Video-Assisted Minimally Invasive Transperineal Mesh Sacrorectopexy With Post-Anal Repair And Anal Cerclage For Treatment Of Complete Rectal Prolapse (Novel Technique)

Mohamed Farid*    Sameh Hany Emile†

*Mansoura University, Mansoura City, Egypt
†Mansoura University, Mansoura City, Egypt, sameh200@hotmail.com

Copyright ©2016 The Berkeley Electronic Press. All rights reserved.
Video-Assisted Minimally Invasive Transperineal Mesh Sacrorectopexy With Post-Anal Repair And Anal Cerclage For Treatment Of Complete Rectal Prolapse (Novel Technique)

Mohamed Farid and Sameh Hany Emile

Abstract

Background and aim: Several operative techniques have been devised for management of rectal prolapse, they can be broadly classified into abdominal and perineal approaches. The perineal approaches are known for their lower morbidity, which made them considered to be the optimal choice for elderly frail patients, however higher recurrence rates were the major drawback of perineal procedures. This report describes a new surgical technique for treatment of complete rectal prolapse combining transperineal mesh rectopexy with a video-assisted transperineal approach to the presacral dissection. Patients and methods: After thorough clinical and physiologic evaluation, six patients (four males and two females) with complete rectal prolapse were submitted for triple repair technique with a median period of follow-up of 11 months. The triple repair technique that we followed consists of video-assisted transperineal mesh rectopexy using the transanal endoscopic microsurgery (TEM) operating proctoscope, post-anal repair, and Thierversch repair. Results: Median age of patients was 27 years. Neither recurrence of rectal prolapse nor major morbidity were reported. Improvement of fecal incontinence (FI) was clinically observed as the median Wexner continence score dropped from 11 preoperatively to 2.5 postoperatively. Similar improvement of median resting and squeeze anal pressures was observed on follow up. Conclusion: Video-assisted transperineal mesh rectopexy can become a promising option in the treatment of complete rectal prolapse. Ascertainment of the long term results of this technique requires further studies with larger sample size.

KEYWORDS: Rectopexy, perineal, TEM, video-assisted, rectal prolapse
Introduction

Rectal prolapse was described since 1500 BC. [1] It affects all ages with a peak incidence in the fourth and seventh decades of life, being more common in females with a male-to-female ratio of 1:6 in the adult population. [2]

Surgical treatment of complete rectal prolapse can be divided into two categories: abdominal procedures and perineal procedures, and there is a controversy regarding which approach represents the optimal treatment of rectal prolapse. [3] As the abdominal procedures have lower recurrence rates but higher morbidity, accordingly older debilitated patients are usually managed with the perineal approach. [4] However, since the introduction of minimally invasive abdominal techniques that have high safety profile, the abdominal approach has been safely used in the elderly frail population. [5]

Mesh rectopexy can be performed through various approaches including: the abdominal, posterior sagittal and perineal approaches. The posterior sagittal approach (Kraske’s approach) allows direct exposure of a vague area whose anatomy is not fully understood. [6] Advantages of this approach include exposure of the retro-rectal space and the distal rectum and allowing the surgeon to perform anatomic repair of sphincters in patients suffering from fecal incontinence (FI). [7] Similarly, the perineal approach provides good access to the post-anal space permitting adequate dissection and performance of post-anal repair of levator ani muscles and the anal sphincters.

This report describes a new technique for treatment of rectal prolapse that involves perineal mesh rectopexy, assisted by endoscopic approach, combined with post-anal repair of anal sphincters and anal cerclage.

Methods

Study Design

The current study is a prospective study that was conducted in the period of November 2014 to December 2015 after obtaining ethical approval of the institutional review board of Mansoura Faculty of Medicine.
Patients

Patients who were eligible to be included in this study were adult patients with complete rectal prolapse associated with FI. We excluded patients with previous repair of rectal prolapse, patients with associated anorectal pathology, and patients who were unfit for anesthesia.

Six patients (four males and two females) with complete rectal prolapse associated with FI were admitted to colorectal surgery unit and were assessed carefully clinically, by endoanal ultrasonography, and by anorectal manometry. Patients were submitted for Wexner continence score [8] both preoperatively and postoperatively.

Surgical Technique

All of our patients underwent a brief bowel preparation with rectal enemas at the night of surgery with restriction of oral intake to clear liquid diet for 24 hours before surgery. One gram of cefotaxime and 500 mg of metronidazole were administered intravenously at the time of induction.

After induction of general anesthesia, patients were in the lithotomy position with careful padding of lower extremities. A transverse curvilinear incision (Figure 1) was made at the intersphincteric space, about 2 cm posterior to the anal verge. Dissection was carried out in the intersphincteric plane (Figure 2) with combined sharp and blunt methods. As we went into the retro-rectal space, the Waldeyer’s fascia was encountered then divided to enter the pelvis posterior to the rectum.

The Transanal Endoluminal Microsurgery (TEM) operating proctoscope was then inserted through the perineal incision (not into the anorectum) to explore the retro-rectal space. We performed dissection upwards to the promontory of the sacrum (Figure 3). After the operative proctoscope was removed, the patient was placed in steep Trendelenburg’s position and a light weight partially absorbable polypropylene mesh (Ultrapro® mesh, Johnson-Johnson Inc. Langhorne, PA, USA) measuring 6 x 11 cm was inserted in the retro-rectal space (Figure 4). The proctoscope was re-inserted to adjust the mesh in place then the mesh was affixed to sacral promontory with a laparoscopic tacker using absorbable tacks (Figure 5). The mesh was affixed to the rectal wall in one case only.
After assuring good hemostasis, we performed post-anal repair in two layers, the levator ani muscles and then the anal sphincter using, 2/0 polypropylene sutures (Figure 6). Anal cerclage was then performed using 0 polyglactin sutures. Finally we closed the skin incision in a longitudinal fashion with 2/0 polyglactin sutures.

Patients were on nothing per oral (NPO) for two days after surgery, with one gram of cefotaxime administered intravenously every 12 hours for 24 hours postoperatively. Patients were discharged on a liquid diet for one week.

Follow up and outcomes assessment

Patients were invited to visit the colorectal surgery clinic every week for one month then at three months, six months, and 12 months after the procedure. Primary outcome assessed was the incidence of recurrence of rectal prolapse, while secondary outcomes included the improvement of continence state, as evaluated by Wexner score and anorectal manometry, and postoperative complications.

Results

Six patients with complete rectal prolapse for a median duration of 18 months (range, 12-24 months) were included in this report, patients were four males and two females with a median age of 27 years (range, 24-50). The median operative time was 82.5 minutes (range, 65-90 minutes) and the median length of hospital stay was 4.5 days. A summary of patients’ data is shown in Table 1.

Follow-up was conducted for a median period of 12 months (range, 4-15 months). Neither recurrence of rectal prolapse nor major complications were reported. A minor complication in the form of a postoperative non-infectious wound seroma collection was detected in one patient. The seroma was managed with antibiotic treatment and simple open drainage. Removal of the mesh was not required in this patient.
Obvious improvement of continence state was clinically observed, as the median Wexner continence score decreased from 11.5 to 2.5 postoperatively. Median resting and squeeze anal pressures increased from 50.5 mmHg and 80.5 mmHg preoperatively to 70 mmHg and 95 mmHg respectively after the procedure.

Discussion

Perineal rectopexy is not a recent innovation, as early attempts were recorded more than 30 years ago. Wyatt has described operative fixation of the rectum to the sacrum via the perineal approach reporting only one case of recurrence among 22 patients after following the patients for four years. [9] Later on, Rogers and Jeffery performed intersphincteric rectopexy using Ivalon sponge combined with post-anal repair in 24 patients with complete rectal prolapse and they reported a single case of recurrence with complete resolution of preoperative FI. [10]

The value of adding video assisted transperineal dissection utilizing the TEM operating proctoscope was to carry out dissection in the presacral space to the sacral promontory under visualization. This facilitates avoiding inadvertent injury of the rectal wall and helps to ensure proper positioning and securing of the polypropylene mesh. Our approach also allows anatomic repair of both levator ani and anal sphincters, which further improves the continence state in patients with FI.

Adding anal cerclage with absorbable suture provides a temporary support for rectopexy by retaining the rectum in place until adhesions form between the rectum and the sacrum. We used a laparoscopic tacker to affix the mesh to the rectum only in one case, yet it did not provide any significant difference in the outcome compared with the other cases where the tacker was not used. Similar to laparoscopic posterior mesh rectopexy, our technique relies on the principle of posterior rectopexy as we believe that dense fibrosis induced by the prosthesis in the retro-rectal space would restore the normal anorectal angle. [11]

The idea of inserting a synthetic mesh in the postanal space carries an undeniable risk of infection, which would be a major concern if occurred. In order to minimize this risk to the least possible extent we followed certain measures.
Those measures included thorough mechanical bowel preparation, administration of prophylactic intravenous antibiotics with induction of anesthesia, insertion of a pack soaked in povidone iodine in the anal canal before the start of the procedure, using partially absorbable light weight polypropylene mesh, following strict aseptic technique when handling the mesh and inserting it into the postanal space, and administering parenteral antibiotics for 24 hours postoperatively in order to eradicate any possible contamination that might have occurred.

Although partially absorbable light weight mesh offers lower complications rate compared to the heavy weight polypropylene mesh according to the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES), [12] we think that biologic mesh may be a better and a safer alternative. The unavailability of biologic mesh in our facility at the time of the study was the main obstacle to its utilization, also the cost of biologic mesh might be prohibitive.

Despite the small number of cases in our series, we demonstrated good functional results as evidenced by absence of recurrence and improvement of FI, together with lack of serious complications; particularly mesh related infection. This implies that our novel technique can be potentially considered a successful option for treatment of complete rectal prolapse.

**Conclusion**

Video-assisted transperineal mesh sacrorectopexy using TEM operating proctoscope can become a promising option in the treatment of complete rectal prolapse associated with FI. Combining mesh rectopexy with post-anal repair and anal cerclage increases the overall success in management of FI associated with rectal prolapse.
References


12. SAGES: Use of synthetic mesh in the infected field.
   online in 15 January 2016.
**Table 1.** Demographic data of the included patients

<table>
<thead>
<tr>
<th>No.</th>
<th>Age</th>
<th>Gender</th>
<th>Duration of complaint (months)</th>
<th>Preoperative Wexner continence score</th>
<th>Mean preoperative resting anal pressure (mmHg)</th>
<th>Mean preoperative squeeze anal pressure (mmHg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>26</td>
<td>Male</td>
<td>18</td>
<td>10</td>
<td>50</td>
<td>75</td>
</tr>
<tr>
<td>2</td>
<td>50</td>
<td>Female</td>
<td>24</td>
<td>13</td>
<td>56</td>
<td>82</td>
</tr>
<tr>
<td>3</td>
<td>26</td>
<td>Male</td>
<td>12</td>
<td>12</td>
<td>50</td>
<td>79</td>
</tr>
<tr>
<td>4</td>
<td>24</td>
<td>Male</td>
<td>14</td>
<td>14</td>
<td>51</td>
<td>85</td>
</tr>
<tr>
<td>5</td>
<td>30</td>
<td>Male</td>
<td>22</td>
<td>11</td>
<td>46</td>
<td>93</td>
</tr>
<tr>
<td>6</td>
<td>28</td>
<td>Female</td>
<td>18</td>
<td>11</td>
<td>51</td>
<td>71</td>
</tr>
</tbody>
</table>
Figure 1. Perineal incision

Figure 2. Dissection in the intersphincteric plane
Figure 3. Video assisted transperineal dissection with the TEM proctoscope

Figure 4. Insertion of light-weight polypropylene mesh
**Figure 5.** Fixing the mesh to the sacral promontory with the absorbable tacker.

![Image of mesh fixation](image5.png)

**Figure 6.** Post-anal repair with 2 layers of polypropylene suture

![Image of post-anal repair](image6.png)