Perineal Approaches to Rectal Prolapse

Louis R. Barfield, MD, FACS, FASCRS^{1,2}

¹Baton Rouge Colon and Rectal Associates, Our Lady of the Lake Physicians Group, Baton Rouge, Louisiana

²Department of Surgery, LSUHSC, New Orleans, Louisiana

Address for correspondence Louis R. Barfield, MD, FACS, FASCRS, 7777 Hennessey Blvd, Suite 206, Baton Rouge, LA 70808 (e-mail: lrbarfieldB@aol.com).

Clin Colon Rectal Surg 2017;30:12–15.

Abstract

Keywords

- ▶ rectal prolapse
- ▶ Altemeier
- ▶ rectosigmoidectomy
- ▶ Delorme
- ▶ Thiersch

Full-thickness rectal prolapse is a painful and debilitating condition that often responds well to surgical intervention. The best method of surgical repair is a matter of debate. Historically, perineal approaches have been thought to have inferior outcomes and were therefore reserved for elderly and unfit patients. Despite recent data calling that into question, perineal approaches are still commonly performed and have their role. We present risks and benefits along with a description of perineal approaches for surgical treatment of rectal prolapse.

Procidentia, or full-thickness rectal prolapse, is a disabling problem that has been reported since antiquity. Its first description dates back to Ebers Papyrus of ancient Egypt (est. 1500 BC), and the first report of associated mortality due to prolapse in the medical literature is that of exiled theologian from North Africa, Arius of Alexandra (256–336 AD).¹ Since that time, well over 100 procedures have been described and are broadly categorized as abdominal and perineal approaches.

Abdominal versus Perineal Approaches

There has been much debate over whether an abdominal approach or a perineal approach is best, and to date there is no consensus statement. Historically, perineal procedures have been recommended for elderly or medically unfit patients and thought to be associated with lower operative morbidity and mortality but higher recurrence rates, while abdominal operations have been considered to have higher morbidity but lower recurrence rates. However, with the availability of minimally invasive approaches, the safety and morbidity of abdominal surgery approaches that of perineal operations.² Alternatively, historical differences in recurrence and reoperative rates have recently been called into question. Ricciardi et al retrospectively reviewed 1,772 patients (1,035 transabdominal and 737 transperineal) from a California database over a 36-month period. Reoperation rates were essentially equal for both groups at 11%. They concluded the recommendation of abdominal procedures

based on durability was not founded in the data and unlikely to be based on actual outcomes. They also concluded other variables may be more relevant in deciding upon surgical approach, including comorbidities, patient and surgeon preference or expertise, and functional outcomes.³ Additionally, in 2013, the PROSPER trial compared 78 abdominal and 213 perineal procedures, and no significant differences in recurrence were found between perineal and abdominal approaches.⁴ In 2015, Tou et al reported an updated Cochrane review looking at the effects of different surgical repairs for rectal prolapse. Due to heterogeneity of the small studies, they concluded it was impossible to identify or refute clinically important differences between the alternative surgical operations. Longer follow-up with current studies and larger rigorous trials were felt to be needed to improve the evidence base and to define the optimum surgical treatment for full-thickness rectal prolapse.⁵

Perineal Procedures: Indications

Because procidentia is usually a progressive process that carries a risk of increasing pain, incontinence, incarceration, and strangulation over time, surgery is usually indicated if conservative therapy fails.⁶ Although traditionally recommended for elderly medically unfit patients, perineal procedures are an option for all patients. For the elderly and those with multiple comorbidities, perineal methods are a great choice. For younger, healthier patients, perineal approaches may be a good option as well depending on patient

Issue Theme Approaches and Treatment of Intussusception, Volvulus, Rectal Prolapse, and Functional Disorders of the Colon, Rectum, and Anus; Guest Editor: Jason S. Mizell, MD, FACS, FASCRS

Copyright © 2017 by Thieme Medical Publishers, Inc., 333 Seventh Avenue, New York, NY 10001, USA.
Tel: +1(212) 584-4662.

DOI <http://dx.doi.org/10.1055/s-0036-1593432>.
ISSN 1531-0043.

preference, risk reduction, and desired functional outcomes.³ For example, in young male adults, there is minimal to no risk of erectile dysfunction with a perineal operation, whereas abdominal rectopexy with posterior rectal mobilization may be associated with 1 to 2% risk.⁷

Perineal procedures include perineal rectosigmoidectomy (Altemeier) with or without levatorplasty, rectal mucosal sleeve resection (Delorme), and anal encirclement (Thiersch). The choice of procedure is dependent on patient and procedural factors: gender, function, comorbidities, and presence of fecal incontinence.⁸

Altemeier

The Altemeier or perineal rectosigmoidectomy was first performed by Mikulicz in 1889 and popularized by Altemeier in the 1970s.⁹ To perform the operation, the prolapse is reproduced and approximately 1 cm proximal to the dentate line, a full-thickness circumferential incision is made through the rectum. The mesentery is sequentially mobilized circumferentially and the peritoneal cavity is entered anteriorly. Mobilization is complete when no further rectal or colon redundancy can be prolapsed through the pelvis. At this point, levatorplasty may be performed by plication of the levator ani muscles anterior or posterior to the bowel wall with interrupted long-term sutures. The redundant rectosigmoid colon is then excised and a hand-sewn or circular-stapled coloanal anastomosis is performed¹⁰ (→Fig. 1).

Results

Minimal postoperative pain is the norm as well as a short hospital stay of usually 1 to 2 days. Complication rates are low. Anastomotic leaks are possible, but rates are much lower than typical coloanal anastomoses for cancer. Ris et al in 2012 reported only one leak in review of 60 consecutive patients.¹¹ Further review of the literature also confirms very low leak rates from 1.6 to 3.3%.^{6,7,10,12}

Recurrence rates were a cumulative 37% in trials conducted prior to 1971, but in trials conducted after 1971, the rate is on average approximately 10%. The difference is felt to be due to surgical technique, as in the past there was lack of entry into the peritoneal cavity and subsequent inadequate mobilization.¹³ Altemeier et al reviewed 101 patients in 1971 and reported a recurrence rate of 3%.^{14,15} Kimmins et al in 2001 reported a morbidity rate of 10% and recurrence rate of 6.4% in a study of 63 patients.¹⁶ In addition, Cirocco in 2010 studied 103 patients and reported no recurrences after a mean follow-up of 43 months. Ninety-four percent of the patients with preoperative constipation reported an improvement in symptoms, and 85% of patients with preoperative incontinence noted improvement.¹⁷ In this study, a levatorplasty was performed in all patients. Furthermore, Ris et al in 2011 reviewed 66 patients who underwent an Altemeier procedure. Patients were followed up for 48 months, and recurrence rate was 14% with improved continence in 62%. Continence was not affected by levatorplasty.¹¹

Levatorplasty is associated with a theoretical improvement in postoperative incontinence by restoring the anorectal angle. Although the benefit is not reported by all, many

authors report significant improvement in incontinence.^{17–19} In addition, some authors have found a decrease in recurrence rates associated with levatorplasty. Altemeier routinely performed a levatorplasty and reported very low recurrence rates. Chun et al compared perineal rectosigmoidectomy with and without levatorplasty in 109 patients. They found at a mean of 28 months, and the levatorplasty group was associated with 7.7% recurrence with a mean time to recurrence of 45.5 months versus 20.6% and 13.3 months in the nonlevatorplasty group.¹⁴

Because of the coloanal anastomosis, the Altemeier procedure has been associated with decreased neorectal compliance and may result in symptoms of coloanal syndrome: urgency, frequent bowel movements, and seepage. As a result, studies have looked at transperineal colonic J pouches instead of a conventional straight coloanal anastomosis with improved function in the colonic J pouch group.^{20,21}

Delorme

Delorme, a French military surgeon, was the first to describe this procedure in 1900. The technique is an option for mucosal prolapse or short segment full-thickness rectal prolapse. Patients who are medically unfit or have a history of prolapse procedures, previous pelvic surgery, or pelvic radiation may be considered for this operation. Additionally, it may be a good option for those after previous anterior resection, as the superior rectal artery has been ligated.

The Delorme procedure entails mucosal stripping and not a full-thickness excision. Overall, it is a technically more challenging operation than the Altemeier.¹⁰ One centimeter proximal to the dentate line, a circumferential incision within the submucosal plane is made and mucosal stripping is performed to the most proximal portion of prolapsed bowel and the stripped mucosa is then excised. Longitudinal suture plication of the muscularis propria is then performed. Finally, an anastomosis is performed between the mucosal edges.

Results

Like the Altemeier, hospital stay after Delorme is short and complication rates are thought of as being lower than abdominal approaches. Nevertheless, urinary retention, fecal impaction, infection, and bleeding have been reported in 4 to 12%.²² Stricture and suture line dehiscence have also been reported.

Overall Delorme recurrence rates are higher than the Altemeier procedure likely because the peritoneal cavity is not entered and mucosal resection is limited. Nevertheless, incontinence rates and constipation are improved. Watts and Thompson in 2000 reviewed 101 patients and reported 27% recurrence rate, but 25% of patients displayed improvement in continence and 13% showed improvement in constipation. Additionally, Tobin and Scott reviewed 43 patients noting a 26% recurrence rate and 50% of patients noting improvement in continence. Overall recurrence rates in literature range from 7 to 27%.²³ Reported improvement rates in continence and constipation range from 25 to 70% and 13 to 100%, respectively.^{13,24,25}

Fig. 1 Perineal rectosigmoidectomy (Altemeier). (a-c) Full-thickness excision of the outer cylinder of the prolapse. (d) Mesenteric vessels ligated; stay sutures placed in distal edge of inner cylinder. (e) Anastomosis of the distal aspect of the remaining colon to the rectal stump. (From Whitlow CD. Rectal prolapse and intussusception. In: Beck DE, ed. Handbook of Colorectal Surgery. St Louis, MO: Quality Medical Publishing; 1997:274–298.)

Thiersch Procedure

Thiersch in 1891 first described anal encirclement. Under local anesthesia, a silver wire was placed subcutaneously around the anus. The objective was to supplement the anal sphincter, increase foreign body reaction, and increase sphincter resistance.⁷ Wire is no longer used due to the high risk of ulceration and erosion into the anus. The operation is rarely performed today and only in those who are so medically unfit that other perineal procedures cannot be performed.

The operation is technically fairly simple. Local anesthetic is administered and a radial incision is made on either side of the anus approximately 2 cm from the anal verge. While remaining outside of the external sphincter, a hemostat is used from either incision to encircle the anus to reach the other incision. A material such as Nylon, Dacron, Teflon, polypropylene mesh, fascia lata, Silicone rubber, or Silastic-impregnated mesh is pulled through the wounds encircling the anus. The material is sutured to itself to tighten the anus to

an index finger tautness^{7,10,26} (►Fig. 2). Subsequently, an aggressive bowel regimen, as well as frequent office evaluation, is important to prevent fecal impactions.

Results

Due to complication rates and high recurrence rates, the procedure has been abandoned.²⁷ Complications include fecal impaction, encirclement material rupture, erosion, and sepsis. In addition, recurrence rates are high and recurrent prolapse is associated with higher risk of incarceration and strangulation.

Conclusion

Further prospective randomized trials comparing abdominal rectal prolapse procedures and perineal approaches are needed to assist in selecting the appropriate procedure for each individual patient. Nevertheless, perineal approaches

Fig. 2 Anal encirclement (Thiersch). (a) Lateral incision with prosthetic mesh tunneled around the anus. (b) Mesh completely encircling the anal opening. (c) Completed anal encirclement procedure. (From Whitlow CB. Rectal prolapse and intussusception. In: Beck DE, ed. Handbook of Colorectal Surgery. St Louis, MO: Quality Medical Publishing; 1997:274–298.)

are still often a very appropriate option in many patients in the treatment of rectal prolapse, and good functional results can be expected with low complication rates.

References

- 1 Ashrafian H. Arius of Alexandria (256–336 AD): the first reported mortality from rectal prolapse. *Int J Colorectal Dis* 2014;29(4):539
- 2 Mustain WC, Davenport DL, Parcells 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(7):686–692
- 3 Ricciardi R, Roberts PL, Read TE, Hall JF, Marcello PW, Schoetz DJ. Which operative repair is associated with a higher likelihood of reoperation after rectal prolapse repair? *Am Surg* 2014;80(11):1128–1131
- 4 Senapati A, Gray RG, Middleton LJ, et al; PROSPER Collaborative Group. PROSPER: a randomised comparison of surgical treatments for rectal prolapse. *Colorectal Dis* 2013;15(7):858–868
- 5 Tou S, Brown SR, Nelson RL. Surgery for complete (full-thickness) rectal prolapse in adults. *Cochrane Database Syst Rev* 2015;11(11):CD001758
- 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(4):460–466, discussion 466–469
- 7 Mills S. Rectal prolapse. In: Beck DE, Roberts PL, Saclarides TJ, Senagore AJ, Stamos MJ, Nasser Y, eds., *ASCRS Textbook of Colon and Rectal Surgery*. 2nd ed. New York: Springer-Verlag; 2011: 551–554

- 8 Mills SD. Rectal Prolapse. In: Beck DE, Wexner SD, Hull TL, et al., eds. *ASCRS Manual of Colon and Rectal Surgery*. 2nd edition. New York: Springer; 2014:595–609
- 9 Garley AD, Krieger BR, Ky AJ. Rectal Prolapse. In: Cameron JL, Cameron AM, eds. *Current Surgical Therapy*. 11th ed. St. Louis, MI: Elsevier/Saunders; 2013:192
- 10 Lindsey I, Nicholls R. Rectal Prolapse (Internal and External), Solitary Rectal Ulcer, Descending Perineum Syndrome, and Rectocele. In: Corman ML, Bergamaschi R, Nicholls J, Fazio V, eds. *Corman's Colon and Rectal Surgery*. 6th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2012:651–657
- 11 Ris F, Colin JF, Chilcott M, Remue C, Jamart J, Kartheuser A. Altemeier's procedure for rectal prolapse: analysis of long-term outcome in 60 patients. *Colorectal Dis* 2012;14(9):1106–1111
- 12 Agachan F, Reissman P, Pfeifer J, Weiss EG, Noguera JJ, Wexner SD. Comparison of three perineal procedures for the treatment of rectal prolapse. *South Med J* 1997;90(9):925–932
- 13 Hayden DM, Wexner SD. Rectal prolapse: current evaluation, management, and treatment of historically recurring disorder. In: Steele S, Maykel J, Champagne B, Orangio G, eds. *Complexities in Colon and Rectal Surgery: Decision making and Management*. New York: Springer Science and Business Media; 2014: 173–183
- 14 Madiba TE, Baig MK, Wexner SD. Surgical management of rectal prolapse. *Arch Surg* 2005;140(1):63–73
- 15 Altemeier WA, Culbertson WR, Schowengerdt C, Hunt J. Nineteen years' experience with the one-stage perineal repair of rectal prolapse. *Ann Surg* 1971;173(6):993–1006
- 16 Kimmins MH, Evetts BK, Isler J, Billingham R. The Altemeier repair: outpatient treatment of rectal prolapse. *Dis Colon Rectum* 2001; 44(4):565–570
- 17 Cirocco WC. The Altemeier procedure for rectal prolapse: an operation for all ages. *Dis Colon Rectum* 2010;53(12): 1618–1623
- 18 Williams JG, Rothenberger DA, Madoff RD, Goldberg SM. Treatment of rectal prolapse in the elderly by perineal rectosigmoidectomy. *Dis Colon Rectum* 1992;35(9):830–834
- 19 Chun SW, Pikarsky AJ, You SY, et al. Perineal rectosigmoidectomy for rectal prolapse: role of levatorplasty. *Tech Coloproctol* 2004; 8(1):3–8, discussion 8–9
- 20 Baig MK, Galliano D, Larach JA, Weiss EG, Wexner SD, Noguera JJ. Pouch perineal rectosigmoidectomy: a case report. *Surg Innov* 2005;12(4):373–375
- 21 Yoshioka K, Ogunbiyi OA, Keighley MR. Pouch perineal rectosigmoidectomy gives better functional results than conventional rectosigmoidectomy in elderly patients with rectal prolapse. *Br J Surg* 1998;85(11):1525–1526
- 22 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(11):1339–1346
- 23 Tobin SA, Scott IHK. Delorme operation for rectal prolapse. *Br J Surg* 1994;81:1681
- 24 Pidala MJ. Rectal prolapse. In: Bailey HR, Billingham RP, Stamos MJ, Snyder MJ, eds. *Colorectal Surgery*. Philadelphia, PA: Elsevier Saunders; 2013:475–487
- 25 Watts AM, Thompson MR. Evaluation of Delorme's procedure as a treatment for full-thickness rectal prolapse. *Br J Surg* 2000;87(2): 218–222
- 26 Monson JR, Jones NA, Vowden P, Brennan TG. Delorme's operation: the first choice in complete rectal prolapse? *Ann R Coll Surg Engl* 1986;68(3):143–146
- 27 Labow S, Rubin RJ, Hoexter B, Salvati EP. Perineal repair of rectal procidentia with an elastic fabric sling. *Dis Colon Rectum* 1980; 23(7):467–469
- 28 Madsen MA. Perineal approaches to rectal prolapse. *Clin Colon Rectal Surg* 2008;21(2):100–105