



# End-to-end anal Sphincter Repair in Treatment of Post-traumatic Fecal Incontinence

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J Coloproctol 2021;41(3):332–334.

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## Abstract

The present report describes the end-to-end technique of anal sphincter repair in a 36-year-old female patient with post-vaginal delivery fecal incontinence (FI). The patient had a history of two vaginal deliveries and the symptoms of FI were observed after the second delivery. On assessment of the severity of FI using the Wexner incontinence score, the patient had a score of 12. Endoanal ultrasonography revealed an anterior defect of the external anal sphincter extending from 11 to 3 o'clock. The patient had no previous anal surgery and did not have any medical comorbidities.

## Keywords

- ▶ end-to-end
- ▶ anal sphincter
- ▶ repair
- ▶ post-traumatic
- ▶ fecal incontinence

The operation time was 45 minutes. No intraoperative complications were recorded. At 12 months of follow-up, the patient showed significant improvement in the continence state, with her Wexner score dropping to 4. No postoperative complications were recorded. We can conclude that end-to-end anal sphincter repair is a technically feasible operation that confers satisfactory improvement in the continence state without imposing much tension on the site of sphincter repair.

## Introduction

Fecal incontinence (FI) is one of the challenging colorectal conditions that have a significant impact the quality of life and daily activities of the patient.<sup>1</sup> Fecal incontinence can be secondary to various etiologies such as trauma induced by vaginal delivery or anorectal surgery, neurogenic disorders, and rectal prolapse. However, in some patients, idiopathic FI with no obvious underlying pathology is reported.<sup>2</sup>

Vaginal delivery is one of the well-known causes of FI, particularly after repeated and difficult deliveries. In one study, between 3 and 25% of women reported stool or flatus incontinence after childbirth.<sup>3</sup> The main underlying mechanism of postlabor FI is injury to the anal sphincter muscles, either due to a spontaneous perineal laceration or due to an extended episiotomy.

Treatment of vaginal delivery-induced FI involves anatomic repair of the anal sphincters and sacral neuromodulation. The technique of anal sphincter repair can entail an end-to-end repair or an overlapping repair. A review of the literature<sup>4</sup> concluded that both repair techniques are followed by similar symptomatic outcomes at 12 months of follow-up.

## Case Presentation

The present report describes the end-to-end technique of anal sphincter repair in a 36-year-old female patient with post-vaginal delivery FI. The patient had a history of two vaginal deliveries and the symptoms of FI were observed after the second delivery when the patient sustained a third-degree perineal laceration caused by obstetric trauma during

received  
December 16, 2020  
accepted after revision  
June 15, 2021

DOI <https://doi.org/10.1055/s-0041-1735543>.  
ISSN 2237-9363.

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difficult labor. On assessment of the severity of FI using the Wexner incontinence score,<sup>5</sup> the patient had a score of 12. Endoanal ultrasonography revealed an anterior defect of the external anal sphincter extending from 11 to 3 o'clock. The patient had no previous anal surgery and did not have any medical comorbidities.

The procedure (**Attached -Video 1**) was done under spinal anesthesia with the patient placed in the modified lithotomy position. Two grams of cefotaxime were given by induction as prophylactic antibiotics. An incision was made using electrocautery just outside and parallel to the anal sphincters at the site of the sphincter defect. Sharp dissection was performed in the extrasphincteric plane to identify the ends of the anal sphincter muscles, which were retracted circumferentially and displaced laterally from the normal position.

### Video 1

- Demonstration of end to end anal sphincter repair. Online content including video sequences viewable at: <https://www.thieme-connect.com/products/ejournals/html/10.1055/s-0041-1735543>.

To differentiate the external anal sphincter fibers from the fibrous scar, the diathermy was used to induce twitches of the external sphincter muscles when touched. The dissection was performed, dividing any fibrous bands between the muscles fibers and mobilizing the external sphincter muscles on both sides, over one-third of the anal circumference.

After mobilization of the ends of the external anal sphincter on both sides, end-to-end repair was conducted using polypropylene 2/0 sutures on a round needle. A good grip of the sphincter muscles on both sides was taken and both ends were approximated, taking care to avoid tight sutures. Upon completion of the external sphincter repair, additional sutures were taken to approximate the levator ani muscles on both sides. Finally, a drain was placed in the subcutaneous space and the subcutaneous tissue and skin were approximated using polyglactin 3/0 sutures.

## Results

The operation time was 45 minutes. No intraoperative complications were recorded. At 12 months of follow-up, the patient showed significant improvement in the continence state, with her Wexner score dropping to 4. No postoperative complications were recorded.

## Discussion and Conclusions

The development of fecal incontinence after vaginal delivery remains a challenging problem, particularly in resource-limited settings. Up to 25% of women experience minor to moderate degrees of fecal incontinence after normal labor,

and some develop more severe degrees of FI that can be long-standing.

Conservative treatment of post-vaginal delivery FI may succeed in some patients when the extent of anal sphincter injury is limited and provided that the integrity and strength of the anal sphincter muscles are appropriate. However, surgical intervention is necessary in many patients.

Surgical repair of anal sphincter muscles is classically classified as end-to-end repair or overlapping repair. The overlapping repair was suggested to improve the outcome by prevention of dehiscence and gaping between the sphincter ends. Nonetheless, a literature review concluded that both repair techniques have similar continence outcomes 1 year postoperatively.<sup>4</sup> Three randomized trials failed to demonstrate the superiority of one technique over the other.<sup>6-8</sup> In contrast, another randomized trial found end-to-end repair to be associated with lower rates of FI when compared with overlapping repair.<sup>9</sup>

In addition to the repair technique, the suture material used for repair was presumed to have an impact on the continence outcome on the long-term. However, this was not proved by a randomized trial conducted by Williams et al.,<sup>7</sup> who randomized women with anal sphincter injury during childbirth into four groups: overlapping repair with polyglactin (Vicryl); end-to-end repair with polyglactin (Vicryl); overlapping repair with polydioxanone (PDS); and end-to-end repair with PDS. The authors concluded that, irrespective of the suture material and repair method used, sound anal sphincter repair performed by an appropriately trained surgeon is followed by good outcomes.

Regarding the patient in the present report, end-to-end anal sphincter repair was technically feasible and conferred satisfactory improvement in the continence state without imposing much tension on the site of sphincter repair.

### Author contributions

Emile S. edited the video and wrote the manuscript. El-Said M. performed the procedure and revised the manuscript.

### Conflict of interests

The authors have no conflict of interests to declare.

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