



Indications

Fecal incontinence with identified sphincter defect:

- Failed conservative management (optimized stools/habits, physical therapy).
- Absence of more promising alternatives (e.g., sacral nerve stimulation, etc.).

Contraindications

- Sphincter defect without clinical symptoms
- Incontinence without sphincter defect
- Incontinence primarily caused by other condition (diarrhea, fistula, prolapse, etc.)
- Pelvic malignancy

Preoperative Preparation

- Review the patient's history, diagnosis, functional aspects, and appropriate indication for surgery (based on incontinence scores, clinical exam, imaging, and anophysiology testing). An endoanal ultrasound is needed to plan the surgery and the incision. An anal manometry may be done to rule out an evacuation disorder and to differentiate if the internal anal sphincter damage is excessive.
- Depending on the patient's age: partial or full colonic evaluation to exclude synchronous pathology.
- Mechanical bowel preparation versus enemas (surgeon preference).
- Antibiotic prophylaxis.

M. Dean · M. Zutshi (✉)
Department of Colorectal Surgery, Digestive Disease & Surgery
Institute, Cleveland Clinic Foundation, Cleveland, OH, USA
e-mail: ZUTSHIM@ccf.org

Pitfalls and Danger Points

- Failure to achieve continence
- Lack of durability
- Sphincteroplasty in presence of poor tissue quality (Crohn, radiation, scarring, infection, etc.), tumor, or severely diminished rectal reservoir function
- Surgery too early after the injury or a previous surgery
- Pudendal nerve injury
- Wound healing issues (dehiscence, abscess, fistula formation, etc.)

Operative Strategy

General Considerations

Overlapping sphincteroplasty is a successful treatment for patients with fecal incontinence secondary to sphincter disruption or injury. Incontinence may be the result of obstetric, surgical, or accidental trauma. Cases of incontinence have been described after anorectal procedures including hemorrhoidectomy, sphincterotomy, fistulotomy and incision, and drainage of abscess. Sphincter disruption after vaginal delivery remains the most common indication for overlapping sphincter repair and may arise from an episiotomy, prolonged second stage of labor, or the use of forceps. Symptoms range from involuntary emission of flatus to loss of complete bowel movements. Regardless of the degree, incontinence is often a distressing and embarrassing sequel to sphincter trauma. These symptoms may appear acutely if the sphincter disruption is large (fourth degree tear) and not adequately repaired or may occur many years after the event.

Evidence of sphincter disruption may be demonstrated on preoperative imaging using endoanal ultrasound to precisely locate the location and size of tears. Sphincteroplasty can however correct only the mechanical component responsible for the development of fecal incontinence. The other com-

plex mechanisms of continence need to be considered and addressed to determine the suitability of this surgical technique.

Timing of the Repair

Choosing the right time is as important as selecting a particular approach. Attempts to repair the sphincter too soon after the original injury or any preceding surgeries are a frequent cause for failure. It is advisable to wait at least 3–6 months and allow for tissue inflammation to subside before planning any (re-)intervention.

Technical Considerations

The operative technique was first described by Parks and McPartlin in 1971, and later modified by Slade et al. Historically alternatives to overlapping repair included end-to-end approximation and separate internal and external repair. Results for end-to-end approximation were poor due to suture disruption. The overlapping repair addresses this issue by increasing the contact surface area for tissue adherence of the scarred muscle ends.

Some controversies remain regarding the technique, including the need for diversion, method for closure, and the long-term durability of repair.

Measuring the Results

Outcomes of overlapping sphincter repair have been described in the literature; however, they are difficult to compare due to the varied methods of outcome assessment. No one method of measuring quality of life and severity of fecal incontinence is accepted. Broadly these methods can be divided into descriptive measures, severity measures, and impact measures. Studies more commonly used the Jorge and Wexner incontinence score, the Parks fecal incontinence classification, or various quality of life assessment tools such as the Fecal Incontinence Quality of Life Scale (FIQLS).

Overall success rates are quoted up to 70–86% in studies with shorter follow-up. Many patients will experience decreased fecal continence in the long term, with 10-year follow-up studies describing decreased continence and increasing fecal accidents. Despite this, many patients report good rates of satisfaction, possibly because although recurrent incontinence occurred patients were still satisfied compared to their initial condition and had learnt to cope with the symptoms.

Several studies have assessed outcomes in older age groups. A successful outcome after sphincteroplasty is achievable in the older age group and is associated with a

significant improvement in sphincter function. Age should not be considered a predictor of poor outcome.

Persistent Incontinence

The use of biofeedback and pelvic floor exercises can help to avoid deterioration of function over time. Kegel exercises should be started about 6 weeks after surgery. Electrical stimulation may also be helpful. Many devices are now available to improve the functional outcome. These include the Prometheus Morpheus system® which is electrical stimulation and the Intone® device which is a guided Kegel exercising device.

A repeat overlapping sphincteroplasty may be performed with good results if the initial reports were encouraging. At least 3 months should elapse before further repairs are attempted. If the outcome is poor in the short term, sacral neuromodulation may be advised.

Documentation Basics

Coding for surgical procedures is complex. Consult the most recent edition of the AMA's *Current Procedural Terminology* book for details (see references at the end). In general, it is important to document:

- Indication and reasoning for choice of intervention
- Findings: location, tissue quality, sphincter condition
- Approach and type of repair

Operative Technique

General Setting

The most common setting is to perform an overlapping sphincteroplasty under general or regional anesthesia and to admit the patient for 2–3 days. Additional local anesthetic infiltration with long-acting agent (with or without epinephrine) allows for sphincter relaxation and improved hemostasis.

Positioning and Setup

Place the patient into the position of your preference. Lithotomy is possible and comparably fast. However, consider the advantages of the prone jackknife position with the buttocks taped aside, which allows you and your team relaxed access and optimized visualization, and reduces venous congestion in the surgical area.

Shave all hair in the surgical site and disinfect the skin, the vagina, and the anal canal with betadine.

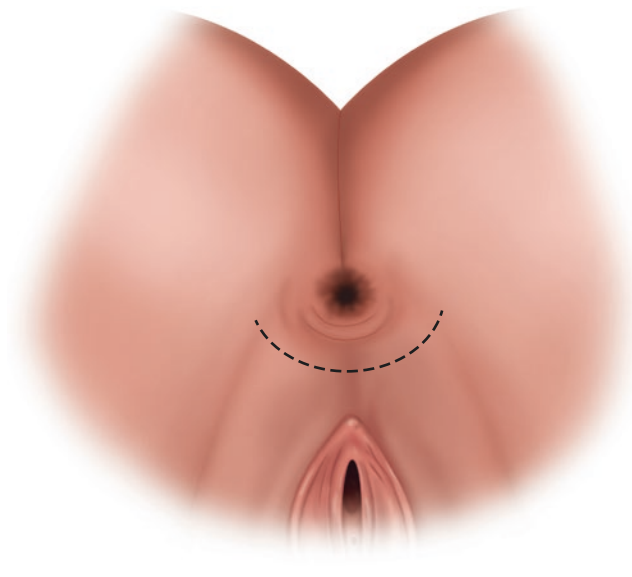


Fig. 84.1

Incision

The description which follows refers to the most common situation, in which the disruption is related to obstetrical trauma and may need to be modified for the individual anatomic situation. Use a 15 blade to make a transverse curvilinear incision over the perineal body between the rectum and the introitus of the vagina, parallel to the outer edge of the external sphincter (Fig. 84.1). The incision length is based on the extent of the sphincter disruption with a longer incision for defects of 180 degrees. However, a generous incision is recommended. The incision site may need to be modified if the sphincter disruption is not anteriorly located.

Mobilization

Using electrocautery and sharp dissection, mobilize the scar and underlying sphincter complex from the anoderm and anal mucosa posteriorly and from the vagina anteriorly, or surrounding tissues (if the defect is not anterior). Palpation in the anal canal and vagina is essential to avoid buttonholing. Identify and grab the edges of the disrupted external anal sphincter with Babcock clamps (Fig. 84.2). Dissect the muscle, taking care during lateral dissection to preserve the branches of the pudendal nerve. Continue the mobilization to the proximal edge of the anorectal ring and laterally the perirectal fat pads. Keep in mind that adequate mobilization is vital to allow a tension-free wrap repair. If the muscle is held by scar tissue in the midline, divide this and dissect the muscle. Do not excise the scar tissue from the severed muscle ends, and do not attempt to separate the internal and external sphincter muscles. If both the internal and external anal

sphincter are disrupted, carry out an en-bloc repair. If the sphincter is very lax, you may plicate the muscles in floor of the wound with a few interrupted 2-0 Vicryl sutures. Maintain meticulous hemostasis and periodically irrigate the wound with an antibiotic solution.

Reconstruction

Grasp the two ends with atraumatic tissue forceps and overlap them in a vest over pants method. Use interrupted 2-0 PDS sutures in a vertical mattress fashion (Fig. 84.3). It is preferable to place and hold the sutures before tying them down. This allows you to pull up on the sutures to check the orifice again and ensure proper placement with good tightening but without excessive narrowing of the sphincter complex. Two to three sutures may be taken depending on the length of muscle mobilized. Take care when tying the sutures to avoid excessive tension to prevent muscle necrosis. - If an overlap is not possible due to tension on the muscle, an end to end repair may be undertaken using the same sutures and technique as described above.

Wound Closure

Irrigate the wound prior to wound closure. Approximate the tissues in two layers and make sure to avoid any dead space. Approximate the skin with absorbable sutures (Fig. 84.4). You may leave a small opening in the center to allow for drainage and prevent infection. Alternatively, you may leave a small Penrose drain in the wound for 24 hours. Consider performing a vaginal packing for 24 hours to help ensure hemostasis.

Postoperative Care

- Antibiotics: Limit to the 24-hour prophylaxis.
- Discharge: Admit the patient for 1–3 days, mainly to avoid major activity and for pain control.
- Fluid management: Restrict fluid administration to minimize risk for urinary retention. If the patient is unable to void within 6 hours, an indwelling catheter should be placed, attached to a gravity drainage leg bag and a voiding trial attempted in 24 hours.
- Diet: The patient may resume their regular diet when recovered from anesthesia.
- Stool management: Instruct the patient to maintain soft bulked stools with use of fiber and stool softeners as needed. Prescribe supplemental laxatives to be used as needed to avoid constipation.

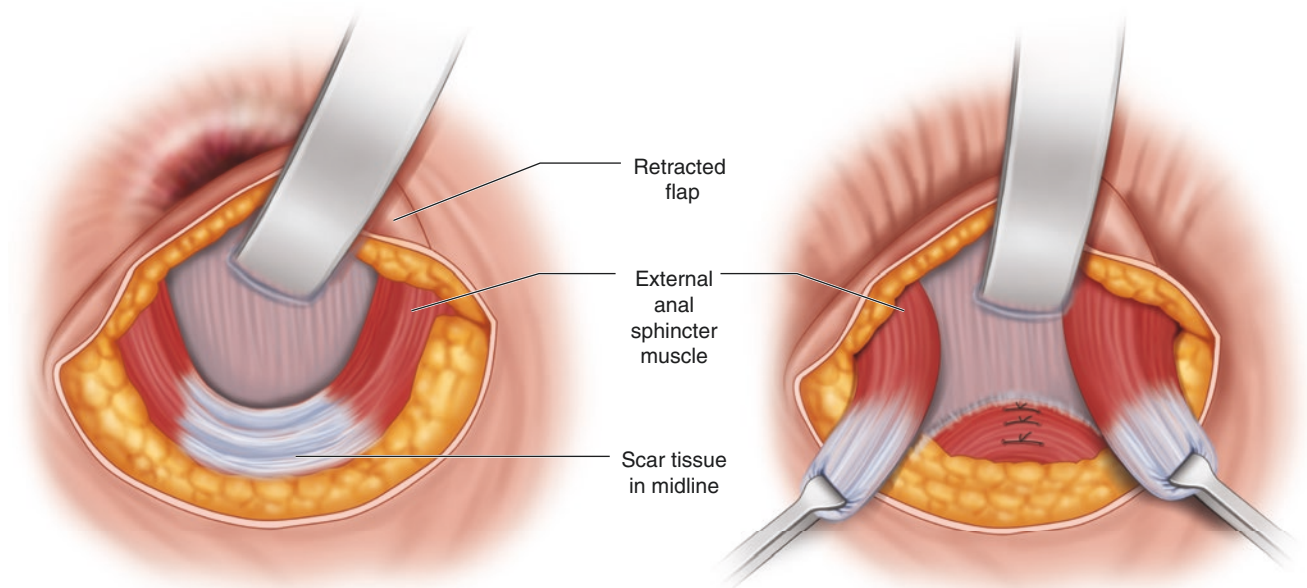


Fig. 84.2

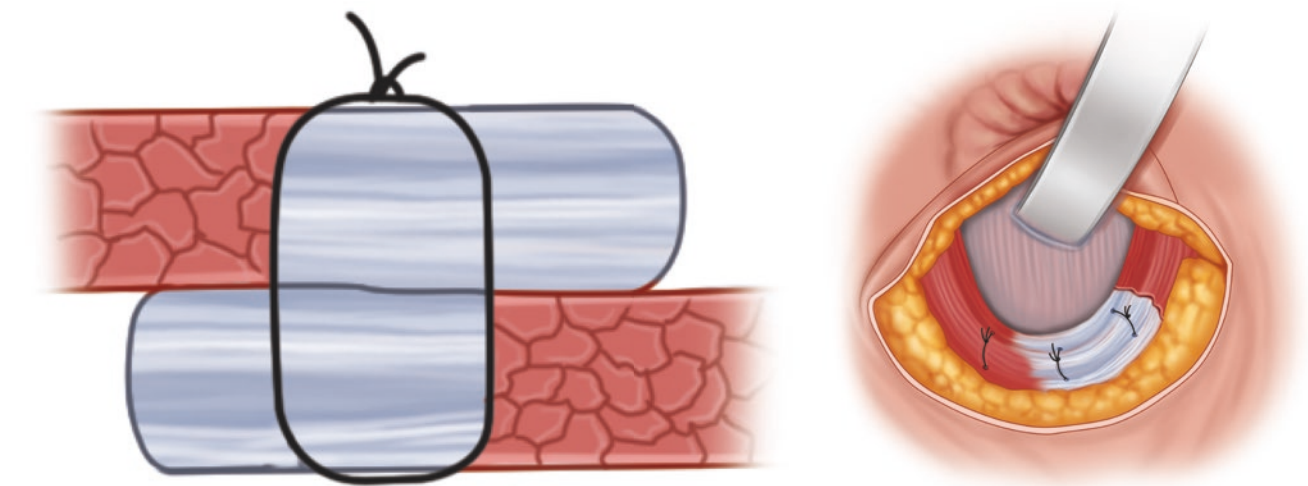


Fig. 84.3

- Pain management: Consider a multimodal approach to pain control, whereby oral analgesics are sufficient in most cases.
- Wound care: Recommend warm sitz baths following each bowel movement and routinely once or twice per day if the wound is open; metronidazole cream may be applied topically.
- Drains: Remove any drains no later than on the fifth postoperative day.
- Follow-up: Plan for frequent enough visits to examine the wound in regular intervals.

Complications

- Surgical site infection: Closely monitor the wound in the postoperative period for signs of infection or wound breakdown. Patients may complain of offensive discharge, prolonged pain, or persistent poor wound healing. Minor infections are often treatable with local wound care; occasionally topical antibiotic creams (e.g., 0.75% metronidazole cream) may be applied; systemic antibiotics are rarely needed.

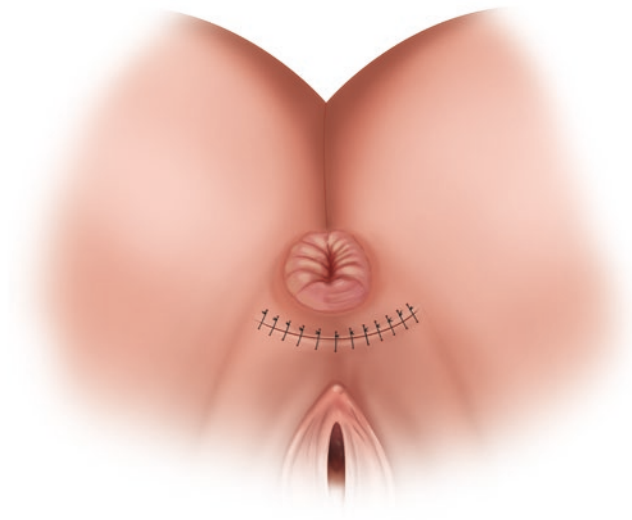


Fig. 84.4

- Pelvic sepsis: Symptoms of increasing pain, urinary retention, and fever are concerning red flags. Such patients should be admitted to hospital and treated with IV fluid, antibiotics, and Foley catheter; it may be necessary to debride the wound, and in worst cases to perform a fecal diversion.
- Injury to the pudendal nerve: Avoid extending the dissection to the posterolateral regions, where the pudendal nerves are laterally located.

- Bleeding/postoperative hematoma: Maintain meticulous hemostasis; consider use of a drain and/or vaginal packing to prevent the development of this complication. Treat a significant hematoma by opening the wound and evacuation of the hematoma.
- Fistula formation: Seepage of stool from the wound or the vagina represents a significant complication with loss of integrity of the rectal wall. Analyze the situation to define the respective individual needs.

Further Reading

- American Medical Association. Current procedural terminology: CPT ®. Professional ed. Chicago: American Medical Association; 2013. <http://www.ama-assn.org/ama/pub/physician-resources/solutions-managing-your-practice/coding-billing/insurance/cpt.page>.
- El-Gazzaz G, Zutshi M, Hannaway C, Gurland B, Hull T. Overlapping sphincter repair: does age matter? *Dis Colon Rectum*. 2012;55(3):256–61.
- Glasgow S, Lowry A. Long-term outcomes of anal sphincter repair for fecal incontinence: a systematic review. *Dis Colon Rectum*. 2012;55(4):482–90.
- Mevik K, Norderval S, Kileng H, et al. Long term results after anterior sphincteroplasty for anal incontinence. *Scand J Surg*. 2009;98:234–8.
- Oom DM, Gosselink MP, Shouten WR. Anterior sphincteroplasty for fecal incontinence: a single center experience in the era of neuromodulation. *Dis Colon Rectum*. 2009;52:1681–7.
- Zutshi M, Hull T, Bast J, Halverson A, Na J. Ten year outcome after anal sphincter repair for fecal incontinence. *Dis Colon Rectum*. 2009;52:1089–94.