NYU Langone Health

Department of Urology
Case of the Month

Management of Cloaca-like Deformity After Obstetrical Trauma

CASE PRESENTATION

A 40-year-old G2P2 female presented with fecal incontinence of flatus and formed stool. In 2009, she had had a large fourth-degree laceration during vaginal delivery in Honduras that was not repaired at the time of the delivery. Her fecal incontinence started shortly thereafter. After seeing several providers in Honduras who could not offer her management solutions for her fecal incontinence, she came to the United States to seek medical care. She initially presented to a primary care physician, who referred her to an OB/GYN, who noted a lack of a rectovaginal septum and referred the patient to colorectal surgery. Colorectal surgery diagnosed her with a traumatic cloaca and referred her to urogynecology. On presentation, she reported flatal incontinence and fecal urgency as well as large-volume fecal incontinence of formed stools. She described her bowel movements as Bristol Stool 5 (soft blobs with clear-cut edges). Physical examination revealed an open defect in the perineal body, anal sphincter complex, and rectovaginal septum measuring 6 cm in length and representing a cloaca (Figure 1). The vagina and the rectum were one single cavity. There was no rectal tone. Otherwise, the vaginal epithelium and the rectal mucosa appeared healthy and free from infection.

Figure 1. Preoperative physical exam. There is a clear demarcation of vaginal mucosa and anal mucosa.

PREOPERATIVE CARE

Stool bulking with fiber supplementation was recommended for medical management. A preoperative endoanal ultrasound demonstrated significant separation of the external anal sphincter 150 degrees from 11 o'clock to 2 o'clock, and the internal anal sphincter appeared disrupted in the midline as well (Figure 2).

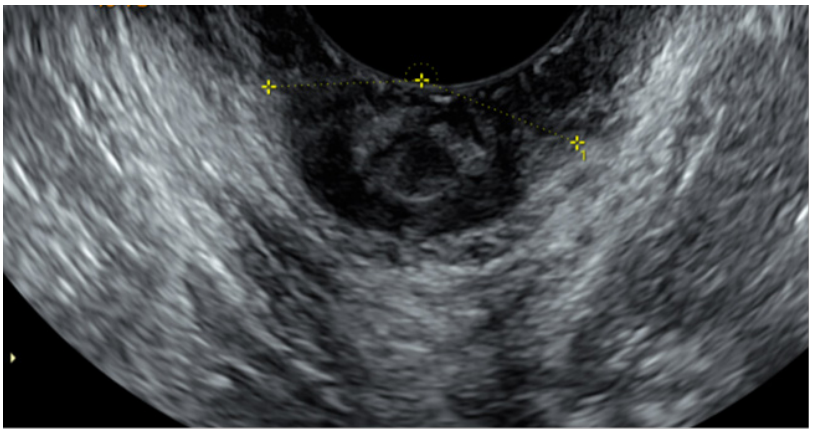

Figure 2. Endoanal ultrasound. The yellow dash marks indicate dehiscence of the sphincter complex 150 degrees.

SURGICAL MANAGEMENT

We discussed the risks, benefits, and alternatives of cloacal repair with the patient and obtained informed consent. The patient was scheduled for surgical repair of her cloaca in a joint case between colorectal surgery and urogynecology. She completed a mechanical bowel prep and consumed only clear liquids during the 24 hours before surgery. The patient was taken to the operating room, where she was placed in the dorsal lithotomy position. She was prepped and draped in normal sterile fashion. Ancef (cefazolin) and Flagyl (metronidazole) were administered preoperatively. A self-retaining retractor (Lone Star Retractor System) was placed to provide adequate exposure of the surgical field. Dissection between the vagina and the anorectum was aided with hydro-dissection with a mixture of lidocaine and epinephrine. A horizontal incision was made between the vagina and the anorectum using needle-point Bovie electrocautery to elevate vaginal tissue off the anus anorectum (Figure 3).

Dissection was carried out laterally on either side at the 3 o'clock and 9 o'clock positions in order to identify the external anal sphincter and mobilize adequate muscle to prevent tension on the repair. The fibers of the internal anal sphincter were visualized during this dissection bilaterally (Figure 4). The internal anal sphincter was repaired primarily using interrupted 2-0 PDS sutures (Figure 5A). Following this, the external anal sphincter was overlapped and repaired with multiple horizontal mattress stitches with 2-0 PDS sutures. (Figure 5B). Both closures were off tension. The previously mobilized rectal mucosa was advanced under the reconstructed sphincter. The mucosa was attached to the perianal skin with interrupted 2-0 Vicryl stitches. The subcutaneous tissue was closed vertically with 2-0 Vicryl stitches. The perianal skin was closed vertically with 2-0 Vicryl stitches to create an elongated perineum. The vaginal epithelium was then reapproximated with 2-0 Vicryl interrupted stitches. A perineal Penrose drain was left in place at the end of the procedure (Figure 6).

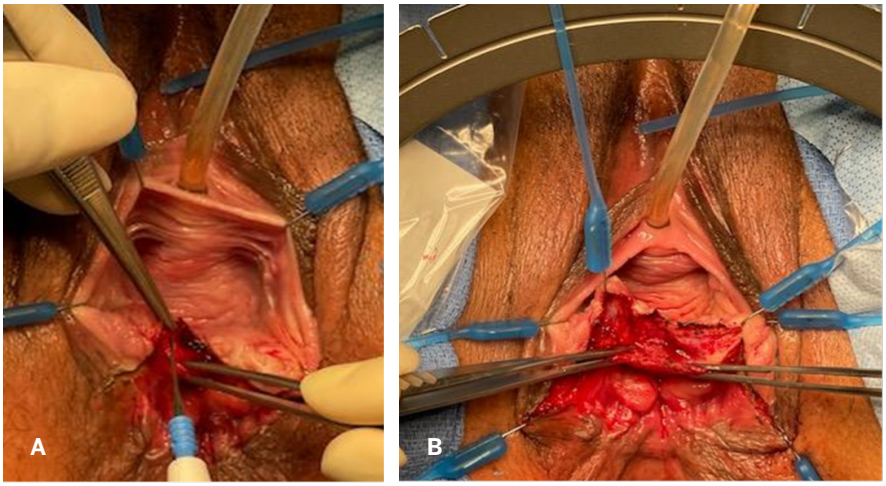

Figure 3. Initial horizontal incision (A) and separation of the rectum and the vagina (B).

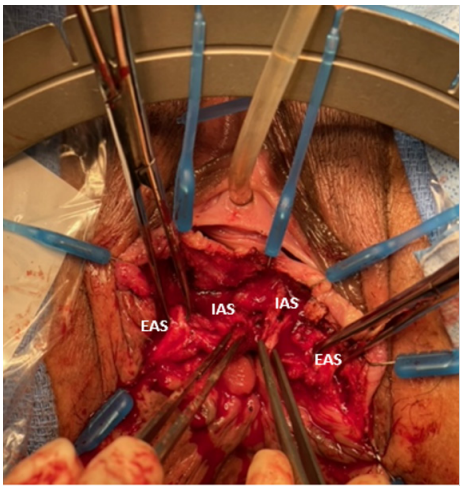

Figure 4. Identification and dissection of the internal anal sphincter (IAS) and external anal sphincter (EAS). Allis forceps are shown grabbing the EAS and DeBakey forceps are holding the IAS.

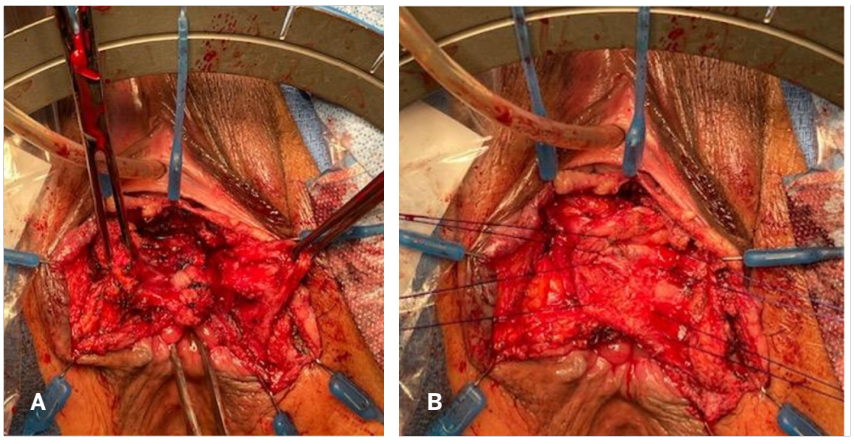

Figure 5. Re-approximation of the internal anal sphincter (A) and re-approximation of the external anal sphincter (B).

Figure 6. Completed surgical repair with Penrose drain in place.

POSTOPERATIVE MANAGEMENT

The patient was kept overnight for observation. A Foley catheter left in place at the end of the procedure was removed on postoperative day 1, and the patient passed a trial of void. She was placed on a bowel regimen with MiraLAX to maintain a soft stool consistency and she maintained a clear liquid diet for 48 hours postoperatively. She was instructed nothing per vagina or rectum for at least 6 to 8 weeks. She was discharged with a 1-week follow-up for wound check and removal of the perineal drain.

COMMENT

Traumatic cloaca is a rare but devastating complication of childbirth. The initial injury is from a third- or fourth-degree laceration during vaginal delivery, which occurs in 3% to 8% of all vaginal deliveries.[1] Most traumatic cloaca result from a breakdown of a previously repaired fourth-degree laceration. However, in our case, the patient had a fourth-degree laceration that was never repaired, which is an even more unusual presentation.

Traumatic cloacae are characterized by a disrupted perineal body, a retracted and disrupted anal sphincter complex, and a disrupted distal rectovaginal septum.[2] This leaves open a wide communication between the rectum and the vagina. Most patients present with fecal and flatal incontinence. Patients can also present with dyspareunia, skin irritation, persistent fecal discharge, urinary tract infection, and chronic perineal pain.[2,3] It is important to recognize that these symptoms, as well as the anatomic malformation of a cloaca, can significantly affect quality of life and self-image. Many patients experience a delay in care and see multiple providers before they find a team with experience managing these complex cases.

Dietary and medical management are recommended as first-line therapy for patients with fecal incontinence. However, nonsurgical therapy does not address the self-image issues that many women experience with a traumatic cloaca. Therefore, the American Society of Colon and Rectal Surgeons recommends that obvious anatomic defects such as cloaca-like deformities be corrected.[4]

There is no standard preoperative evaluation; however, the preoperative workup is to better understand the anatomy and functional status of the patient. A detailed history and digital rectal exam are essential starting points.[4] Endoanal ultrasound is useful for surgical planning because it will demonstrate the degree of separation of the external and internal anal sphincters. Endoanal ultrasound can be technically challenging and requires expertise for interpretation. In areas where endoanal ultrasound is unavailable, MRI may provide some information about sphincter injury but is likely inferior to ultrasound.[4]

Surgical repair of traumatic cloaca is best performed by identifying and isolating individual structures and replacing them back into anatomic position. Although there are a variety of techniques to choose from, the basic building blocks for repair include dissection of the rectal vaginal septum and sphincteroplasty. In addition, important surgical principles must be followed in order to optimize success rates. These include wide mobilization of tissue planes, multilayer closure, and tension-free repair. It is important to note that sphincter repair delayed by years from the initial injury can be technically more challenging. This is due to associated muscle atrophy and denervation.[5]

Regarding techniques for sphincteroplasty, studies have shown similar outcomes for end-to-end vs. overlapping repair of the external anal sphincter when the repair is done at the time of delivery.[6-8] However, when repair is delayed, such as with our patient, the data are less robust. Traditionally, delayed repairs have been described using the overlapping technique.[9]

Tissue interposition can be used if needed for wound closure. The most commonly used flap is a Martius flap. Martius flap is typically done unilaterally and involves harvesting a portion of adipose tissue from the labia majora. Flaps are not always necessary and are often reserved for recurrences.

There are no standard guidelines for the postoperative care of these patients. The patient is usually placed on a bowel regimen to ensure passage of soft stool but prevent diarrhea. Sexual activity is restricted for 6 to 8 weeks until the repair is healed.

Postoperatively, wound breakdown is common and can be seen in up to 40% of patients.[3,10] Some experts have advocated for fecal diversion to control wound contamination after a repair, but there is no evidence in the literature to support better outcomes with diversion.[10] In addition, fecal diversion can add morbidity to the procedure and negatively affect patient self-image. Our patient had completed her childbearing; for women with a cloacal repair who decide they want children in the future, elective cesarean delivery is a reasonable option.[11]

CONCLUSION

Traumatic cloaca following vaginal delivery is a rare but devastating outcome. Patients present not only with fecal symptoms but also with a negatively affected quality of life and self-image. Surgical management is the mainstay of care to help restore both anatomy and function. Although there are a variety of techniques for repair, most repairs include a dissection of the rectovaginal septum and sphincteroplasty. Good surgical principles that should be employed during repair include wide mobilization of tissue planes, multilayer closure, and a tension-free repair. These cases are technically challenging, and wound breakdown can occur in 40% of cases. More research is needed in this area to better optimize surgical outcomes for this devastating obstetric complication. Traumatic cloaca involves anatomy understood best by urogynecology and colorectal surgery experts and provides an opportunity for high-level collaboration of both specialties.

REFERENCES

1. Ramm O, Woo VG, Hung YY, Chen HC, Ritterman Weintraub ML. Risk factors for the development of obstetric anal sphincter injuries in modern obstetric practice. *Obstet Gynecol.* 2018;131(2):290-296. doi:10.1097/aog.0000000000002444
2. Kaiser AM. Cloaca-like deformity with faecal incontinence after severe obstetric injury--technique and functional outcome of ano-vaginal and perineal reconstruction with X-flaps and sphincteroplasty. *Colorectal Dis.* 2008;10(8):827-832. doi:10.1111/j.1463-1318.2007.01440.x
3. Hollingshead JR, Warusavitarne J, Vaizey CJ, Northover JM. Outcomes following repair of traumatic cloacal deformities. *Br J Surg.* 2009;96(9):1082-1085. doi:10.1002/bjs.6664
4. Paquette IM, Varma MG, Kaiser AM, Steele SR, Rafferty JF. The American Society of Colon and Rectal Surgeons' Clinical Practice Guideline for the Treatment of Fecal Incontinence. *Dis Colon Rectum.* 2015;58(7):623-636. doi:10.1097/dcr.0000000000000397
5. Williams KS, Shalom DF, Winkler HA. Faecal incontinence: a narrative review of clinic-based management for the general gynaecologist. *J Obstet Gynaecol.* 2018;38(1):1-9. doi:10.1080/01443615.2017.1344204
6. Fernando RJ, Sultan AH, Kettle C, Thakar R. Methods of repair for obstetric anal sphincter injury. *Cochrane Database Syst Rev.* 2013;(12):CD002866. doi:10.1002/14651858.CD002866.pub3
7. Farrell SA, Flowerdew G, Gilmour D, Turnbull GK, Schmidt MH, Baskett TF, Fanning CA. Overlapping compared with end-to-end repair of complete third-degree or fourth-degree obstetric tears: three-year follow-up of a randomized controlled trial. *Obstet Gynecol.* 2012;120(4):803-808. doi:10.1097/AOG.0b013e31826ac4bb
8. Garcia V, Rogers RG, Kim SS, Hall RJ, Kammerer-Doak DN. Primary repair of obstetric anal sphincter laceration: a randomized trial of two surgical techniques. *Am J Obstet Gynecol.* 2005;192(5):1697-1701. doi:10.1016/j.ajog.2004.11.045
9. Goetz LH, Lowry AC. Overlapping sphincteroplasty: is it the standard of care? *Clin Colon Rectal Surg.* 2005;18(1):22-31. doi:10.1055/s-2005-864072
10. Young CJ, Mathur MN, Eyers AA, Solomon MJ. Successful overlapping anal sphincter repair: relationship to patient age, neuropathy, and colostomy formation. *Dis Colon Rectum.* 1998;41(3):344-349. doi:10.1007/bf02237489
11. Waldman R. ACOG Practice Bulletin No. 198: Prevention and Management of Obstetric Lacerations at Vaginal Delivery. *Obstet Gynecol.* 2019;133(1):185. doi:10.1097/AOG.0000000000003041

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