RESIDENT'S CORNER

Management of Obstetric Anal Sphincter Injuries

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CASE SUMMARY: A 50-year-old woman with a several-year history of fecal incontinence (FI), urgency, and perianal discomfort was referred for treatment. These symptoms were having a significant impact on her quality of life. She reported FI to both liquid stool and air, which was associated with urgency. Her Cleveland Clinic Fecal Incontinence score was 15. Her medical history was significant for 3 vaginal deliveries, each 18 months apart, beginning at the age of 25 years. Her first 2 deliveries were precipitous labors; however, her last standard vaginal delivery at the age of 29 years was complicated by a prolonged second stage of labor with a forceps delivery resulting in a "tear." The patient reported that it was repaired in her labor room. Physical examination was remarkable for reduced anal sphincter tone; however, no overt anatomical deformity was seen. Conservative measures, including fiber supplementation and pelvic floor rehabilitation, had only partially improved her symptoms. Endoanal ultrasound demonstrated a partial external anal sphincter defect of 30%, extending from the 9 o'clock to 12 o'clock position. She underwent a successful sphincteroplasty, using an overlapping technique with polydioxanone suture. Postoperatively, laxatives were used for 6 weeks, at which time the patient recommenced pelvic floor physiotherapy. At follow-up 3 months postoperatively, her Cleveland Clinic Fecal Incontinence score decreased to 6.

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Funding/Support: None reported.

Financial Disclosure: None reported.

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Dis Colon Rectum 2025; 68: 510–513
DOI: 10.1097/DCR.0000000000003697

CLINICAL QUESTIONS

1. What is the role of the gynecologist in the primary repair of obstetric anal sphincter injuries, and when should a colorectal surgeon be involved in the acute management?
2. What is the role of the colorectal surgeon in the evaluation and management of obstetric anal sphincter injuries in cases of nonhealing, persistent symptoms, or continence concerns in the intermediate and long-term settings?

BACKGROUND

Obstetric anal sphincter injuries (OASIS) are defined as damage to the anal sphincter complex during vaginal childbirth. The severity of OASIS is graded on the basis of the extent of anatomical disruption. Third-degree tears involve varying degrees of injury to the external anal sphincter, further subclassified into 3a, 3b, and 3c based on the extent of muscle involvement. Fourth-degree tears are characterized by full-thickness disruption, encompassing both the internal anal sphincter and the rectal mucosa, as illustrated in Figure 1.

The reported incidence of OASIS varies greatly, ranging from 0.5% to 19% of childbirths.[1–3] The sequelae of OASIS are profound, encompassing fecal and flatus incontinence, dyspareunia, and psychological distress, significantly impacting the quality of life for the affected individuals. In addition, OASIS can influence future delivery mode, as there is an increased risk of recurrence in subsequent pregnancies.

Historically, OASIS has posed challenges due to unrecognized injuries or inappropriate grading, which is thought to result from poor anatomical classification.[4] The implementation of standardized terminology for OASIS, including perineal trauma classification (Table 1), has been vital in facilitating better treatment. It has enabled further research and education into prevention, identification, and repair. Specifically, the repair technique has been improved through standardized techniques, the selection of suture material (polydioxanone suture or Vicryl),

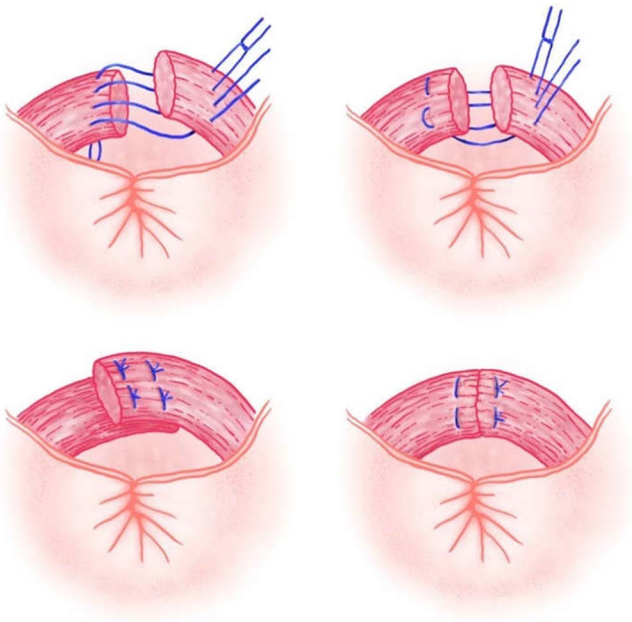


FIGURE 1. Methods for surgical repair of anal sphincter tears: overlap technique (images on the left) and end-to-end technique (images on the right). © 2021 by the authors (Spinelli et al[1]; https://www.mdpi.com/2077-0383/10/15/3261). Licensee MDPI, Basel, Switzerland. This article is an open-access article distributed under the terms and conditions of the Creative Commons Attribution [CC BY] license).

TABLE 1. Sultan classification of perineal trauma[2]

Degree	*Injury*
First	Laceration of the vaginal epithelium or perineal skin only
Second	Involvement of the perineal muscles but not the anal sphincter
Third	Disruption of the anal sphincter muscles that should be further subdivided into: 3a: <50% thickness of external sphincter torn 3b: >50% thickness of external sphincter torn 3c: internal sphincter also torn
Fourth	A third-degree tear with disruption of the anal epithelium as well
Buttonhole tear of the rectum	Isolated tear of the rectum without involvement of the anal sphincter

routine postoperative management, and courses accrediting the surgical competence of clinicians performing the repair.[4,5] Despite prevailing assumptions regarding the anatomical expertise of colorectal surgeons, traditionally positioning them as primary repair specialists, evidence suggests limited exposure to acute OASIS.[3,5]

This review seeks to build on existing knowledge in the field by examining the role of colorectal surgeons in OASIS management in acute, intermediate, and long-term settings. We aim to contribute to the understanding of optimal care pathways for patients with OASIS.

PRESENTATION AND DIAGNOSIS

The presentation of OASIS can manifest either immediately after childbirth or with a delayed onset. Although all women who undergo vaginal childbirth are inherently susceptible to such injuries, this risk is significantly heightened by preexisting predisposing factors. These include a prolonged second stage of labor, nulliparity, instrumental delivery, and fetal macrosomia.[6] There is a higher rate of OASIS among people of Southeast Asian descent.[6] Immediate postpartum injury typically presents as discernible perineal lacerations, warranting systematic examination and grading. It is worth noting that although the perineal skin may be intact, occult injury is not infrequent. Physical assessment involves a thorough inspection of the perineum, coupled with a digital rectal examination to assess transverse perineal muscle attenuation, identify the potential extension of tears into the anal sphincter complex, and detect buttonhole tears.[5] This examination should facilitate prompt initiation of primary repair, with cases involving suspected third- or fourth-degree tears necessitating surgical repair within a theater setting.

Injuries that initially evade detection can manifest with chronic anorectal symptoms, encompassing urgency, perianal pain, flatulence, or FI, as well as fistula, including rectovaginal and anovaginal.[7] The criterion standard for assessing anorectal symptoms precipitated by OASIS is endoanal ultrasound (EAUS). EAUS assesses the integrity of the internal and external anal sphincter complex providing information on the site, size, and anatomical location of the defect.[1] Although considered the criterion standard, its use is limited by tolerability, availability, appropriately trained personnel, and user variability. Alternative methods of assessing OASIS include transperineal ultrasound, MRI, and anorectal manometry.[4] Emerging techniques, such as pudendal nerve terminal motor latency testing, referred to as impedance spectroscopy, represent promising advancements in medical diagnostics. These methods are characterized by their low cost, minimal invasiveness, and suitability for use by less experienced practitioners. Pudendal nerve terminal motor latency testing shows potential in the early detection of OASIS, enabling timely primary repair.[8] However, these methods are also limited by restricted accessibility, requisite user proficiency, cost considerations, and test duration.[1]

MANAGEMENT

The management of OASIS depends on the timing of recognition.[5] When OASIS is diagnosed in the acute setting, that is, within 12 to 24 hours[5] after childbirth, it should prompt consideration of primary repair before significant scar formation. The recommended method of primary repair is the overlapping sphincteroplasty technique (Fig. 1). Ultimately, there is no difference in the long-term rates of FI after

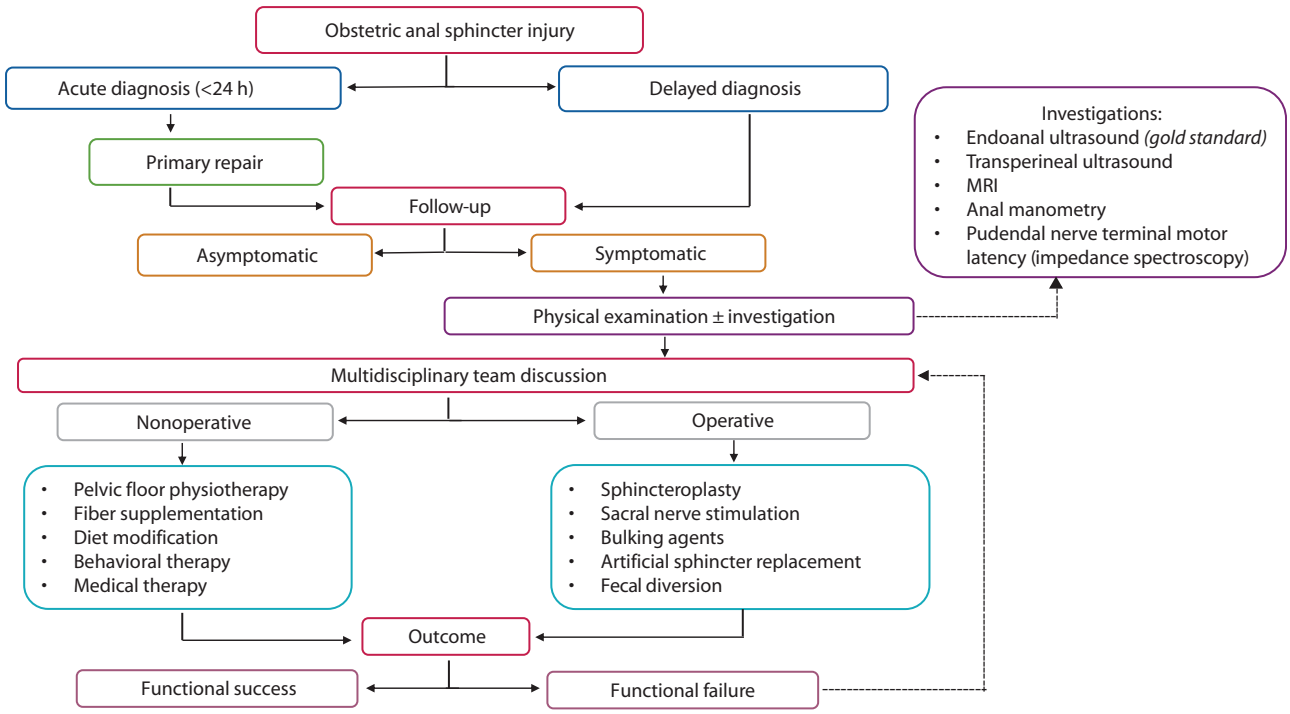
overlap or end-to-end sphincteroplasty. However, the overlapping technique has superior patient-reported outcomes regarding fecal urgency symptoms.[9] Primary repairs performed by colorectal surgeons have been associated with improved long-term functional outcomes,[10] demonstrating the clear advantage of early specialist involvement. A colorectal consultation should be considered in cases involving a rectal mucosal tear exceeding 7 cm or when there is evidence of fecal contamination of the wound.[5] In acute cases, fecal diversion is rarely recommended, as demonstrated by a randomized controlled trial that showed that adding fecal diversion for anal sphincter injury repair does not improve wound healing or functional outcomes.[11]

Follow-up for primary repair and management of missed OASIS should be conducted collaboratively within a dedicated perineal injury clinic.[3] Anorectal symptoms should be systematically assessed using patient-reported outcome measures of continence, such as the Cleveland Clinic Fecal Incontinence Score or the St. Mark's Fecal Incontinence Score, in conjunction with a thorough physical examination and EAUS. A multidisciplinary team comprising continence nurses, midwives, pelvic floor physiotherapists, sonographers, radiologists, gynecologists, and colorectal surgeons is essential to optimize patient outcomes. Conservative management remains the cornerstone of treatment, with emphasis placed on symptom optimization before surgical intervention. This includes dietary modifications such as increasing fiber intake to slow colonic transit, avoiding triggers like caffeine and gluten, and engaging with specialized pelvic floor physiotherapists.[12] Furthermore, incorporating pelvic floor physiotherapy and electric stimulation modalities, when appropriate, can significantly enhance continence and overall quality of life.[1]

Colorectal surgeons are increasingly involved in the assessment and management of women experiencing FI resulting from missed OASIS, often identified months to years after labor and delivery. Although conservative management remains the cornerstone of treatment, sacral nerve stimulation (SNS) is now considered the first-line surgical intervention for FI in the setting of chronic OASIS, given its potentially superior long-term outcomes compared to delayed (secondary) sphincteroplasty.[11] However, SNS is not without limitations, including high costs, limited accessibility, and potential device-related complications, whereas long-term durability remains inadequately studied.[12] Although sphincteroplasty offers immediate anatomical correction and symptom improvement, due to its role in improving muscle bulk and recreating lost tissue, its benefits are often short-lived, particularly in women with incontinence decades after obstetric trauma.[12] The lack of robust randomized controlled trials comparing these approaches highlights the need for nuanced, patient-specific decision-making.

In instances of persistent incontinence, alternative surgical interventions include colostomy formation and the implantation of an artificial sphincter. Although a colostomy is generally viewed as an *extreme* option in managing FI, it enhances the individual's quality of life.[12] Sphincter replacement may be considered for select

EVALUATION AND TREATMENT ALGORITHM



patients with severe fecal incontinence; however, due to the high risk of complications, it is typically reserved for carefully selected cases. Obstetric injury is not a common precipitating cause.[12]

CONCLUSION

The role of the colorectal surgeon in the management of OASIS is complex and multifaceted. Although evidence supports the early involvement of colorectal specialists as being associated with improved long-term functional outcomes, this is not always feasible. Consequently, current guidelines advocate for acute primary sphincter repairs to be performed by either obstetric or colorectal teams, depending on the availability of local expertise. In the context of missed injuries and subsequent FI, colorectal surgeons play a pivotal role in evaluation and management, often collaborating with key allied health professionals, such as physiotherapists, to optimize patient outcomes. Emerging trends suggest a preference for SNS neuromodulation over traditional sphincter repair; however, management strategies remain nuanced and should be individualized on the basis of specific patient factors.

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Expert Commentary on the Management of Obstetric Anal Sphincter Injuries

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Funding/Support: None reported.

Financial Disclosure: Crohn's and Colitis Foundation (grant support), American Society Colon and Rectal Surgery Research Foundation (grant support); Cook Myosite (clinical trial research support).

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Dis Colon Rectum 2025; 68: 513–514
DOI: 10.1097/DCR.0000000000003698

Congratulations to Drs. Price and Cohen for their summary on managing obstetric anal sphincter injuries (OASIS). This complication remains a prevalent cause of fecal incontinence in women, but despite advancements in education, much work remains in prevention, recognition, and timely repair.

I generally think of patients with OASIS based on both the timing of their presentation and the severity of their fecal incontinence. I categorize the injuries that are recognized immediately during delivery or within the first few days after, as acute OASIS. These require urgent