

Management of wound complications following obstetric anal sphincter injury (OASIS)

The 3 steps described here—demonstrating the modern approach to managing an infected wound dehiscence following a severe perineal injury—can put patients on the path to full health



Robert L. Barbieri, MD

Editor in Chief, OBG MANAGEMENT
Chair, Obstetrics and Gynecology
Brigham and Women's Hospital
Boston, Massachusetts
Kate Macy Ladd Professor of Obstetrics,
Gynecology and Reproductive Biology
Harvard Medical School, Boston



Jeannine M. Miranne, MD, MS

Division of Urogynecology
Brigham and Women's Hospital
Boston, Massachusetts
Instructor, Obstetrics, Gynecology and
Reproductive Biology
Harvard Medical School, Boston

During vaginal delivery spontaneous perineal trauma and extension of episiotomy incisions are common. A severe perineal laceration that extends into or through the anal sphincter complex is referred to as an obstetric anal sphincter injury (OASIS) and requires meticulous repair. Following the repair of an OASIS, serious wound complications, including dehiscence and infection, may occur. In Europe the reported rate of OASIS varies widely among countries, with a rate of 0.1% in Romania, possibly due to underreporting, and 4.9% in Iceland.¹ In the United States the rates of 3rd- and 4th-degree lacerations were reported to be 3.3% and 1.1%, respectively.²

Risk factors for OASIS include forceps delivery (odds ratio [OR], 5.50), vacuum-assisted delivery (OR, 3.98), and midline episiotomy (OR, 3.82).³ Additional risk factors for severe perineal injury at vaginal delivery include nulliparity (adjusted odds ratio [aOR], 2.58), delivery from a persistent occiput posterior

position (aOR, 2.24), and above-average newborn birth weight (aOR, 1.28).⁴

In a meta-analysis of randomized trials, the researchers reported that restrictive use of episiotomy reduced the risk of severe perineal trauma (relative risk [RR], 0.67) but increased the risk of anterior perineal trauma (RR, 1.84).⁵ The American College of Obstetricians and Gynecologists (ACOG) recommends that episiotomy should not be a routine practice and is best restricted to use in a limited number of cases where fetal and maternal benefit is likely.⁶ In addition, ACOG recommends that if episiotomy is indicated, a mediolateral incision is favored over a midline incision. In my practice I perform only mediolateral episiotomy incisions. However, mediolateral episiotomy may be associated with an increased risk of postpartum perineal pain and dyspareunia.⁷ Use of warm compresses applied to the perineum during the second stage of labor may reduce the risk of 3rd- and 4th-degree lacerations.⁸ Techniques to ensure that the fetal head and shoulders are

birthed in a slow and controlled fashion may decrease the risk of OASIS.⁹ See the **TABLE**, “Four maneuvers to control and slow the birth of the fetal head.”¹⁰⁻¹⁴

Wound complications following the repair of a 3rd- or 4th-degree laceration are reported to occur in approximately 5% to 10% of cases.¹⁵ The most common wound complications are dehiscence, infection, abscess formation, pain, sexual dysfunction, and anal incontinence. Minor wound complications, including superficial epithelial separation, can be managed expectantly. However, major wound complications need intensive treatment.

In one study of 21 women who had a major wound complication following the repair of a 4th-degree laceration, 53% had dehiscence plus infection, 33% had dehiscence alone, and 14% had infection alone.¹⁶ Major wound complications present at a mean of 5 days after delivery, with a wide range from 1 to 17 days following delivery.¹⁷ In a study of 144 cases of wound breakdown following a perineal laceration

TABLE Four maneuvers to control and slow the birth of the fetal head^{10–14*}

Maneuver	Description of technique
Perineal support	One hand is applied against the perineum and the other hand on the fetal occiput to control the expulsion of the fetal head. ¹⁰
Ritgen maneuver	"...in an interval between pains...two fingers are applied just behind the anus, and forward and upward pressure is made upon the brow through the perinaeum." ¹¹ A modification is to perform the Ritgen maneuver during a contraction. ¹²
Flexion maneuver	Maintain flexion of the emerging fetal head by exerting pressure on the occiput toward the perineum. Attempt to prevent flexion until crowning has occurred. ¹³
Finnish maneuver	"The speed of crowning is controlled by exerting pressure on the occiput with one hand. Simultaneously the thumb and index finger of the other hand are used to support the perineum while the flexed middle finger takes a grip on the baby's chin. When a good grip has been achieved, the woman is asked to stop pushing and to breathe rapidly, while the accoucheur slowly helps the baby's head through the vaginal introitus. When most of the head is out, the perineal ring is pushed under the baby's chin." ¹⁴

*In a large randomized trial of the perineal support maneuver¹⁰ versus the modified Ritgen maneuver,¹² there was no significant difference in OASIS,¹⁰ 4.4% versus 5.5% of vaginal deliveries, respectively.

Abbreviation: OASIS, obstetric anal sphincter injury.

repair, the major risk factors for wound breakdown were episiotomy (aOR, 11.1), smoking (aOR, 6.4), midwife repair of laceration (aOR, 4.7), use of chromic suture (aOR, 3.9), and operative vaginal delivery (aOR, 3.4).¹⁸ In one study of 66 women with a wound complication following the repair of a 3rd- or 4th-degree laceration, clinical risk factors for a wound complication were cigarette smoking (OR, 4.04), 4th-degree laceration (OR, 1.89), and operative vaginal delivery (OR, 1.76).¹⁹ The use of intrapartum antibiotics appears to be protective (OR, 0.29) against wound complications following a major perineal laceration.¹⁹

Approach to the patient with a dehiscence and infected perineal wound

Historically, wound dehiscence following surgical repair of a perineal injury was managed by allowing the wound to slowly close. This approach adversely impacts the quality of life of the affected woman because it may take weeks for the wound to heal. One small randomized trial¹⁷ and multiple case

series^{20–24} report that an active multistep management algorithm permits early closure of the majority of these wounds, thereby accelerating the patient's full recovery. Delayed primary (within 72 hours postpartum) or early secondary reconstruction (within 14 days of delivery) has been demonstrated to be safe with acceptable long-term functional outcomes.²⁵ The modern approach to the treatment of a patient with an infected wound dehiscence following a severe perineal injury involves 3 steps.

Step 1. Restore tissue to health

The dehiscent wound is cultured and, if infection is present, treatment is initiated with intravenous antibiotics appropriate for an infection with colorectal flora. One antibiotic option includes a cephalosporin (cefotetan 2 g IV every 6 hours) plus metronidazole (500 mg IV every 8 hours).

In the operating room, the wound should be thoroughly assessed, cleansed, and debrided. This step includes irrigation of the wound with a warm fluid, mechanical debridement, and sharp dissection of necrotic tissue. If

the wound is infected, removal of stitches that are visible in the open wound is recommended.

Often more than one session of debridement may be needed to obtain wound edges that are free from exudate and show granulation at the wound margins. Between debridement sessions, wet-to-dry dressings are utilized. Two to 10 days of wound care may be needed before an attempt is made to close the wound. The wound is suitable for repair when there is no infected tissue and granulation tissue is present. Some surgeons prefer a mechanical bowel preparation regimen just before surgically closing the open wound. This may prevent early bowel movements and provide for tissue healing after surgery.²⁶ The same preparations recommended for colonoscopy can be considered prior to surgical repair.

Step 2. Surgically close the wound

The wound is surgically closed in the operating room. If in Step 1 the assessment of the wound shows major trauma, assistance from a

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urogynecologist may be warranted. Surgical management of a perineal wound dehiscence requires a clear understanding of perineal anatomy and the structures contained between the vagina and the anorectum.

Six key structures may be involved in perineal injury: the anorectal mucosa, internal anal sphincter, external anal sphincter, vaginal wall and perineal skin, bulbocavernosus muscle, and transverse perineal muscles. It is important to definitively identify the individual structures that need to be repaired. Careful dissection is then carried out to mobilize these structures for repair. Additional debridement may be necessary to remove excess granulation tissue.

Anorectal mucosa repair. With repair of a 4th-degree perineal wound dehiscence, the apex of the defect in the anorectal mucosa is identified. The defect is repaired beginning at the apex using closely spaced interrupted sutures or a running suture of 3-0 or 4-0

polyglactin 910. Adequate tissue bites that will resist tearing should be taken. If interrupted sutures are used, tying the knots within the anorectal canal prevents them from being located within the healing wound.

Internal anal sphincter repair. After the anorectal mucosa is closed, attention is turned to reapproximation of the internal anal sphincter. The ends of a torn internal anal sphincter are often located lateral to the anorectal mucosa and appear as shiny gray-white fibrous tissue. The surgeon's gloved index finger can be placed within the anorectal canal to aid in identification of the internal anal sphincter, as it tends to have a rubbery feel. Additionally, while the surgeon's gloved index finger is in the anorectal canal, the surgeon's gloved thumb can be used to retract the anorectal mucosa slightly medial and inferior so that adequate bites of the internal anal sphincter can be taken on each side.

Alternatively, Allis clamps can be placed on the ends of the

retracted internal anal sphincter to facilitate repair. Suture selection for repair of the internal anal sphincter can include 3-0 polyglactin 910 or 3-0 monofilament, delayed-absorbable suture such as polydioxanone sulfate (PDS). Some surgeons prefer delayed-absorbable suture (PDS) for this layer given the internal anal sphincter is constantly contracting and relaxing as it samples stool.²⁶ This layer also can be closed with either interrupted sutures or a running suture.

External anal sphincter repair. After the anorectal mucosa and internal anal sphincter defects are reapproximated, attention is turned to the external anal sphincter. Like the internal anal sphincter, the ends of the external anal sphincter are often retracted laterally and must be definitively identified and mobilized in order to ensure an adequate tension-free repair. It is important to include the fascial sheath in the repair of the external anal sphincter.²⁷ Allis clamps can be used

Welcome, Ms. Lucia DiVenere!



The editors of OBG MANAGEMENT have appointed Lucia DiVenere, MA, to the publication's roster of Contributing Editors.

Ms. DiVenere is Officer of Government and Political Affairs at the American College of Obstetricians and Gynecologists (ACOG).

Ms. DiVenere has contributed expert articles to OBG MANAGEMENT for many years. In fact, she was awarded Bronze for Best Legislative Article from the American Society of Healthcare Publication Editors for her January 2014 article, "As the Affordable Care Act comes of age, a look behind the headlines."

Her passionate viewpoint is one of authority, often offering ACOG's stance on current issues, including the Affordable Care Act, Medicaid reimbursement changes, and controversies in home birth and medical liability reform. She has been a major contributor to our series on burnout, which began with her article "ObGyn burnout: ACOG takes aim" and a peer-to-peer audiocast that she conducted with Roger P. Smith, MD, in September 2016, "Is burnout on the rise and what are the signs ObGyns should be on the lookout for?" See page 15 in this issue and obgmanagement.com for her latest audiocast interview with Steven Gabbe, MD, on what administrators and ObGyns can do together to reduce physician burnout.

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to grasp the ends of the torn muscle after they are identified.

We recommend 0 or 2-0 PDS for repair of the external sphincter. Repair can be performed using either an end-to-end or overlapping technique. An end-to-end repair traditionally involves reapproximating the ends of the torn muscle and its overlying fascial sheath using interrupted sutures placed at four quadrants (12:00, 3:00, 6:00, 9:00).

In contrast, in an overlapping repair, the ends of the muscle are brought together with mattress sutures. Suture is passed top down through the medial aspect of the more superior muscle flap and top down through the inferior muscle flap more laterally. The same suture is then passed bottom up through the inferior muscle flap more laterally and finally bottom up through the medial aspect of the more superior muscle flap. Two to four mattress sutures are usually placed. After all sutures are placed, they are tied securely.

An overlapping repair results in a greater amount of tissue contact between the two torn

muscle ends. However, adequate mobility of the external anal sphincter is necessary to perform this type of repair.

Vaginal wall and perineal body repair. After the anal sphincters have been repaired, the vaginal wall and remainder of the perineal body are reconstructed using the same techniques involved in a 2nd-degree laceration repair. Care must be taken to retrieve and reapproximate the torn ends of the **bulbocavernosus muscles**, which are also often retracted laterally and superiorly. After the bulbocavernosus and **transverse perineal muscles** are brought together in the midline, the posterior vaginal wall should be perpendicular to the perineum.

An alternative to surgical closure of a 2nd-degree dehiscence is the use of vacuum-assisted wound closure. Disadvantages of this approach include difficulty in maintaining a vacuum seal in the perineal region and the risk of wound contamination with feces. In one case report, 3 weeks of vacuum-assisted wound closure resulted in healing of a 10-cm wound dehiscence that

occurred 5 days following a forceps-assisted vaginal delivery with a mediolateral episiotomy.²⁸

Step 3. Ensure complete healing of the wound

Superb postoperative wound care helps to ensure a quick return to full recovery. Wound care should include regularly scheduled sitz baths (at least 3 times daily) followed by drying the perineum. It is preferable to provide a liquid diet that avoids frequent bowel movements in the initial 3 postoperative days. Stool softeners and fiber supplementation are recommended when a full diet is resumed. Some surgeons have found mineral oil (1 to 2 tablespoons daily) effective in producing soft stools that are easy to pass.²⁶ Ensuring soft stool consistency is important to help prevent repair breakdown that may occur with passage of hard stools, fecal impaction, and/or straining during defecation.

We recommend follow-up 1 to 2 weeks after surgery to assess wound healing. No vaginal intercourse is permitted until complete healing is achieved.

Welcome, Dr. Katherine T. Chen!



The editors of OBG MANAGEMENT have appointed Katherine T. Chen, MD, MPH, to the publication's roster of Contributing Editors.

Dr. Chen is Professor of Obstetrics, Gynecology, and Reproductive Science, Vice-Chair of ObGyn Career Development and Mentorship, and Director of ObGyn Medical Student Clerkship and Electives at the Icahn School of Medicine at Mount Sinai in New York, New York. In addition, she is Vice-Chair of ObGyn Education for the Mount Sinai Health System.

Dr. Chen will be contributing a quarterly app review column for OBG MANAGEMENT. Her column will be debuting next month, in January 2017, with her review and recommendation of pregnancy wheel, or due date calculator apps, based on their comprehensiveness, price, platform, literature use, and special features. Look for her column next month!

Use a surgical checklist

All obstetricians and midwives strive to reduce the risk of OASIS at vaginal birth. When OASIS occurs, it is often useful to use a surgical checklist to ensure the execution of all steps in the management of the repair and

recovery process.²⁹ It is heartbreaking to see an OASIS repair breakdown in the week following a vaginal delivery. But by following the 3 steps outlined here, the secondary repair is likely to be successful and will quickly return most patients to full health. 🌟


RBARBIERI@FRONTLINEMEDCOM.COM

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