The Egyptian Journal of Hospital Medicine (October 2024) Vol. 97, Page 3606-3610

Posterior Sagittal Mesh Rectopexy versus Delorme's Procedure in The Treatment of Complete Rectal Prolapse in Adult

Abdulhameed M. Abdulshafi, Mohamady M. El-Said, Saied A. Hewidy
Departments of General Surgery, Damanhour Medical Institute of Health, Behaira, Egypt
Corresponding author: Abdulhameed M. Abdulshafi, Mobile: (+20) 01115570556,
E-mail: abdulhameedabdulshafi67@gmail.com

ABSTRACT

Background: Although both transabdominal and perineal approaches have been suggested for correcting rectal prolapse, the optimal procedure for this condition is still up for debate.

Objective: This study aimed to evaluate Delorme's method for treating full rectal prolapse in adults and compare it prospectively with posterior sagittal mesh rectopexy.

Patients and methods: Two groups of twenty-two patients were randomly assigned to have different treatments for total rectal prolapse. Eleven patients in group I got Delorme's surgery (DP), while eleven patients in group II underwent posterior sagittal mesh rectopexy (PSMR). A comprehensive patient history was taken, a detailed physical examination was performed, and a digital evaluation of the sphincter tone was performed as part of the meticulous preoperative evaluation. Ultrasound and electromyography were used to assess patients with fecal incontinence.

Results: Constipation affected 681% of patients, incontinence to flatus 27.2%, loose stool 13.6%, and solid stool 9%. Mass bulging through the anus on straining was the most prevalent symptom. Group II (PSMR) had an average operating time of 80 minutes, while group I (DP) had an average operating time of 106 minutes with a considerable difference. Up to twelve months of follow-up was scheduled. In group 1(DP), 2 patients (18.2%) experienced a complete recurrence, while in group 1I (PSMR) 2 patients (18.2%) experienced a partial recurrence. Postoperative constipation was experienced by one patient (9.1% of group I) and two patients (18.2% of group II). Within two to four months after surgery, the patients who had anal incontinence due to flatus or loose stool before the procedure regained continence, except for two patients who had incontinence due to solid stool, who did not recover continence at all. **Conclusions:** Patients with complete rectal prolapse may benefit from the posterior sagittal approach, which has a short operating time, a good functional outcome, and a largely partial recurrence rate.

Keywords: Posterior sagittal mesh rectopexy, Delorme’s procedure, Rectal prolapse.

INTRODUCTION

Surgeons have long been captivated by the phenomenon of rectal prolapse. There is still no one best surgical procedure that has been found. Rectal prolapse's cause is still up for debate, although the prevalence of incontinence and constipation, two of its linked functional issues, is well-known [1, 2].

The treatment of rectal prolapse has been documented using over a hundred distinct surgical techniques. Modern minimally invasive techniques have replaced older encirclement methods for the surgical treatment of rectal prolapse [3–8]. Controlling the prolapse, restoring continence, and preventing poor evacuation are the goals of rectal prolapse treatment [9, 10-12]. Rectopexy, anterior resection, rectosigmoidectomy, anal encirclement, and other abdominal and perineal treatments are available for the repair of rectal prolapse [6-9]. Rectal prolapse is best treated with abdominal surgeries that include dissection and fixation of the rectum. These procedures are often reserved for young and physically healthy patients at many sites. The outcomes of several abdominal operations are similar [10-12].

Sexual dysfunction, namely impotence and sphincteric dysfunction due to injury to the pelvic nerve, is a major issue for male patients undergoing abdominal surgeries [11, 12].

Only older individuals with substantial co-morbidities should undergo perineal operations. Treatment of young male patients is best accomplished via perineal methods due to the reduced likelihood harm to the pelvic nerves. There is a substantial recurrence incidence related with perineal methods such as the Delorme technique and perineal rectosigmoidectomy [8, 13-15].

Patients with anal incontinence can have their anal sphincter repaired using the posterior sagittal approach, which also exposes the retro-rectal area and the distal part of the rectum [16, 17]. This study aimed to compare the functional outcomes, recurrence rates, and morbidity rates of the Delorme surgery with posterior sagittal rectopexy in young adults with full-blown rectal prolapse.

PATIENTS AND METHODS

This was a prospective study conducted at The Department of Surgery of Damanhur Teaching Hospital from April 2012 till April 2016.

Inclusion criteria: Complete rectal prolapse externally visible on straining and age of 18 years or older. A written informed consent was taken from all the patients. Twenty-two patients with complete rectal prolapse were randomly divided into two groups: Group I included 11 patients underwent Delorme's procedure (DP) and group II that comprised 11 patients underwent posterior sagittal mesh rectopexy (PSMR).

Received: 13/06/2024
Accepted: 14/08/2024

Preoperative assessment: Full history taking, thorough general examination, meticulous perineal examination with digital assessment of the sphincter tone, barium enema, and colonoscopy. Patients with fecal incontinence were evaluated by electromyography (EMG) and endoanal ultrasonography.

Operative technique:

Posterior sagittal approach:

All patients had preoperative bowel cleaning enema and prophylactic antibiotics including metronidazole. Intradural anesthesia (saddle block) was used for all patients. Reducing the prolapse and inserting a Foley urethral catheter were preoperative procedures. The patients were positioned in a jackknife position and an analogous incision was made in the natal cleft, which runs approximately 7 cm from the coccyx down to the external anal muscle complex, but does not go through it. Next, a length of approximately 10 to 12 centimeters were carefully removed from the rectum's posterior and lateral walls (Fig.1). Repair of the sphincter complex was accomplished with Proline number 0, and the rectum was horizontally plicationed using 3/0 Proline sutures. The rectum's lateral and posterior surfaces were stitched with a 10×3 cm piece of T-form polypropylene mesh. Sutures for fixing and suspending the sacrum were threaded through the sacrum's back and lateral aspects, and then through the polypropylene mesh and the seromuscular coat on the rectum's posterior and lateral surfaces (Fig. 2).

The posterior attachment to the sacrum was accomplished by raising the distal rectum (Fig. 3).

The midline was then approximated with interrupted Vicryl sutures that went through the seromuscular coat of the rear of the rectum to fix the para-sagittal muscles and levator ani on both sides. Finally, closed suction was used to close the skin incision. Patients were prescribed laxatives during the postoperative period to alleviate constipation and ease the straining required for defecation. The drain was removed after 2 to 3 days of diligent wound care, which included frequent dressing changes to prevent infection.

Fig. (1): Incision and rectal dissection**.**

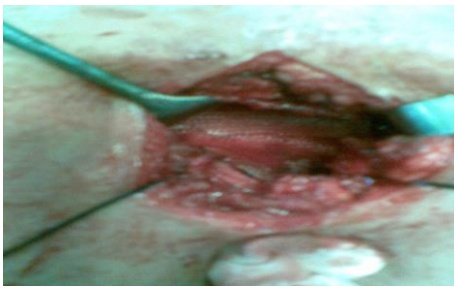

Fig. (2): Mesh fixation**.**

Fig. (3): Rectum fixation.

Delorme's procedure:

A circumferential incision was created in the mucosa, approximately 2 cm above the dentate line, after injecting a 1:10,000 epinephrine solution into the submucosa, and the prolapse was fully expanded. The muscularis layer was reached by dissecting the mucosa up to the vertex of the prolapse (Fig 4).

The rectal musculature was reduced and invaginated using a 6- to 8-stitch (Vicryl 0) longitudinal suture (Fig. 5 & 6). After the mucosa that had been dissected was removed (Fig. 7), the process was completed by stitching loosely (Vicryl 00) from the mucosa that was closest to the dentate line to the one that was furthest away (Fig. 8). A rectal tube was placed for a duration of two days (Fig. 9).

It was recommended to limit oral intake for the first three days following surgery. For the first week after surgery, patients took diclofenac and oral metamizole to prevent constipation and heavy straining when defecating. Proper hydration and dietary fiber were topics of patient education before to release. Time spent in the operating room, amount of time spent in the hospital, and the incidence of wound infections, constipation, incontinence, and prolapse recurrence were all considered clinical outcomes.

Fig. (1): The mucosa was dissected

Fig. (2): Plication of muscle

Fig. (3): Plication of muscle

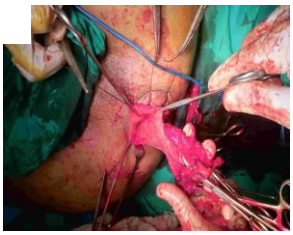

Fig. (7): Excision of mucosa

Fig. (8): Mucosa approximation

Fig. (9): Rectal tube.

At the 1, 3, 6, and 12 month, patients were seen in outpatient setting for follow-up. Whether the patient was very satisfied, somewhat satisfied, or not satisfied at all with the surgery was the question posed.

Ethical approval:

Before we start the research we take approval from the scientific committee of the hospital.

All aspects of the scientific researches were fulfilled during the whole period of the research.

All patients included in the research were informed about the procedure, its steps, its possible complications and how to coordinate with the research.

Statistical analysis:

The collected data were tabulated and analyzed using SPSS version 16 soft ware (SPSS Inc, Chicago, ILL Company).

When comparing (PSMR) and (DP) before and after the procedure, statistical analysis using the Chi-square test was employed, and a p-value ≤ 0.05 was deemed statistically significant.

RESULTS

22 individuals were chosen to participate in the research. Eleven patients underwent Delorme's operation (DP) in group I, and eleven patients underwent posterior sagittal mesh rectopexy (PSMR) in group II. The patients were randomly assigned to each group. They were 17 men (or 77.3%) and 5 girls (or 22.7%). Group 1 had a male to female ratio of 3.4:1, while group 11 had a ratio of 4.5:1. Each patient ranged in age from twenty-two to fifty-two. Group 1 (DP) patients had an average age of 34.86 (range: 25–49) years, whereas group 11 (PSMR) patients had an average age of 33.42 (range: 22–52) years. Both groups had similar mean ages. One hundred percent of patients reported a mass that protruded through the anus when they strained, while fifteen patients (681% of the total) reported constipation; eight of these patients were in group 1 and seven were in group 11. In 17 individuals (63.6%), pruritus ani was seen; eight patients (72.7%) from group 1 and nine patients (81.1%) from group 11. Furthermore, three patients (13.6%) experienced incontinence due to loose stool, and six patients (27.2%) experienced incontinence due to flatus. Two patients (9% of the total) in group 1 and one patient in group 11 experienced solid stool. Group I (DP) had an average operating time of 106 minutes, whereas group II (PSMR) had an average of 80 minutes. Up until the twelve-month, all patients were routinely monitored. In group 1 (DP), two patients (18.2%) experienced recurrence, while in group 1I, the recurrence was limited to anterior mucosal prolapse (PSMR). In group 1, it was full-blown prolapse, while one patient in group 11 experienced a fresh episode of constipation. Nine percent of patients in group I and two patients in group II continued to experience constipation after surgery. Within two to four months after surgery, individuals in group 11 who had anal incontinence due to flatus or loose stool before the procedure restored continence more quickly than those in group 1, however only one patient in group 11 who had incontinence due to solid stool regained continence. There was no death in group11, and three patients had minor wound infections. Among both groups, 78.8% were satisfied with their surgical results [Table 1].

Table (1): Contrast between the two categories

Variables	Group1	Group11	p value
Age (Years)	34.8 (25-49)	33.4 (22-53)	0.371
Operative time (Minutes)	106 (120-160)	80 (70-90)	0.004
Recurrence	2 (18.2%)	2 (18.2%)	0.271
Constipation	1 (9.1%)	2 (18.2$)	0.620
Incontinence	1 (9.1%)	1 (9.1%)	0220.

DISCUSSION

It is generally believed that the perineal approach in treatment of complete rectal prolapse results in less peri-operative morbidity and mortality. These advantages have, until recently, been considered to be offset by a higher recurrence rate. **Janjua and his team** [18], documented in their study similar results of better perioperative complications. While **Fan and his colleagues** [19] documented in their meta-analysis that it is difficult to prefer a specific procedure for rectal prolapse management. **Wang and his colleagues** [20] revealed in their study that Delorme's procedure had a significant less operative and postoperative complications, which run in lines with our results. Also, **Kohata and his coworkers** [21] concluded in their study that Delorme's procedure was associated with less post-operative functional disorders of the rectum, which run in lines with our results. **De la Torre and his colleagues** [22] concluded in their study that Delorme's procedure has significant less complications and recurrence rate, which run in lines with our study and this what **Milve and his workers** [23] found in their study that Delorme's procedure is associated with good structural and functional results.

In our study total improvement **in incontinence** was in 9 out of 11 cases (82.5%), incontinence was cured in four out of five patients from group1 and in three out of four patients from group11 (80% vs.75%). Incontinence to solid stool persisted in patients who were suffering from rectal prolapse for > 3 years due to pudendal nerve damage as was shown by EMG. **Smedberg and his colleagues** [24] concluded in their study that there was no difference between Delrome's procedure and other abdominal or perineal procedures regarding incontinence, which run in lines with our results.

In the present study during follow–up at 12 months, **recurrence** (mucosal prolapse only) was reported in 2 patients (18.9%) of group 11 (PSMR), and complete prolapse in 2 patients (18.9%) from group 1 (DP). **Plaskett and his colleagues** [25] reported in their study that the recurrence rate after Delrome's "perineal approach" for rectal prolapse was 23% without difference between trained and untrained surgeons, which run in lines with our results. While, **Aslam and his coworkers** [26] found in their study that the recurrence rate was 7%, which is contradicting with our results. **Tanabe *et al.*** [27] in their study concluded that recurrence after Delrome's procedure was reported with older age than with younger age and this is contradicting with our study.

Smedberg and his colleagues [24] concluded in their study that recurrence was higher in Delrome's procedure and other abdominal or perineal procedures, which disagree with our results. In addition, **Emile and his colleagues** [28], **Pares and coworkers** [29] and **Leo and his colleagues** [30] documented in their studies that there was no difference between Delorme's procedures and other pelvic or abdominal procedures regarding recurrence rate, which run in lines with our results. Also, **Chung and his team** [31] found in their study that there was no difference between Delorme procedure and abdominal procedures for management of rectal prolapse regarding post-operative complications and/or recurrence, which agrees with our results.

CONCLUSION

When it comes to people suffering from full-blown rectal prolapse, a treatment known as posterior sagittal rectopexy with prolene mesh yielded excellent functional outcomes in a remarkably minimal amount of time. However, Delorme's technique can rectify the partial recurrence. To definitively state that this treatment approach is superior to the Delorme's surgery, larger-scale randomized controlled trials with long-term follow-up are required.

- **Conflicts of interest:** Nil.
- **Funding:** No funding.

REFERENCES

1. **Kairaluoma M , Kellokumpu I (2005):** Epidemiologic aspects of complete rectal prolapse. Scand J Surg., 94: 207-210.
2. **Hussein A, Helal S (2000):** Schistosomal pelvic floor myopathy contributes to the pathogenesis of rectal prolapse in young males. Dis Colon Rectum, 43: 644-649.
3. **Kenapati A, Gray R, Middleton L *et al.* (2013):** A randomized comparison of surgical treatments for rectal prolapse. Colorectal Dis., 5: 145-148.
4. **McKee R, Lauder J (1992):** A prospective randomised study of abdominal rectopexy with and without sigmoidectomy in rectal prolapse. Surg Gynecol Obstet., 174: 145-148.
5. **Luukkonen P, Mikkonen U, Järvinen H (1992):** Abdominal rectopexy with sigmoidectomy vs rectopexy alone for rectal prolapse: a prospective, randomised study. Int J Colorectal Dis., 7: 219-222.
6. **Finlay I , Aitchison M,(1991):** Perineal excision of the rectum for prolapse in the elderly. Br J Surg., 78: 687-689.
7. **Williams J, Rothenberger D, Madoff R (1992): Treatment of rectal prolapse in the elderly by**

perineal rectosigmoidectomy. Dis Colon Rectum, 35: 830-834.

8. **Lee S, Kye B, Kim H, Cho H, Kim J (2012):** Delorme's procedure for complete rectal prolapse: Does it still have it's own role? Korean Soc Coloproctol., 28(1): 13-18.
9. **Kuijpers H (1992):** Treatment of complete rectal prolapse: To narrow, to wrap, to suspend, to fix, to encircle, to plicate or to resect? World J Surg., 16: 826-830.
10. **Yakut M, Kaymakciioglu N, Simsek A (1998):** Surgical treatment of rectal prolapse: A retrospective analysis of 94 cases. Int Surg., 83: 53-55.
11. **Kim D, Tsang C, Wong W *et al.* (1999):** Complete rectal prolapse: Evolution of management and results. Dis Colon Rectum, 42: 460-466.
12. **Huber F, Stein H, Siewert J (1995):** Functional results after treatment of rectal prolapse with rectopexy and sigmoid resection. World J Surg., 19: 138-143.
13. **Marchal F, Bresler L, Ayav A *et al*. (2005):** Long-term results of Delorme's procedure and Orr-Loygue rectopexy to treat complete rectal prolapse. Dis Colon Rectum, 48: 1785-9.
14. **Lieberth M, Kondylis L, Reilly J, Kondylis P (2009):** The Delorme repair for full-thickness rectal prolapse: A retrospective review. Am J Surg., 197: 418-23.
15. **Fazeli M, Kazemeini A, Keshvari A, Keramati M (2013):** Delorme's Procedure: An effective treatment for a full-thickness rectal prolapse in young patients. Ann Coloproctol., 29(2): 60-5.
16. **Harry E (1994):** The posterior sagittal approach: Implications in adult colorectal surgery. Dis Colon Rectum, 37: 1-11.
17. **Kent C, Nicholas P, Ralph B, Bernard W, Thompson T (1982):** Posterior surgical approaches to the rectum. Ann Surg., 677-80.
18. **Janjua M, Kearse L, Watson K *et al.* (2024):** Less is more: Outcomes of surgical approaches to rectal prolapse in patients with cirrhosis. J Surg., 10:10
19. **Fan K, Cao A, Barto W, De Lacavalerie P (2020):** Perineal stapled prolapse resection for external rectal prolapse: A systematic review and meta-analysis. Color Dis., 22: 1850-1861.
20. **Wang H, Zhang F, Shao X, Shen Z (2022):** Altemeier and Delorme procedures are efficacious and safe for treatment of rectal prolapse: A retrospective analysis. Res Square, 1: 1-14.
21. **Kohata A, Shimizu W, Kochi M, Takakura Y, Ohdan H (2021):** A case of effective Delorme's procedure for colonic mucosal prolapse after inter-sphincteric resection. J Surg Case Reports, 9: 1-3.
22. **De la Torre L, Moreno M, Cogley K, Wehrli L, Montañez A, Jasso K (2019):** Transanal endorectal approach for the treatment of idiopathic rectal prolapse in children: Experience with the modified Delorme's procedure. Oper Tech., 54(4): 857-861.
23. **Milev I, Mitevski A, Karagjozov P (2022):** Delorme "procedure for full thickness rectal prolapse with complete fecal incontinence": A report of two cases. JMS., 5(3): 13-19.
24. **Smedberg J, Graf W, Pekkari K, Hjern F (2022):** Comparison of four surgical approaches for rectal prolapse: multi-centre randomized clinical trial. BJS Open, 6(1): 1-11.
25. **Plaskett J, Baigrie R, Thomson S (2020):** Recurrence after Delorme's procedure in a single and multi-surgeon setting. South Afr J Surg., 58(2): 78-85.
26. **Aslam I, Sherzaman B, Mukhtar Z (2019):** Delorme's procedure; 5 years experience at a Teaching Hospital, for treatment of complete rectal prolapse. PJMHS., 13(2): 415-417.
27. **Tanabe T, Yamaguchi E, Nakada T, Nishio R, Okamoto K, Yamana T(2022):** Longer prolapsed rectum length increases recurrence risk after Delorme's procedure. Ann Coloproctol., 38(4): 314-318.
28. **Emile S, Elbanna H, Youssef M *et al.* (2017):** Laparoscopic ventral mesh rectopexy vs Delorme's operation in management of complete rectal prolapse: A prospective randomized study. Colorectal Dis., 19(1): 50-57.
29. **Parés D, Drami I, Adams K, Grossi U, Suliman I, Knowles C (2017):** Use of the Harmonic scalpel for Delorme's procedure. Colorectal Dis., 19(6): 0232-0234.
30. **Leo C, Campennì P, Hodgkinson J *et al.* (2018):** Long-term functional outcome after internal Delorme's procedure for obstructed defecation syndrome, and the role of postoperative rehabilitation. J Invest Surg., 31(3): 256-262.
31. **Chung J, Ju J, Kwak H (2023):** Comparison of abdominal and perineal approach for recurrent rectal prolapse. Ann Surg Treat Res., 104(3):150-155.