمامي للمستقيم عن طريق فتح البطن لعلاج السقوط الشرجي الكامل عند الذكور البالغين من حيث الإرتجاع أو المضاعفات بعد العملية.

منهجية البحث: أجرى هذا البحث بطريقة إستقصائية مرجعية وشمل جميع المرضى الذكور الذين أجروا جراحة تثبيت المستقيم من الجهة الأمامية بطريقة فتح البطن الجراحية لعلاج سقوط المستقيم وذلك بوحدة جراحة القولون والشرج بالمستشفى الرئيسي الجامعي بجامعة الإسكندرية خلال الفترة من يناير ٢٠١٤ حتى ديسمبر ٢٠١٧. تم بحث ملفات المرضى وإستخراج البيانات الخاصة بالفحوصات قبل الجراحة وبعدها بما فيها نتائج مقياس ويكسندر للتحكم بالتبرز، بيانات الجراحة والمتابعة بعد الجراحة، كذلك تم البحث عن المضاعفات المبكرة والمتأخرة بعد الجراحة. تم التواصل مع المرضى عبر الهاتف والإستقصاء عن إضطراب التبول بعد الجراحة بإستخدام المقياس الدولي لأعراض البروستاتا والنشاط الجنسي بإستخدام المعيار العالمي لوظائف الإنتصاب وكذلك رضا المرضى العام على مقياس ١ إلى ٥.

نتائج البحث: تم تضمين ٣٥ مريضاً بهذا البحث، وكان متوسط أعمار المرضى  $٣٦.٣ \pm ١٢.٩$  سنة. وقد حدث إرتجاع لسقوط المستقيم لأربعة مرضى (١١.٤٪) بعد فترة زمنية متوسطها  $٧.٨ \pm ٣.٤$  أشهر بعد الجراحة. وقد شكى ١٤ مريضاً من أعراض الإمساك قبل الجراحة وتحسنت أعراض ١٠ منهم بعد الجراحة، بينما ظهرت أعراض الإمساك حديثاً بعد الجراحة عند إثنين من المرضى. وجد تحسن ملحوظ للتحكم فى التبرز، كذلك وجدت نتائج مرضية تحسن أعراض إضطراب التبول وكذلك الحفاظ على القدرة الجنسية. وقد أبدى ٣١ مريضاً (٨٥.٧٪) رضاً عاماً عن نتائج الجراحة.

الإستنتاجات: إن التثبيت الأمامي للمستقيم عن طريق فتح البطن لعلاج السقوط الشرجي الكامل عند الذكور البالغين هو إجراء جراحى آمن وفعال وله نسبة إرتجاع منخفضة، كما أظهرت النتائج نسبة مرتفعة للتحسن بالتحكم بالتبرز، وإضطرابات التبول والحفاظ على القدرة الجنسية، ولكن يجب عمل دراسات مستقبلية عشوائية منضبطة لتأكيد هذه النتائج.