

LAPAROSCOPIC RECTOPEXY FOR COMPLETE RECTAL PROLAPSE: AN EARLY EXPERIENCE

By

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Complete rectal prolapse is defined as the protrusion of all layers of the rectal wall through the anal sphincter complex. It occurs mainly in women and is associated with weakness of the pelvic wall musculature and hypotonic anal sphincters attributed to stretching of the pudendal nerves during rectal descent. The present study describes the technique of laparoscopic rectopexy and the clinical outcome. Between June 1999 and September 2001, 31 consecutive patients (26 women 83.8% and 5 men 16.2%) with complete rectal prolapse were treated by laparoscopic rectopexy in El Minia university hospital. The median age of patients was 63 years (range 25 – 79 years). The median time of procedure was 120 minutes (range, 50-150 minutes). Conversion from laparoscopic to laparotomic rectopexy occurred in one case (3.3%). It was the first case in this study. The conversion was due to severe bleeding due to overdissection of the rectum. The bleeding was from presacral venous plexus and controlled during open surgery. Blood loss was less than 100 cc in every case except the first case in which 1000 cc was lost and was replaced by blood transfusion. Return of bowel movements appeared at 24 hour postoperatively, with passage of stools at the fourth postoperative day (2-5). The time to oral intake of solid food was 24 hour in all patients. Opiate analgesia was needed by all patients during the first 12 hours. Median hospital stay was 5 days (range 3 –10 days). Incontinence was reported in 22 patients (70.9%). Eighteen patients (58.1%) were grade 2, three patients (9.7%), were grade 3 and one patient (3.3%) was grade 4. Postoperatively there was an improvement in 19 of 22 patients (86.4%) among those with continence grade 2 or more (P<0.05). Three patients (13.6%) remained incontinent. No patient became more incontinent after surgery.

In Conclusion the rectal prolapse can be treated successfully by laparoscopic rectopexy. It is a technically feasible, safe, effective and offers a minimally invasive approach. Symptoms of incontinence were improved in the majority of patients, where as constipation was not improved. Conversion rate was rare. So laparoscopic rectopexy is considered the method of choice choice in patients with complete rectal prolapse.

Key words: Rectopexy

Laparoscopy

Complete rectal prolapse

INTRODUCTION

Complete rectal prolapse is defined as the protrusion of all layers of the rectal wall through the anal sphincter complex. It occurs mainly in women and is associated with weakness of the pelvic wall musculature and hypotonic anal sphincters attributed to stretching of the pudendal nerves during rectal descent^(1,2). It is usually accompanied by varying grades of faecal incontinence, soiling and frequent bowel motions⁽³⁾. Rectopexy is performed through the perineal or abdominal route. Abdominal procedures include simple suture rectopexy, prosthesis fixation

rectopexy with Ivalon, Mersilene or Prolene mesh and rectopexy with sigmoidectomy. Since 1992, when the first laparoscopic attempts were made, laparoscopic rectopexy has been gaining wider acceptance⁽⁴⁾. The present paper describes the technique of laparoscopic rectopexy and the clinical outcome in patients with complete rectal prolapse over a period of 27 months in El-Minia university hospital.

PATIENTS AND METHODS

Between June 1999 and September 2001, 31 consecutive patients [26 women (83.8%) and 5 men (16.2%)]

with complete rectal prolapse were treated by laparoscopic rectopexy. The median age of patients was 63 years (range 25 - 79 years). A detailed history, physical examination (inspection, digital examination and sigmoidoscopy) were performed.

Continence was scored according to Browning and Parks⁽²⁾.

Table (1): Grading of continence

Grade 1	Fully continent for flatus and stool
Grade 2	Continent for stool but not for flatus
Grade 3	Incontinent for liquid stool
Grade 4	Incontinent for solid stool

After Browning and Parks⁽²⁾.

Bowel preparation was not given but all procedures were covered with antibiotic prophylaxis by 1 gm cefuroxime twice daily for three days. All patients received subcutaneous heparin and wore elastic compression stockings. Patients were followed-up for one year, range (9-24) months.

Surgical techniques:

Position of the patient and trocars:

The supine position with head-down tilt was adopted for the patients. Indwelling catheterization was performed. The video monitor was placed between the legs. The surgeon and the second assistant (camera man) stood on

the right side of the patient, the first assistant and the operating nurse were in front of them, on the left side. Pneumoperitoneum was established using a Veress needle introduced via subumbilical incision. The needle was then replaced with a 10 mm trocar in order to introduce the laparoscope, then three trocars were placed under direct vision, two in the right iliac fossa and one in the left iliac fossa.

Exposure of the rectosigmoid colon:

Laparoscopic exposure of the rectosigmoid was achieved by gravity displacement of small bowel loops from the pelvis to the abdomen by two atraumatic graspers (Fig. 1).



Fig. (1): Laparoscopic exposure of rectosigmoid colon

Mobilization:

The rectum was mobilized down to the pelvic floor. Initially, the peritoneum was divided on either side (Fig. 2). The rectum was held up and to one side by an assistant using a Babcock-type grasper. Mobilization was achieved

by scissors with diathermy followed by blunt dissection. The dissection was kept close to the rectum and posteriorly the roots, trunks and branches of the presacral nerves were identified and preserved. The ureters were identified as a precaution against inadvertent injury. The lateral ligaments were left intact.

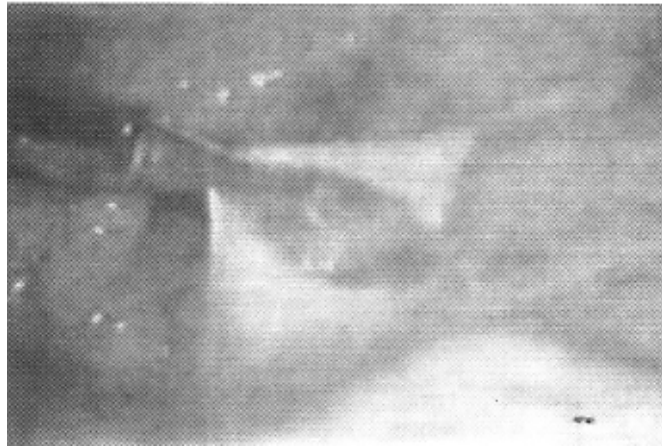


Fig. (2): *The peritoneum was divided by diathermy*

Following this, a 4x8 cm polypropylene mesh tightly rolled then was introduced into the abdomen and attached to the promontory of sacrum and presacral fascia using an endoscopic hernia stapler device (Ethicon, USA) (fig. 3). After determining that the mesh was firmly attached to the sacrum, the rectum was held under tension and the mesh was fixed to the lateral wall of the rectum by stapling so

that one-third of the circumference of the bowel was left free. The abdomen was deflated, the trocars removed and the insertion sites closed in two layers.

* Statistical analysis: for comparison preoperatively and postoperatively, wilcoxon test was used, with differences considered statistically significant at $P < 0.05$



Fig. (3): *Fixation of the mesh by stapling*

RESULTS

The median time of procedure was 120 minutes (range, 50-150). Conversion from laparoscopic to laparotomic rectopexy occurred in one case (3.3%). It was the first case in this study. The conversion was due to severe bleeding due to overdissection of the rectum. The bleeding was from presacral venous plexus and controlled during open surgery.

Blood loss was less than 100 cc in every case except the first case in which 1000 cc was lost and replaced by blood transfusion. Return of bowel movements appeared at 24 hour postoperatively, with passage of stools at the fourth postoperative day (2-5).

The time to oral intake of solid food was 24 hour in all patients. Opiate analgesia was needed by all patients

during the first 12 hours. Median hospital stay was 5 days, rang (3-10 days).

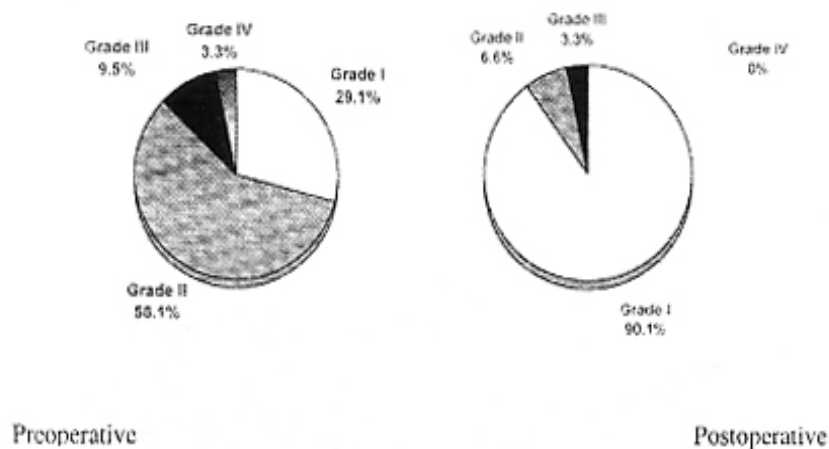
Preoperatively incontinence was reported in 22 patients (70.9%). Eighteen patients (58.1%) were grade 2, 3 patients (9.7%) were grade 3 and one patient (3.3%) was grade 4 (Fig. 4). Postoperatively there was an improvement in 19 of 22 patients (86.4%) among those with continence grade 2 or more ($P < 0.05$) (Fig. 4) and 3 patients (13.6%) remained incontinent. No patient became more incontinent after surgery.

Postoperatively four patients (12.9%) developed deep venous thrombosis (3 left and 1 right). They were treated by systemic heparin and oral anticoagulation for 6 months.

Constipation, which was present in 10 patients (32.3%) preoperatively, affected 12 patients (38.7%) after rectopexy ($P > 0.05$, not significant).

Postoperative morbidity included a port site hernia in one patient (3.3%) and wound infection in one patient (3.3%). There were no cases of impaired sexual function due to keeping the dissection close to rectum.

There were no cases of recurrent prolapse during follow-up period (12 month), range (9-24) months.. There were no cases of operative mortality.



(Fig. 4): Preoperative and postoperative continence grading

DISCUSSION

The ideal operation for complete rectal prolapse should be minimally invasive, correct all the anatomical abnormalities, and restore continence with no morbidity⁽⁵⁾. The range of surgical methods available to correct the complete rectal prolapse poses the question about the best operation. Until recently, abdominal rectopexy has been advocated as the treatment of choice for complete rectal prolapse. Recurrence rates are low (0-8%)^(3,6) and continence improves in the majority of patients (50-88%)^(1,7,8). As most patients are elderly and not always fit enough to undergo an abdominal procedure, various perineal approaches are preferred. They have recurrence rates varying from 0 to 21%, depending on the type and the extent of the operation⁽⁹⁾.

A possible alternative is laparoscopic rectopexy aiming to obtain the good functional outcome of abdominal procedures with the low postoperative

morbidity of minimally invasive surgery. Laparoscopic rectopexy has been proven technically feasible⁽¹⁰⁾.

All the steps of the equivalent open operation as mobilization of the rectum to the pelvic floor with preservation of the presacral nerve and posterior rectopexy, can satisfactory be accomplished laparoscopically⁽¹¹⁾.

Some surgeons use stapling devices to fix the mesh to the sacrum and others use direct suturing which is time consuming⁽¹²⁾.

In our study, we used endoscopic hernia stapler device. This modification of the technique has not been associated with increasing recurrence rates while it is a rapid technique.

An average operative time of 96 minutes is reported for patients undergoing laparoscopic suture rectopexy

without resection⁽¹³⁾. In our study the mean time was 120 minutes range (50 -150) minutes which was similar to other series. The median hospital stay was 5 days in a study by Kessler et al., 1999. In our study, the median hospital stay was similar 5days, range (3-10) days.

Continence improved in 19 of 22 patients (86.36%) and this is comparable with other series^(14,18,19,20). It is believed that the improvement of this after surgery might be due to relieve of rectoanal inhibition, which is induced by the prolapsed bowel distending the lower rectum^(15, 16). Also of importance might be the simple anatomical restoration of the prolapsed bowel, which prevents further dilatation of the anal sphincters⁽¹⁾. No patients in our study became more incontinent after surgery.

A major drawback of abdominal rectopexy is constipation. The precise mechanism of constipation following rectopexy is uncertain. High fixation of the rectum allows the redundant sigmoid colon to prolapse into the pouch of Douglas and may create a mechanical obstruction at this site. An alternative hypothesis is that the rectal mobilization divides the parasympathetic neural inflow to the left colon through the pelvic autonomic fibers, thereby altering bowel function^(11,22).

Previous studies have reported an increased incidence of postoperative constipation (up to 50%) probably related to the division of the lateral ligaments⁽¹⁷⁾. Two of our patients developed mild constipation postoperatively which was treated successfully with the use of bulk forming agents. These satisfactory results regarding postoperative constipation can be explained by the fact that we did not dissect the lateral ligaments and the nervi erigents.

The possibility of deep vein thrombosis is of concern. The position of the patient during surgery, the high intra-abdominal pressure and the length of the procedure may all contribute to the development of this complication. The Lloyd-Davis position, although helpful, is not strictly necessary for laparoscopic rectopexy and patients are now placed supine for pelvic laparoscopic procedures that does not involve endoanal manipulation^(17,23). All patients received low dosage subcutaneous heparin and worn above -knee elastic stockings to decrease the possibility of deep vein thrombosis in our study.

CONCLUSION

Complete rectal prolapse can be treated successfully by laparoscopic rectopexy. It is a technically feasible, safe, effective and offers a minimally invasive approach. Symptoms of incontinence were improved in the majority of patients, where as constipation was not improved. Conversion rate was rare. So laparoscopic rectopexy is

considered the method of choice in patients with complete rectal prolapse.

REFERENCES

1. Madden MV, Kamm MA, Nicholls RJ, Santhanam AN, Cabot R, Speakman CTM (1992): Abdominal rectopexy for complete prolapse: prospective study evaluating changes in symptoms and anorectal function. *Dis Colon Rectum* 35: 48-55.
2. Browing GGP and Parks AG (1983): Postanal repair for neuropathic faecal incontinence: correlation of clinical results and anal pressures. *Br. J. Surg.* 70: 101-4.
3. Cuschieri A, Shimi M, Vander G, Banting S and Wood AB, (1994): Laparoscopic prosthesis fixation rectopexy for complete rectal prolapse. *Br. J. Surg.*, 81: 138-139.
4. Heah SM., Hartley JE., Hurley J., Duthie GS., Monson JR., (2000): Laparoscopic suture rectopexy without resection is effective treatment for full thickness rectal prolapse. *Dis Colon Rectum* 2000; 43: 638-43.
5. Kessler H, Jerby B and Mislou J, (1999): Successful treatment of rectal prolapse by laparoscopic suture rectopexy. *Surg. Endosc*; 13: 585-61.
6. Keighley MRB, Fielding JEL, Alexander-Williams J. (1983): Results of marlex mesh abdominal rectopexy for rectal prolapse in 100 consecutive patients. *Br. J. Surg* 70: 229-232.
7. Farouk R, Duthie GS, Bartolo DCC and MacGregor AB, (1992): Restoration of continence following rectopexy for rectal prolapse and recovery of the internal sphincter electromyogram. *Br. J. Surg.* 1992, 79: 439-440.
8. Finlay IG and Aitchison M (1991): Perineal excision of the rectum for prolapse in the elderly. *Br. J. Surg.* 78, 687-689.
9. Tjandra JJ, Fozio VW, Church JM, Milson JW, Oakley JR and Lavery IC (1993): Ripstein procedure is an effective treatment for rectal prolapse without constipation. *Dis Colon Rectum* 36: 501-507.
10. McCue JL and Thomson JPS (1991): Clinical and functional results of abdominal rectopexy for complete rectal prolapse. *Br. J. Surg.* 78: 921-923.
11. Duthie GS, and Bartolo DCC (1992): Abdominal rectopexy for rectal prolapse: comparison of techniques. *Br. J. Surg.* 79:107-113.
12. Ramanujam PS, Venkatesh KS, Fietz MJ, (1994): Perineal excision of rectal procedentia in elderly high risk patients. A ten year experience. *Dis Colon Rectum* 37: 1027-1030.

13. Cuesta MA, Borgstein PJ, De Jong D and Meijer S (1993): Laparoscopic rectopexy. *Surg Laparoscopy Endosc*, 3: 456-458.
14. Farouk R, Duthie GS, MacGregor SAB and Bartolo DCC (1994): Rectoanal inhibition and incontinence in patients with rectal prolapse. *Br. J. Surg*, 81: 743-746.
15. Poen AC., Brauw LM., Felt-Bersma RJF, Jong D., Cuesta MA., (1996): Laparoscopic rectopexy for complete rectal prolapse. Results regarding clinical outcome and anorectal function tests. *Surg. Endosc*; 10: 904-908.
16. Speakman CT, Madden MV, Nicholls RJ and Kamm MA (1991): Lateral ligament division during rectopexy causes constipation but prevents recurrence: results of a prospective randomized study. *Br. J. Surg* 78: 1431-1433.
17. Cuschieri A, Shimi S, Banting S, Vander Velpen G, Dunkley O (1993): Coaxial curved instrumentation for minimal access surgery. *Surg. Endosc*; 1: 76-81.
18. Heash SM., Hartley JE., Hurley J., Duthie GS., Monson JR., (2000): Laparoscopic suture rectopexy without resection is effective treatment for full thickness rectal prolapse. *Dis Colon Rectum* 2000; 43: 638-43.
19. Benoist S, Taffinder N, Gould S, Chang A, Darzi A (2001): Functional results two years after laparoscopic rectopexy. *Am J Surg* ; 182 (2): 168-73.
20. Zittel TT, Manncke K, Haug S, Schafer JF, Kreis ME, Becker HD, Jehle EC (2000): Functional results after laparoscopic rectopexy for rectal prolapse. *Gastrointest Surg*; 4 (6): 632-41.
21. Kellokumpu IH, Vioren J, Schinin T (2000): Laparoscopic Repair of rectal prolapse: a prospective study evaluating surgical outcome and changes in symptoms and bowel function. *Surg Endosc*; 14 (7): 634-40.
22. Soloman MJ, Young CJ, Evers AA, and Roberts RA (2002): Randomized clinical trial of laparoscopic versus open abdominal rectopexy for rectal prolapse. *Br. J Surg*; 89: 35-9.
23. Rose JS, Scheidbach H, Yildirim C, Bruch HP et al., (2002): Laparoscopic treatment of rectal prolapse: experience gained in a prospective multicenter trial *Arch Surg*; 387 (3-4): 130-7.

