

Original Article

Comparison of Abdominal Versus Perineal Resection for Rectal Prolapse

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Key Words

Abdominal resection;

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Purpose. Both abdominal and perineal resections have been used by surgeons for management of rectal prolapse. Perineal resection of rectal prolapse has been criticized by, and fallen out of favor with some surgeons for its higher associated rate of recurrence. We compared the result of a surgeon's experience of abdominal versus perineal resection of rectal prolapse and evaluated whether the latter should be the procedure of choice.

Materials and Methods. Charts of 41 patients (April 1987-October 2013) who had rectal prolapsed resected by a senior colorectal surgeon at Mackay Memorial Hospital were reviewed. Patient demographics and outcomes were analyzed.

Results. Of the 14 male and 27 female patients, eleven (5 male, 6 female) had resection through abdominal approach, and 30 (9 male and 21 female) through perineal approach. Patients age were on average younger for those treated by abdominal approach (24-68 years with an average age of 49.4 years vs 15-87 years average 60.9 years). Complications for patients resected through abdominal approach included: operative mortality (1 patient), postoperative bleeding (2 patients); recurrence of prolapsed (1 patient) and anastomotic leak (1 patient). There was no operative mortality in the patients treated through a perineal approach, and one had a recurrence who was retreated with a second resection through abdominal approach followed by a third resection through a repeat perineal approach.

Conclusion. Our results suggested that the perineal resection of rectal prolapse is a safe procedure with low rate of recurrence. Perineal resection also had advantages over abdominal approach of no abdominal wound complications and less compromise of respiratory function.

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Rectal prolapse, or procidentia, is defined as a protrusion of the rectum beyond the anus.¹ The peak incidence of rectal prolapse in adults is after the fifth decade.²

There are two theories for the etiology for rectal prolapse. The first, proposed in 1912 by Moschcowitz,³ is that rectal prolapse is essentially a sliding hernia

through a pelvic fascial defect. An alternate theory proposed in 1968 by Broden and Snellman,⁴ is that the initial step in the genesis of prolapse is circumferential intussusception of the rectum. The anatomic defects associated with prolapse of the rectum include: deep pelvic cul-de-sac, deficient pelvic floor structures through which the rectum herniates, attenuated

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ligamentous attachments to the rectum and presacral fascia, and redundant sigmoid colon susceptible to intussusception.

The best operative approach to rectal prolapse is controversial. Both abdominal and perineal resections have been used by surgeons for management of rectal prolapse for years. Perineal resection of rectal prolapse has been criticized as having a higher rate of recurrence.⁵⁻⁷

Our study examined the experience of a senior colorectal surgeon and compared outcomes for these two approaches to patients with rectal prolapsed.

Materials and Methods

Administrative data from the Department of Surgery at Mackay Hospital were reviewed for patients who had undergone surgical intervention for rectal prolapse. In the 26 year period from April 1987 to October 2013, 41 patients underwent resection of rectal prolapse by a colorectal surgeon (TCH). Patients excluded from analysis included those who had abdominal procedure of rectopexy without bowel resection such as Ripstein's procedure or Wells' procedure; perineal procedure such as Delorme's procedure or Thiersch's wire; and those who had laparoscopic procedures. Demographic data collected included patient gender, age and types of initial operations. Patient outcomes, morbidities and mortalities were analyzed for each group of patients.

Patient treated with abdominal approach were subjected to a midline abdominal incision. Briefly, the rectum was mobilized and the presacral space was entered and dissected, and the rectum was optimally mobilized and elevated. Fixation of the lateral stalks was done by suturing them to the sacral periosteum. Segmental resection of excess sigmoid colonic tissue was performed with an end-to-end anastomosis. For patients with perineal resection, circumferential incision of the rectum proximal to the dentate line was done. Blood supply to rectum was ligated. Redundant rectal tissue was mobilized down to the anal area and resected (Fig. 1). Levatorplasty with suture approximation of puborectalis muscle was performed in patients

with perineal resection. Coloanal anastomosis was accomplished with interrupted and continuous 2-0 Dexon sutures. Sutures were applied through the full thickness of the colon wall and anchored the edges of the dentate line area. Mucocutaneous approximation was optimized.

Results

Our review examined a total of 41 patients, 14 male and 27 female. Patient age ranged from 15 to 87 years old with an average age of 57.8 years. Eleven patients had resection of prolapsed rectum from abdominal approach and 30 patients had resection of prolapsed rectum from perineal approach (Table 1).

In patients resected from an abdominal approach, 5 were male and 6 were female. Age at time of surgery ranged from 24 to 68 years with an average age of 49.4 years. One patient died of postoperative medication event. Two patients encountered postoperative bleeding. One had an anastomotic leak. Another pa-

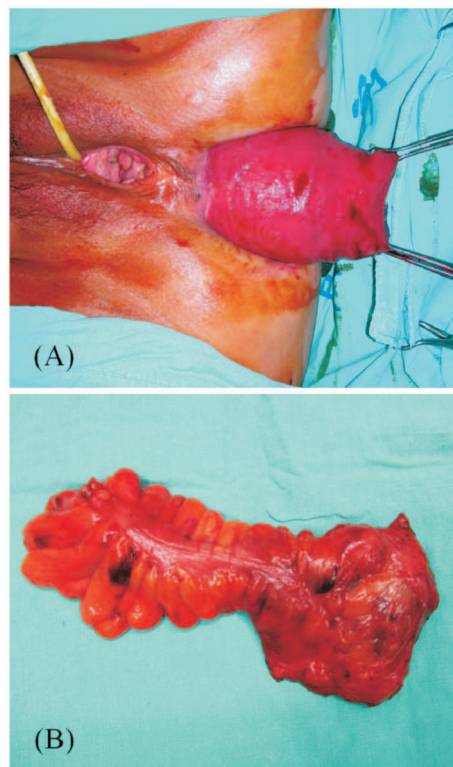


Fig. 1. (A) Operation during perineal approach; (B) Resected gross specimen.

tient had recurrence of prolapse. The average length of hospital stay day was 8.4 days (Table 1).

In comparison, patients resected from perineal approach, 9 were male and 21 were female. Age at time of surgery ranged from 15 to 87 years with an average age of 60.9 years. Postoperative complications included a patient with pulmonary edema leading to respiratory failure. One patient had a recurrence. The average length of hospital day was 5 days (Table 1).

One patient had multiple recurrences of her rectal prolapse. This 74 year old female had a perineal resection initially but had a recurrence. She had an abdominal resection 6 months later, followed by another recurrence. Her third operation, 12 months following the first operation, was a perineal resection. There was no further recurrence after the third surgery.

Discussion

Definitive treatment of rectal prolapse requires a surgical approach. Surgical procedures for rectal prolapse are diverse. Procedures of choice largely include abdominal approaches versus perineal approaches.^{6,8,9}

The abdominal procedure is classified according to the method or the location of bowel fixation. The Ripstein procedure was introduced in 1965, and has been used widely in the United States, and is essentially an anterior sling rectopexy. Intraoperative complications, such as hemorrhage and hematoma in the sacral venous plexus have been reported, and fre-

quently occur in males with a narrow pelvic cavity.⁸ The use of an Ivalon sponge, described by Wells in 1959, was advocated in England,¹⁰ and is a method entailing posterior prosthetic rectopexy. The main complication was prosthetic related infection and resulting pelvic sepsis, usually requiring removal of the prosthesis.¹¹ Resection of redundant sigmoid colon with fixation was also another abdominal procedure. Since the procedure included resection of a segment of bowel, postoperative morbidity is higher compared to other procedures.¹²

Perineal approach described in the literature included Thiersch procedure, Delorme procedure and Altemeier procedure. In 1891, Thiersch in Germany suggested an encirclement procedure in which a prosthesis was inserted around the anus, narrowing the anal opening.¹³ It was recommended to be performed for high risk patients, however, the recurrence rates were high.¹⁴ In 1900, Delorme in France described a method to have the rectal mucosa resected as a column shape and the muscular layer plicated.¹⁵ Again this technique was also criticized for the high recurrence rate (13.5 percent) in one article.¹⁶ In 1971, Altemeier proposed a procedure to have the protruded rectum resected 2-cm above the dentate line, and the mesentery of the sigmoid colon was ligated and resected.¹⁷ The recurrence rate reported in his series was 3%. Other surgical reported that when levatorplasty was performed simultaneously, the recurrence rate was less than 10% in 3-year follow-up.¹⁸

What is the optimal surgical operative approach to rectal prolapse is still debatable. Prior studies have shown that perineal approach had equivalent results as the abdominal approach. Sobrado et al. reported 51 patients who underwent surgical treatment from 1980 to 2002.¹⁹ Abdominal operations were performed in 36 (71%) cases. Presacral rectopexy was the most common abdominal procedure in 29 cases followed by presacral rectopexy with sigmoidectomy in 5 cases. The most common perineal procedure was perineal rectosigmoidectomy associated with levatorplasty in 12 cases. Intraoperative bleeding in the presacral space developed in two cases, and a rectovaginal fistula occurred in another patient after a perineal rectosigmoidectomy. Two recurrences were observed after a mean

Table 1. Patient characteristics, mortality and complications

	Abdominal approach n (%)	Perineal approach n (%)	n (%)
Male	5 (12)	9 (22)	14 (34)
Female	6 (15)	21 (51)	27 (66)
Total	11 (27)	30 (73)	41 (100)
Mortality	1 (9)	0	
Complications (total)	4 (36)	2 (7)	
Postoperative bleeding	2 (18)	-	
Anastomotic leakage	1 (9)	-	
Pulmonary edema	-	1 (3)	
Recurrence	1 (9)	1 (3)	
Hospital stay	8.4 days	5 days	

follow-up time of 49 months. These two recurrences were treated by reoperation. The study suggested that either abdominal or perineal procedures can be used safely with good long-term results. Age, associated medical conditions, and symptoms of fecal incontinence or constipation were the main patient features that could influence the choice of the best surgical approach. Hoal et al. reported 56 patients who underwent operations for rectal prolapse.²⁰ The patency of his patients who underwent an abdominal approach was better than that of perineal repairs. His study also suggested that abdominal approaches had a more favorable effect on patient constipation and anal insufficiency. They recommend perineal approaches be reserved for patients with a very short life expectancy.

In contrast, some recent studies suggested the perineal surgical method was better than abdominal approach. Fleming et al. compared 30-day outcomes following rectal prolapse repair using NSQIP database of 1275 patients. Overall, the perineal approach group had older patients, with more comorbidities. There were fewer minor and major complications in the perineal compared with the abdominal procedure cohorts. No differences in major complications were observed between abdominal rectopexy and perineal approach, but the latter had fewer minor complications. They concluded that the perineal approach was safer than an abdominal approach to the treatment of rectal prolapse.²¹ Similarly, Mistain et al. identified 2188 patients of rectal prolapse indicated that many patients could be safely treated by perineal repair.²²

Besides, some studies suggested abdominal surgery may have respiratory problems. Pasteur, Haldane and Beecher were all convinced of the importance of active collapse of the lung after abdominal operations with shallow breathing as the major cause of postoperative hypoxia and pulmonary complications.²³⁻²⁵ The advantage of perineal approach is no abdominal wound so we think perineal approach is less likely to compromise respiratory function.

Levatorplasty is a key for the successful control of continence in patients with perineal method for rectal prolapse. Cirocco's study reported 103 patients who underwent the Altemeier procedure between 2000 and 2009, and showed excellent results across all age group

with minimal morbidity, allowing patients for shorter hospital stays and reduced recovery period. No recurrences were observed in the younger age group, the authors are waiting for longer follow-up data from this study.²⁶

In conclusion, our cases demonstrate that perineal resection for rectal prolapse is a safe procedure with low recurrence rate. Because there is no abdominal incision, there were fewer wound complications, and this approach is less likely to compromise respiratory function. The perineal approach is also likely to have better value and with reduced hospital stay. The key for the success of perineal resection is resection of adequate length of colon and levatorplasty leads to better continence.

Conclusion

This series suggest that perineal resection is a safer procedure with low recurrence rate. The advantages of perineal resection were no abdominal wound, fewer complications and less compromise of respiratory function.

References

1. Gourgiotis S, Baratsis S. Rectal prolapse. *Int J Colorectal Dis* 2007;22:231-43.
2. Wassef R, Rothenberger DA, Goldberg SM. Rectal prolapse. *Curr Probl Surg* 1986;23:397-451.
3. Classic articles in colonic and rectal surgery. Alexis Victor Moschcowitz, 1865-1937. The pathogenesis, anatomy, and cure of prolapse of the rectum. *Dis Colon Rectum* 1983;26:553-65.
4. Broden B, Snellman B. Procidentia of the rectum studied with cineradiography. A contribution to the discussion of causative mechanism. *Dis Colon Rectum* 1968;11:330-47.
5. Madiba TE, Baig MK, Wexner SD. Surgical management of rectal prolapse. *Arch Surg* 2005;140:63-73.
6. Kim DS, Tsang CB, Wong WD, Lowry AC, Goldberg SM, Madoff RD. Complete rectal prolapse: evolution of management and results. *Dis Colon Rectum* 1999;42:460-6; discussion 466-9.
7. Riansuwan W, Hull TL, Bast J, Hammel JP, Church JM. Comparison of perineal operations with abdominal operations for full-thickness rectal prolapse. *World J Surg* 2010; 34:1116-22.

8. Shin EJ. Surgical treatment of rectal prolapse. *J Korean Soc Coloproctol* 2011;27:5-12.
9. Madoff RD, Mellgren A. One hundred years of rectal prolapse surgery. *Dis Colon Rectum* 1999;42:441-50.
10. Wells C. New operation for rectal prolapse. *Proc R Soc Med* 1959;52:602-3.
11. Ross AH, Thomson JP. Management of infection after prosthetic abdominal rectopexy (Wells' procedure). *Br J Surg* 1989;76:610-2.
12. Luukkonen P, Mikkonen U, Jarvinen H. Abdominal rectopexy with sigmoidectomy vs. rectopexy alone for rectal prolapse: a prospective, randomized study. *Int J Colorectal Dis* 1992;7:219-22.
13. Thiersch C. Carl Thiersch 1822-1895. Concerning prolapse of the rectum with special emphasis on the operation by Thiersch. *Dis Colon Rectum* 1988;31:154-5.
14. Poole GV Jr, Pennell TC, Myers RT, Hightower F. Modified Thiersch operation for rectal prolapse. Technique and results. *Am Surg* 1985;51:226-9.
15. Classic articles in colonic and rectal surgery. Edmond Delorme 1847-1929. On the treatment of total prolapse of the rectum by excision of the rectal mucous membranes or recto-colic. *Dis Colon Rectum* 1985;28:544-53.
16. Lechaux JP, Lechaux D, Perez M. Results of Delorme's procedure for rectal prolapse. Advantages of a modified technique. *Dis Colon Rectum* 1995;38:301-7.
17. 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.
18. Pikarsky AJ, Joo JS, Wexner SD, Weiss EG, Noguerras JJ, Agachan F, et al. Recurrent rectal prolapse: what is the next good option? *Dis Colon Rectum* 2000;43:1273-6.
19. Sobrado CW, Kiss DR, Nahas SC, Araújo SE, Seid VE, Cotti G, et al. Surgical treatment of rectal prolapse: experience and late results with 51 patients. *Rev Hosp Clin Fac Med Sao Paulo* 2004;59:168-71.
20. Hoel AT, Skarstein A, Ovrebo KK. Prolapse of the rectum, long-term results of surgical treatment. *Int J Colorectal Dis* 2009;24:201-7.
21. Fleming FJ, Kim MJ, Gunzler D, Messing S, Monson JR, Speranza JR. It's the procedure not the patient: the operative approach is independently associated with an increased risk of complications after rectal prolapse repair. *Colorectal Dis* 2012;14:362-8.
22. Mustain WC, Davenport DL, Parcels JP, Vargas HD, Hourigan JS. Abdominal versus perineal approach for treatment of rectal prolapse: comparable safety in a propensity- matched cohort. *Am Surg* 2013;79:686-92.
23. Pasteur W. Active lobar collapse of the lung after abdominal operations: a contribution to the study of post-operative lung complications epidural analgesia versus combined spinal/thoracic epidural analgesia. *Lancet* 1910;ii:1080-3.
24. Haldane JS, Meakins JC, Priestley JG. The effects of shallow breathing. *J Physiol* 1919;52:433-53.
25. Beecher HK. Effect of laparotomy on lung volume. Demonstration of a new type of pulmonary collapse. *J Clin Invest* 1933;12:651-8.
26. Cirocco WC. The Altemeier procedure for rectal prolapse: an operation for all ages. *Dis Colon Rectum* 2010;53:1618-23.

原 著

比較經腹部及經會陰部切除直腸脫垂的手術成績

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目的 外科醫師經腹部及經會陰部切除手術來治療直腸脫垂已經行之有年。經會陰部切除直腸脫垂手術被部分外科醫師所詬病的是其高復發率。本研究在於評估單一外科醫師在經腹部及經會陰部切除直腸脫垂的手術治療上之經驗，並評估經會陰部切除直腸脫垂手術是否為一個好的選擇。

方法 自 1987 年 4 月至 2013 年 10 月，共 41 位病患接受同一位外科醫師對直腸脫垂進行手術治療。

結果 在這些病人中，包含 14 位男性及 27 位女性。起初，11 位（包含 5 位男性及 6 位女性）接受經腹部切除直腸脫垂手術，30 位病人（包含 9 位男性及 21 位女性）接受經會陰部切除直腸脫垂手術。經腹部切除直腸脫垂手術這一分組平均年紀較輕，平均年齡 49.4 歲（24 到 68 歲）對比經會陰部切除直腸脫垂手術，平均年齡 60.9 歲（15 到 87 歲）。經腹部切除直腸脫垂手術這一分組，1 位病人術後死亡。2 位病人術後出血，1 位病人產生復發及 1 位病人腸道吻合滲漏。經會陰部切除直腸脫垂手術這一分組，沒有病人術後死亡。1 位病人產生復發，第二次接受經腹部切除手術；再復發，第三次再接受經會陰部切除直腸脫垂手術。

結論 本研究建議經會陰部切除直腸脫垂手術是一個安全且復發率低的手術。經會陰部的方式比經腹部的方式優點有：沒有腹部傷口的併發症，並且較少呼吸方面的問題。

關鍵詞 腹部切除直腸脫垂手術、會陰部切除直腸脫垂手術、直腸脫垂。