

Original Article

Laparoscopic Rectopexy with Sigmoid Resection for Full-thickness Rectal Prolapse

Chuan-Yin Fang
Chun-Ting Chu
Yun-Chung Huang
I-Chen Lin

Division of Colon and Rectal Surgery,
Department of Surgery, Ditmanson Medical
Foundation, Chia-Yi Christian Hospital,
Chia-Yi, Taiwan

Key Words

Laparoscopy;
Rectopexy with sigmoid resection;
Full-thickness rectal prolapse

Purpose. This study aims to evaluate the efficacy and safety of laparoscopic rectopexy with sigmoid resection in patients with full-thickness rectal prolapse.

Methods. Eighteen patients with full-thickness rectal prolapse, who underwent laparoscopic rectopexy with sigmoid resection in our institution, were enrolled from January 2014 to March 2020. We retrospectively evaluated and analyzed their demographic data, perioperative results, and short-term functional outcome.

Results. The median age was 73.2 (± 16) years. The male to female ratio was 0.2 (3/15). Preoperative clinical symptoms such as constipation occurred in 77.8% (14/18) of patients, and incontinence in 88.9% (16/18) of patients. Patients' preoperative risk according to American Society of Anesthesiologists (ASA) score included: ASA I = 22.2% (5/18), ASA II = 50% (9/18), and ASA III = 27.8% (4/18). Mean operation times were 199.1 (± 44.3) min and the mean blood loss was 35.2 mL. There were five minor perioperative complications: one anastomotic bleeding, one delayed ileus, two urinary retention, and one surgical wound infection. There were no major complications or surgical mortality in this series. Mean hospital stay was 9.78 (± 1.8) days. Functional outcome after one year follow-up showed improvement of constipation status in 85.7% (12/14) of patients with preoperative constipation, and improvement of incontinence status in 87.5% (14/16) of patients with preoperative incontinence. The overall recurrence rate was 5.6% (1/18). Finally, 83.3% (15/18) of patients were satisfied with the functional outcome of the operation.

Conclusions. Laparoscopic rectopexy with sigmoid resection is a safe and effective surgical option for patients with full-thickness rectal prolapse regarding recurrence rate, bowel function, and risk.

[J Soc Colon Rectal Surgeon (Taiwan) 2021;32:159-167]

Rectal prolapse, also called rectal procidentia, is the protrusion of the entire circumference of the rectal wall through the anus. It is a pelvic floor disorder that typically occurs in older adult women, but can occur in men and women of all ages.^{1,2} Moschowitz first proposed the etiology of rectal prolapse in 1912.³

His idea was that a rectal prolapse is a sliding hernia that occurs through a defect in the pelvic fascia. Altermeier et al.⁴ in 1971 classified rectal prolapse into three types according to anatomy. Type I is a protrusion of the redundant mucosal layer (labeled as a false prolapse and usually associated with hemorrhoids). Type

Received: June 21, 2021.

Accepted: October 23, 2021.

Correspondence to: Dr. Chuan-Yin Fang, Division of Colon and Rectal Surgery, Department of Surgery, Ditmanson Medical Foundation, Chia-Yi Christian Hospital, No. 539, Zhongxiao Rd., East Dist., Chia-Yi 600, Taiwan. Tel: 886-5-276-5041 ext. 8100; Fax: 886-5-276-5041; E-mail: 04969@cych.org.tw

II is intussusception without an associated cul-de-sac sliding hernia, while type III is a sliding hernia of the cul-de-sac (occurs in the vast majority of cases). In contrast, in 1972, Beahrs et al.⁵ proposed a clinical classification based on the completeness of the prolapse: incomplete prolapse (mucosal prolapse) and complete prolapse (full-thickness wall prolapse).

There is a female predominance among patients with rectal prolapse with a male to female ratio of 6:1. In women, the incidence of this disorder increases with age and peaks in the fifth and subsequent decades; however, it is evenly distributed throughout the age range in men.⁶ The incidence is approximately 10/1000 in women after age 65 years.⁷

In the early stage, symptoms of rectal prolapse may include difficulty in bowel movement and the sensation of incomplete evacuation. Mucous discharge and bleeding usually occurs after a permanent extruding rectal mass, causing soiling of the underclothes. Both fecal incontinence and constipation with straining are frequently associated with prolapse.

Over the past few decades, surgical treatment has become the treatment of choice for operative candidates with full-thickness rectal prolapse. A great number of different procedures have been introduced to treat patients with rectal prolapse. However, there is no consensus regarding the most effective procedure as it relates to recurrence rate, bowel function, and risk.⁸⁻¹¹ The surgical approaches of rectal prolapse can generally be divided into abdominal and perineal. The four most commonly performed procedures for full-thickness rectal prolapse are: 1) trans-abdominal rectopexy with or without concomitant sigmoid resection, 2) trans-abdominal ventral mesh rectopexy (Ripstein procedure), 3) perineal rectosigmoidectomy (Altemeier procedure), and 4) perineal mucosal stripping and muscular plication (Delorme procedure). The choice of surgical procedure is determined by age, physical condition, and baseline bowel function, as well as the surgeon's experience and preference.

The Delorme procedure was described by Delorme in 1900¹² and involves dilation of the anus, separation of the mucosa from the sphincter and the muscularis propria, and the division of the mucosa together with the plication of the muscularis propria. It offered a

surgical alternative for patients with prolapse who may be unable to tolerate a more extensive operation, such as the elderly, frail patients, and those who are medically unfit for major surgery.

The perineal rectosigmoidectomy procedure was first advocated by Miles¹³ in 1933 and subsequently by Altemeier et al.⁴ in 1971. It involves a full-thickness excision of the rectum and, if possible, a portion of the sigmoid colon.

The ventral mesh rectopexy (Ripstein procedure) was first described by Ripstein in 1952.¹⁴ After complete mobilization of the rectum, an anterior sling of fascia lata or synthetic material is placed in front of the rectum and sutured to the sacral promontory. The operation provides a firm anterior fascial support in patients with atrophic pelvic structures and restores the normal anatomic position of the rectum.

The suture rectopexy operation, first described by Cutait in 1959,¹⁵ involves a thorough mobilization and upward fixation of the rectum. The mobilization and subsequent healing by fibrosis tends to keep the rectum fixed in an elevated position as adhesions form, attaching the rectum to the presacral fascia. The majority of previous suture rectopexy studies showed low recurrence rate and good improvement in fecal continence, but variable influence on constipation. The different studies showed improvement, deterioration, or no effect on constipation. The addition of sigmoid resection to rectopexy (resection rectopexy; Frykman-Goldberg procedure), first described by Frykman²⁵ in 1955, combines the procedures of mobilization of the rectum, sigmoid resection, and fixation of the rectum. Finally, there is the advantage of overall reduction in constipation, which is attributed to resection of the redundant sigmoid colon.

This retrospective study aimed to review and analyze both the perioperative complications and follow-up functional outcomes of patients who underwent laparoscopic rectopexy with sigmoid resection in our institution.

Materials and Methods

Patients and data

We did a retrospective search from “the laparo-

scopic colorectal surgery database” in our institution from January 2014 to March 2020. Using the criteria of full-thickness rectal prolapse with length of prolapse ≥ 5 cm and surgery being laparoscopic resection rectopexy, a total of 18 patients were enrolled in the study. Patients with partial (mucosal) prolapse or who underwent perineal repair or rectopexy only were excluded. All surgeries were conducted by four senior colorectal surgeons. All data were collected by chart review and follow-up functional outcome was recorded at outpatient department visit or requested by questionnaires in telephone interviews.

Preoperative

All patients had preoperative diagnostic assessments, including patient’s demographics, clinical symptoms, detailed history of bowel function, continence status, physical examinations, and other further studies. Colonoscopy or sigmoidoscopy was performed routinely to rule out malignancy. Double contrast studies of the colon were performed in some patients to demonstrate the sigmoid colon redundancy status. Anal manometry was performed for patients with fecal incontinence. Colon preparation before surgery was routinely conducted.

Operative procedures

All surgeries were conducted using Olympus 3D laparoscopy with patients positioned in the modified lithotomy position using five trocars. The procedures consist of four essential steps: (1) Rectal mobilization: incise the perirectal peritoneum and mobilize the rectum posteriorly from the pelvic floor to the coccyx tip, preserving the lateral stalks and avoiding injury to the hypogastric nerves. Mobilize the rectum anteriorly for a few centimeters to allow for straightening of the rectum and additional scarring. (2) Mobilize the sigmoid colon medially up to the descending colon near the splenic flexure. (3) Divide and ligate the sigmoid branches of the inferior mesenteric artery, then perform sigmoid resection with the distal transection level over the upper rectum (near the rectosigmoid junction) and end to end anastomosis with a double

stapling technique. Keep the anastomosis tension-free and without residual redundant descending colon. (4) Suture rectopexy: three nonabsorbable sutures (3-0 black silk) below the sacral promontory are placed to attach the lateral stalks of the rectum to the presacral fascia bilaterally.

A 10 mm JP drain was placed in the presacral space routinely for drainage and leakage detection.

Post-operative care and follow-up

The patients fasted until flatus was passed and then were discharged after uncomplicated oral intake with a low residual soft diet. Perioperative complications were recorded. All patients were asked to return to the outpatient department once every three months for one year. A questionnaire about the follow-up functional outcome and satisfaction was performed in the outpatient department or by telephone interview one year after surgery.

Constipation is a symptom with varying meanings for patients. Thus, it is difficult to clearly define the term. Most experts include the symptoms of frequency of bowel actions, straining, and incomplete evacuation in the definition of constipation. However, the symptoms of straining and incomplete evacuation are rather subjective and unreliable. In this study, constipation was defined as having two or fewer bowel movements per week or required use of stimulant laxatives or enemas to induce bowel movements two or more times per week.¹⁶

Fecal incontinence was assessed using the Brown-ing and Parks continence scale according to incontinence for gas, liquid, and solid stool.¹⁷ Recurrence of prolapse was defined as a recurrent full-thickness prolapse observed and reported during the follow-up periods. The patient’s satisfaction with the operation was assessed using the Visick scale according to relief level of symptoms.

Results

A total of 18 patients with full-thickness rectal prolapse underwent laparoscopic rectopexy with sig-

moid resection from January 2014 to March 2020 at Ditmanson Medical Foundation Chia-Yi Christian Hospital. The median age was 73.2 (± 16.7) years, ranging from 33 to 90 years. The male to female ratio was 0.2 (3/15). The mean overall body mass index (BMI) was 23.2. Three patients had past histories of perineal repair for rectal prolapse (Table 1). Preoperative clinical symptoms with constipation were noted in 77.8% (14/18) of patients and incontinence was noted in 88.9% (16/18) of patients.

Other clinical symptoms included diarrhea in 16.7% (3/18), urinary incontinence in 27.8% (5/18), and a combination of uterine prolapse or cystocele in 16.7% (3/18) of patients. Preoperative studies included colonoscopy or sigmoidoscopy in 83.3% (15/18) of patients, and double contrast studies of the colon in 16.7% (3/18) of patients. Colorectal cancer was not detected in any patient. Six (33.3%) patients received anal manometry examination and all showed low resting and sneezing pressures.

Patients' preoperative risks were evaluated according to the American Society of Anesthesiologists (ASA) physical status score. The results were ASA I in 22.2%, II in 50%, and III in 27.8%. The mean operation time was 199.1 (± 44.3) min. One case was converted to an open operation because of severe adhesion resulting from previous gynecological procedures. The mean blood loss was 35.2 mL (range = 20 to 250 mL). Synchronous protective T-loop colostomy was performed in two patients. One was because

of severe rectal fibrosis and stricture, while the other was because of mild rectal ischemic change. Their colostomies were closed three months later. Perioperative complications were rare, but included anastomotic bleeding in one patient, delayed ileus in another patient, urinary retention in two patients, and surgical wound infection in one patient. No major complications such as anastomotic leakage, cardiopulmonary complications, or cerebrovascular accident occurred in our series. There was no surgical mortality in the series. The mean hospital stay was 9.7 (± 1.8) days (Table 2).

Results of functional outcome in follow-up

Recurrent rectal prolapse was observed in one patient after a year of follow-up. The overall recurrence rate was 5.6% (1/18).

Of those patients ($n = 14$) with preoperative constipation, 12 had better bowel movements after surgery and two had no change. Therefore, the ratio of improvement of constipation was 85.7% (12/14) (Table 3). However, of those patients without preoperative constipation, two developed post-operative diarrhea with frequent bowel movements of more than three times per day.

Of those patients²⁰ with preoperative incontinence (three patients for gas only, eight patients for liquid

Table 1. Patients' demographics (N = 18)

Variable	N (%)
Median age (years)	73.2 \pm 16
Sex	
Male	3 (16.7%)
Female	15 (83.3%)
Mean length of prolapse (cm)	9.1 (5 to 20)
Mean BMI	23.2 \pm 4.7
ASA score	
I	5 (27.8%)
II	9 (50%)
III	4 (22.2%)
Previous perineal repair	3 (16.6%)

ASA: American Society of Anesthesiologists physical status score; BMI: body mass index.

Table 2. Perioperative results (N = 18)

	N
Minor complications	
Anastomotic bleeding	1
Delayed ileus	1
Urinary retention	2
Wound infection	1
Major complications	
Anastomotic leakage	0
Cardiopulmonary complication	0
CVA	0
Mortality	0
Conversion to open surgery	1
Additional protective colostomy	2
Total complication rate	5 (27.8%)

CVA: cerebrovascular accident.

Delayed ileus: no flatus passage more than 7 days after surgery.

Table 3. Constipation status (N = 18)

	Pre-op	Post-op
Constipation	14	Better 12 Same 2 Worse 0
Total number of constipated patients	14 (77.8%)	2

stool, five patients for solid stool), 14 had better incontinence statuses after surgery. Therefore, the ratio of improvement of incontinence was 87.5% (14/16) (Table 4). However, permanent colostomy was performed for a post-operative unchanged incontinent patient.

Finally, more than 80% of patients thought that the procedure had alleviated their symptoms (Table 5) and were satisfied with functional outcome after surgery in the follow-up period.

Discussion

In the past decades, several studies demonstrated

Table 4. Incontinence status (N = 18)

	Pre-op	Post-op
Gas	2	Better 2 Same 0 Worse 0
Liquid stool	6	Better 5 Same 1 Worse 0
Solid stool	8	Better 7 Same 1 Worse 0
Total number of incontinence patients	16 (88.9%)	2

that abdominal repair had a lower recurrence rate but higher complication rate, compared with perineal repair (Table 6).¹⁸⁻²² In this respect, patients who are physically fit for an abdominal procedure should have an abdominal rather than a perineal repair. Abdominal repair should include both rectal mobilization and rectal fixation. Rectopexy is key in achieving low recurrence rates. However, postoperative new onset constipation frequently accompanies rectopexy. Some studies have reported that 30%-50% of patients suffered from severe constipation after rectopexy only.^{23,24} For this reason, additional sigmoid resection is necessary for patients with preoperative severe constipation. In a 2015 cochrane review of three randomized trials, by Tou S et al.,⁸ postoperative constipation in 82 randomized patients was significantly less common in patients who had a sigmoid resection with rectopexy compared with those who had rectopexy alone (12% versus 48%).

The technique of rectopexy and sigmoid resection, originally derived by Frykman²⁵ in 1955, is a composite surgical procedure designed to eliminate abnormal factors that contribute to the formation of rectal prolapse. It starts as an open surgery through a midline abdominal incision.

The laparoscopic approach for rectal prolapse has become popular because it offers a less stressful and

Table 5. Satisfaction level of patients (N = 18)

	N	%
Complete relief of symptoms	7	83.3%
Significant relief of symptoms	8	
Slight relief of symptoms	2	
No relief	1	16.7%

Table 6. Comparison of recurrence and complication rates of different procedures^{14,16-18,40}

Procedures	Recurrence rate	Complication rate
Abdominal procedures		
Resection rectopexy	2 to 5%	0 to 20%
Suture rectopexy	3 to 9%	around 14%
Resection alone	7 to 12%	15 to 29%
Anterior mesh rectopexy (modified Ripstein)	4 to 10%	around 20%
Perineal procedure		
Delorme procedure	10 to 27%	4 to 12%
Altemeier procedure	16 to 30%	< 10%

minimally invasive approach, which might be suitable for the high percentage of high-risk elderly patients in this population. Several studies have demonstrated reduced postoperative pain, earlier recovery, and shorter length of hospital stay after laparoscopic surgery for rectal prolapse compared to open surgery.²⁶⁻²⁹

In our study, all patients had full-thickness rectal prolapse with the length of prolapse more than or equal to 5 cm. The majority of patients experienced severe constipation and incontinence; therefore, laparoscopic resection rectopexy is the first choice option of treatment.

The morbidity rate in this study was 27.7% (5/18), and all complications were minor. No major complications, such as anastomotic leakage, cardiopulmonary complication, or cerebrovascular accident, were noted in our series. There was also no surgical mortality. The results of low morbidity and mortality demonstrate that laparoscopic resection rectopexy is safe and well tolerated in almost all patients with rectal prolapse, including the elderly or those with associated comorbidities.

The recurrence rate of rectal prolapse in this series was 5.6% (1/18) after one year of follow-up. The results are similar to those in previously published data, ranging from 2%-8%.^{7,18,21,22} In general, abdominal procedures have lower recurrence rates compared with perineal procedures because rectopexy is the main step of abdominal repair. Another possible explanation for these favorable recurrence rates is that resection of the abundant sigmoid colon prevents further intussusception.

Constipation is a major functional problem for patients with rectal prolapse. The mechanism is unclear. It may be because of pelvic outlet obstruction by the intussuscepting bowel, an inherent motility disorder of the large bowel, or a prolonged redundant sigmoid colon.³⁰ In this study, 85.7% (12/14) of patients with preoperative constipation (n = 14) experienced improvement in constipation. Constipation disappeared or was alleviated after the operation in most patients. However, two patients had unchanged constipation statuses after surgery. A possible reason for postoperative constipation is colonic dysmotility from operative denervation by division of the lateral rectal ligaments.³¹

Previous studies showed rates of constipation improvement varying from 64% to 82%. In 1998, A R Stevenson et al.²⁸ reported that constipation was improved in 64% of patients in a prospective study of 30 cases of laparoscopic rectopexy with resection after a median follow-up of 18 months. Y Kariv et al.³⁸ reported a constipation improvement rate of 74% in patients treated by laparoscopic repair in 2005, and Tilman Laubert et al.³⁹ reported improvement of complete elimination of constipation by 81.3% for 152 patients in 2010.

Fecal incontinence is another important functional problem that frequently accompanies rectal prolapse. Several explanations for the incontinence of patients with rectal prolapse have been proposed. These include pudendal nerve neuropathy causing sphincter denervation,³² direct sphincter trauma caused by the intussuscepting rectum, chronic stimulation of the rectoanal inhibitory reflex, and abnormal anorectal sensation.^{33,34} In this study, 87.5% (14/16) of patients with preoperative incontinence experienced improvement in incontinence statuses after operation. This supports previous reports regarding improvement in preoperative incontinence for 64%-100% of patients who undergo laparoscopic resection rectopexy.^{28,35-37} A R Stevenson et al.²⁸ in 1998, reported 70% improvement rate of incontinence after 18 months follow-up in 30 patients who underwent laparoscopic resection rectopexy. Similarly, Kellokumpu IH et al.³⁵ in 2000, reported continence restored in 80% patients after 12 months follow-up in a prospective study.

Finally, according to the data from follow-up questionnaires, 15 (83.3%) patients expressed complete or significant relief of symptoms after operation, and were satisfied with the functional outcome.

Conclusion

In our studies, laparoscopic rectopexy with sigmoid resection was performed in 18 patients with full-thickness rectal prolapse. The results showed acceptable risk, good bowel functional outcome, and low recurrence rate. We concluded that it is a safe and effective treatment option for full-thickness rectal prolapse.

References

- Felt-Bersma RJ, Tiersma ES, Cuesta MA. Rectal prolapse, rectal intussusception, rectocele, solitary rectal ulcer syndrome, and enterocele. *Gastroenterol Clin North Am* 2008; 37:645-68.
- Kairaluoma MV, Kellokumpu IH. Epidemiologic aspects of complete rectal prolapse. *Scand J Surg* 2005;94:207-10.
- Moschcowitz AV. The pathogenesis, anatomy and cure of pro-lapse of the rectum. *Surg Gynecol Obstet* 1912;15:7-21.
- Altemeier WA, Culbertson WR, Schowengerdt C, Hunt J. Nineteen years' experience with the one-stage perineal repair of rectal prolapse. *Ann Surg* 1971;173:993-1006.
- Beahrs OH, Theuerkauf FJ, Hill JR. Procidentia: surgical treatment. *Dis Colon Rectum* 1972;15:337-46.
- Küpfer CA, Goligher JC. One hundred consecutive cases of complete prolapse of the rectum treated by operation. *Br J Surg* 1970;57:482-7.
- Laubert T, Kleemann M, Schorch A, Czymek R, Jungbluth T, Bader FG, Bruch HP, Roblick UJ. Laparoscopic resection rectopexy for rectal prolapse: a single-center study during 16 years. *Surg Endosc* 2010;24:2401-6.
- Tou S, Brown SR, Nelson RL. Surgery for complete (full-thickness) rectal prolapse in adults. *Cochrane Database Syst Rev* 2015;11:CD001758.
- Raftopoulos Y, Senagore AJ, Di Giuro G, Bergamaschi R, Rectal Prolapse Recurrence Study Group. Recurrence rates after abdominal surgery for complete rectal prolapse: a multi-center pooled analysis of 643 individual patient data. *Dis Colon Rectum* 2005;48:1200-6.
- Karas JR, Uranues S, Altomare DF, Sokmen S, Krivokapic Z, Hoch J, Bartha I, Bergamaschi R, Rectal Prolapse Recurrence Study Group. No rectopexy versus rectopexy following rectal mobilization for full-thickness rectal prolapse: a randomized controlled trial. *Dis Colon Rectum* 2011;54:29-34.
- Laubert T, Kleemann M, Schorch A, Czymek R, Jungbluth T, Bader FG, Bruch HP, Roblick UJ. Laparoscopic resection rectopexy for rectal prolapse: a single-center study during 16 years. *Surg Endosc* 2010;24:2401-6.
- Delorme R. Sur le traitement des prolapsus du rectum totaux pour l'excision de la musculature rectale ou rectocolique. *Bull Mem Soc Chir Paris* 1900;26:499-518.
- Miles WE. Recto-sigmoidectomy as a method of treatment for procidentia recti. *Proc R Soc Med* 1933;26:1445-52.
- Ripstein CB. Treatment of massive rectal prolapse. *Am J Surg* 1952;83:68-71.
- Cutait D. Sacro-promontory fixation of the rectum for complete rectal prolapse. *Proc R Soc Med* 1959;52(suppl):105.
- Drossman DA, Sandler RS, McKee DC, Lovitz AJ. Bowel patterns among subjects not seeking health care. Use of a questionnaire to identify a population with bowel dysfunction. *Gastroenterology* 1982;83:529-34.
- Browning GG, Parks AG. Postanal repair for neuropathic faecal incontinence: correlation of clinical result and anal pressures. *Br J Surg* 1983;70:101-4.
- Novell JR, Osborne MJ, Winslet MC, Lewis AA. Prospective randomized trial of Ivalon sponge versus sutured rectopexy for full-thickness rectal prolapse. *Br J Surg* 1994;81:904-6.
- Duthie GS, Bartolo DC. Abdominal rectopexy for rectal prolapse: a comparison of techniques. *Br J Surg* 1992;79:107-13.
- Varma M, Rafferty J, Buie WD, Standards Practice Task Force of American Society of Colon and Rectal Surgeons. Practice parameters for the management of rectal prolapse. *Dis Colon Rectum* 2011;54:1339-46.
- Madbouly KM, Senagore AJ, Delaney CP, Duepre HJ, Brady KM, Fazio VW. Clinically based management of rectal prolapse. *Surg Endosc* 2003;17:99-103.
- Dulucq JL, Wintringer P, Mahajna A. Clinical and functional outcome of laparoscopic posterior rectopexy (Wells) for full-thickness rectal prolapse. A prospective study. *Surg Endosc* 2007;21:2226-30.
- Speakman CT, Madden MV, Nicholls RJ, Kamm MA. Lateral ligament division during rectopexy causes constipation but prevents recurrence: results of a prospective randomized study. *Br J Surg* 1991;78:1431-3.
- Scaglia M, Fasth S, Hallgren T, Nordgren S, Oresland T, Hultén L. Abdominal rectopexy for rectal prolapse. Influence of surgical technique on functional outcome. *Dis Colon Rectum* 1994;37:805-13.
- Frykman HM. Abdominal proctopexy and primary sigmoid resection for rectal procidentia. *Am J Surg* 1955;90:780-9.
- Baker R, Senagore AJ, Luchtfeld MA. Laparoscopic-assisted vs. open resection. Rectopexy offers excellent results. *Dis Colon Rectum* 1995;38:199-201.
- Senagore AJ. Management of rectal prolapse: the role of laparoscopic approaches. *Semin Laparosc Surg* 2003;10:197-202.
- Stevenson AR, Stitz RW, Lumley JW. Laparoscopic-assisted resection-rectopexy for rectal prolapse: early and medium follow-up. *Dis Colon Rectum* 1998;41:46-54.
- Boccasanta P, Venturi M, Reitano MC, Salamina G, Rosati R, Montorsi M, Fichera G, Strinna M, Peracchia A. Laparotomic vs. laparoscopic rectopexy in complete rectal prolapse. *Dig Surg* 1999;16:415-9.
- Huber FT, Stein H, Siewert JR. Functional results after treatment of rectal prolapse with rectopexy and sigmoid resection. *World J Surg* 1995;19:138-43.
- Speakman CT, Madden MV, Nicholls RJ, Kamm MA. Lateral ligament division during rectopexy causes constipation but prevents recurrence: results of a prospective randomized study. *Br J Surg* 1991;78:1431-3.
- Parks AG, Swash M, Ulrich H. Sphincter denervation in anorectal incontinence and rectal prolapse. *Gut* 1977;18:656-65.
- Madoff RD, Mellgren A. One hundred years of rectal prolapse surgery. *Dis Colon Rectum* 1999;42:441-50.
- Spencer RJ. Manometric studies in rectal prolapse. *Dis Colon Rectum* 1984;27:523-5.
- Kellokumpu IH, Vironen J, Scheinin T. Laparoscopic repair

- of rectal prolapse: a prospective study evaluating surgical outcome and changes in symptoms and bowel function. *Surg Endosc* 2000;14:634-40.
36. Bruch HP, Herold A, Schiedeck T, Schwandner O. Laparoscopic surgery for rectal prolapse and outlet obstruction. *Dis Colon Rectum* 1999;42:1189-94.
 37. Xynos E, Chrysos E, Tsiaoussis J, Epanomeritakis E, Vassilakis JS. Resection rectopexy for rectal prolapse. The laparoscopic approach. *Surg Endosc* 1999;13:862-4.
 38. Kariv Y, Delaney CP, Casillas S, Hammel J, Nocero J, Bast J, Brady K, Fazio VW, Senagore AJ. Long-term outcome after laparoscopic and open surgery for rectal prolapse: a case-control study. *Surg Endosc* 2006;20:35-42.
 39. Tilman L, Markus K, Alexander S, Ralf C, Thomas J, Franz GB, H-P B, Uwe JR. Laparoscopic resection rectopexy for rectal prolapse: a single-center study during 16 years. *Surg Endosc* 2010;24(10):2401-6.
 40. Watts AMI, Thompson MR. Evaluation of Delorme's procedure as a treatment for full-thickness rectal prolapse. *Br J Surg* 2000;87:218-22.

原 著

腹腔鏡直腸固定術併乙狀結腸切除術 治療全層直腸脫垂

方川尹 朱峻廷 黃允中 林怡成

戴德森醫療財團法人嘉義基督教醫院 外科部 大腸直腸外科

目的 本研究的目的是評估腹腔鏡直腸固定術併乙狀結腸切除術治療全層直腸脫垂患者的療效和安全性。

方法 2014年1月至2020年3月，在本院接受腹腔鏡直腸固定術併乙狀結腸切除術的全層直腸脫垂患者18例。我們回顧性地評估和分析了患者的人口統計學數據、手術期間併發症和短期腸道功能結果。

結果 共分析了18名患者。中位數年齡為73 (±16) 歲。男女比例為0.2 (3/15)。77.8% (14/18) 的患者術前出現便秘症狀，88.9% (16/18) 患者出現大便失禁。根據ASA評分，患者的術前風險包括：ASA I 22.2% (5/18)、ASA II 50% (9/18) 和ASA III 27.8% (4/18)。平均手術時間為199.1分鐘，平均失血量為35.2 ml。手術期間輕微併發症5例，包括：吻合口出血1例，延遲性腸脹氣1例，尿滯留2例，手術傷口感染1例，無嚴重併發症，無手術死亡。平均住院時間為9.78天。追蹤1年後的腸道功能結果顯示：85.7% (12/14) 的術前便秘患者的便秘狀態得到改善，87.5% (14/16) 的術前失禁患者的失禁狀態得到改善。總體復發率為5.6% (1/18)。最後，83.3% (15/18) 的患者對手術的功能結果感到滿意。

結論 考慮到復發率、腸道功能和風險，腹腔鏡直腸固定術併乙狀結腸切除術作為全層直腸脫垂的手術選擇是安全有效的。

關鍵詞 腹腔鏡、直腸固定術併乙狀結腸、全層直腸脫垂。