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Recto-Vaginal Fistula Closure With Anterior Rectal Resection, Pull-Through, Coloanal Anastomosis and Gracilis Myocutaneus Transposition

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Method Article

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Abstract

Introduction Rectovaginal fistula (RVF) following obstetric trauma represents one of the most challenging conditions in colorectal surgery, particularly when multiple prior repair attempts have failed. Recurrent RVF is associated with extensive fibrosis, distorted anatomy, and compromised tissue quality, rendering conventional local repair techniques insufficient. This video article describes a combined reconstructive approach for a complex, multiply recurrent RVF.

Methods We report the case of a 42-year-old woman who presented with recurrent RVF secondary to obstetric trauma, having undergone five previous failed surgical repairs between 2019 and 2022, resulting in rectovaginal cloaca. A definitive reconstructive procedure was performed combining laparoscopic anterior intersphincteric rectal resection, transanal pull-through coloanal anastomosis, and left gracilis myocutaneous transposition. The vaginal defect was repaired with interrupted PDS sutures, incorporating levatoroplasty and sphincteroplasty. Coloanal anastomosis was completed in a staged fashion 15 days after the index procedure. The entire operative technique is demonstrated in a step-by-step video.

Results The procedure was completed without intraoperative complications. No early postoperative adverse events were recorded, including pelvic sepsis, anastomotic leakage, wound infection, or flap-related morbidity. Complete fistula closure was achieved, with no evidence of recurrence on vaginal and rectal examination at follow-up. Functional outcomes were favorable, with preserved continence and absence of fecal passage per vagina. At four years after surgery, the patient remained clinically stable with durable anatomical and functional results. Postoperative pelvic floor physiotherapy contributed to functional recovery.

Conclusions In patients with wide, recurrent RVF refractory to multiple prior local repairs, anterior rectal resection with pull-through coloanal anastomosis combined with gracilis myocutaneous transposition represents a technically feasible salvage strategy. This approach achieves complete excision of diseased tissue, restores bowel continuity, and provides well-vascularized tissue interposition to promote durable fistula closure. Patient selection and surgical expertise are critical to optimize outcomes in this demanding clinical scenario.

INTRODUCTION

Rectovaginal fistula (RVF) is a debilitating condition that markedly impairs quality of life and may be surgically challenging to treat, particularly when it develops after obstetric trauma (1). Recurrent RVF represents an especially complex scenario, as repeated failed repairs are often associated with dense fibrosis, distorted anatomy, and compromised local tissue healing (2).

In patients with multiple previous unsuccessful attempts, standard local repair techniques may be insufficient (3). In such cases, definitive management may require a more extensive reconstructive strategy combining anterior rectal resection, pull-through coloanal anastomosis, and interposition of

well-vascularized tissue such as gracilis myocutaneous transposition to separate suture lines and enhance durable closure.

In this video article, we present a step-by-step demonstration of rectovaginal fistula closure with anterior intersphincteric rectal resection, pull-through coloanal anastomosis, and gracilis myocutaneous transposition, emphasizing key technical steps and practical considerations for

MATERIALS AND METHODS

STUDY DESIGN

This report is presented as a **single-case, educational video article** demonstrating a complex reconstructive approach for the management of **recurrent rectovaginal fistula (RVF)** after multiple failed surgical repairs.

PATIENT

A **42-year-old female patient** presented with a recurrent rectovaginal fistula secondary to **obstetric trauma.** The patient had undergone multiple previous surgical attempts for fistula closure at different institutions, resulting in rectovaginal cloaca with extensive fibrosis and altered pelvic anatomy.

PREVIOUS SURGICAL HISTORY

Prior surgical interventions included:

- **2019:** Rectovaginal fistula closure
- **2020:** Endorectal and transperineal repair with sphincteroplasty
- **2021:** Endorectal and endovaginal repair
- **2021:** Endorectal and endovaginal repair with levatoroplasty
- **2022:** Endovaginal repair with levatoroplasty

Despite these operations, the fistula persisted. In **2023,** a definitive reconstructive strategy was planned.

INDICATION FOR SURGERY

Surgical operation was indicated due to **wide, recurrent RVF** refractory to multiple local repair techniques, associated with significant fibrosis and impaired tissue quality.

ETHICAL CONSIDERATIONS

Written informed consent was obtained from the patient for the surgical procedure and for the use of intraoperative video material for scientific publication and educational purposes.

SURGICAL TECHNIQUE

The procedure was performed under **general anesthesia,** with the patient positioned in the **lithotomy position.** An **abdominal approach** was used to perform **laparoscopic rectal dissection,** mobilizing the rectum proximally to the level of the pelvic floor. The rectum was then **stapled just above the level of the rectovaginal fistula.**

Subsequently, a **transanal approach** was adopted. The distal rectum involved in the fistulous disease was excised transanally. Dissection was carried out in the **intersphincteric plane,** proceeding cranially using monopolar electrocautery. At the level of the rectovaginal fistula, careful dissection of the **rectovaginal septum** was performed to completely separate the rectal and vaginal walls.

The vaginal defect was repaired using interrupted absorbable polydioxanone sutures (PDS 3-0; Ethicon). The upper portion of the repair incorporated the puborectal muscle, and the external anal sphincter was included when required, performing a combined levatoroplasty and sphincteroplasty to reinforce the rectovaginal septum.

Following complete excision of the fistula tract, the previously mobilized colon was pulled through transanally. The pull-through segment was fixed first at the level of the pelvic floor muscle and then to the dentate line using absorbable braided sutures (Polysorb™ 2-0; Covidien), incorporating the internal anal sphincter to achieve a secure coloanal fixation. Approximately 8 cm of the sigmoid colon was intentionally left externalized to allow subsequent management.

Gracilis myocutaneous transposition was subsequently performed. A longitudinal skin incision was made along the **left medial thigh,** and the gracilis muscle was identified and mobilized. The muscle was detached from its **distal (tibial) insertion,** preserving its proximal neurovascular pedicle. A **subcutaneous tunnel** was created toward the perineum and posterior vaginal wall. The gracilis muscle, together with an overlying skin paddle, was transposed through the tunnel and positioned between the rectal and vaginal suture lines.

The muscle flap was secured to fill the vaginal defect and to provide well-vascularized tissue interposition between the rectum and vagina. Final inspection confirmed adequate positioning of the flap and tension-free reconstruction. Hemostasis was ensured, and all incisions were closed in layers. During the postoperative period, adequate vascularisation of the sigmoid pull-through was confirmed. After 15 days, the exteriorised sigmoid colon was resected and the coloanal anastomosis was completed.

RESULTS

The procedure was completed successfully without intraoperative complications. Both the abdominal rectal dissection and the transanal phase were performed as planned, allowing complete excision of the fistula tract and the diseased distal rectal segment. The hand-sewn pull-through coloanal anastomosis was constructed without technical difficulty, and the gracilis myocutaneous flap was positioned tension-free between the rectal and vaginal suture lines.

The postoperative course was uneventful. No early postoperative complications were observed, including pelvic sepsis, anastomotic leakage, wound infection, or flap-related morbidity. Bowel function gradually resumed, and the patient reported progressive improvement in symptoms during the early postoperative period.

15 days after the index procedure, the previously mobilized excessive colon segment was resected and coloanal anastomosis was performed without complications. Recovery following this secondary intervention was also uneventful.

At follow-up, the patient demonstrated **complete fistula closure** with satisfactory anatomical healing. Vaginal and rectal examinations showed no evidence of recurrent fistula, wound breakdown, or perineal infection. Functional outcomes were favorable, with preserved continence and no symptoms of vaginal discharge or fecal passage per vagina.

At the last follow-up, **4 years after surgery,** the patient remained **clinically stable,** with **no recurrence of rectovaginal fistula** and no late procedure-related complications. Both **anatomical integrity and functional outcomes** were maintained over long-term follow-up, confirming **durable fistula closure.** The patient also underwent **postoperative pelvic floor physiotherapy,** which contributed to the preservation of continence and functional recovery.

DISCUSSION

Recurrent rectovaginal fistula represents one of the most challenging conditions in colorectal and pelvic reconstructive surgery. Fistulas related to obstetric trauma that persist after multiple failed repair attempts are often characterized by extensive fibrosis, distorted anatomy, and poor local tissue quality, all of which significantly reduce the success rates of conventional local repair techniques (4).

In such complex cases, repeated endorectal, endovaginal, or transperineal approaches may be insufficient (5). A more radical and definitive reconstructive strategy is frequently required to address both the diseased rectal segment and the compromised rectovaginal septum. Anterior rectal resection with pull-through coloanal anastomosis allows complete excision of the fistula-bearing rectum, while restoring bowel continuity in a controlled manner.

The addition of **gracilis muscle transposition** plays a critical role in the management of severe and recurrent rectovaginal fistulas (6,7). **In selected cases, a gracilis myocutaneous flap,** rather than muscle alone, allows the interposition of **well-vascularized muscle and skin tissue** between the rectal and

vaginal suture lines. This approach provides effective mechanical separation, enhances local vascularity, and promotes durable healing in an otherwise hostile surgical field. This principle is particularly relevant in patients with a long history of failed repairs, where tissue ischemia and scarring are prominent (8).

In the present case, the combined abdominal and transanal approach enabled precise dissection in the intersphincteric plane, safe excision of the diseased distal rectum, and construction of a tension-free pull-through coloanal anastomosis. The absence of early postoperative complications and the achievement of complete fistula closure support the technical feasibility of this strategy. Importantly, the maintenance of both anatomical integrity and satisfactory functional outcomes at **4-year follow-up** suggests durable long-term success in a highly selected and complex clinical scenario.

Patient selection remains crucial. This approach should be reserved for patients with **wide, recurrent rectovaginal fistulas,** particularly those with multiple prior failed local repairs and severely compromised tissue planes (9). Although the procedure is technically demanding and associated with significant surgical complexity, it may represent a valuable option when less invasive techniques are no longer appropriate.

This report has inherent limitations, including its single-case design and the absence of standardized functional outcome measures. Nevertheless, the primary aim of this video article is to illustrate a **salvage reconstructive strategy** for severe rectovaginal fistulas and to demonstrate that, in selected patients, anterior rectal resection with pull-through coloanal anastomosis combined with gracilis myocutaneous transposition can achieve **durable fistula closure** where other approaches have failed. In our opinion, the use of a **gracilis myocutaneous flap** was a key factor contributing to the favorable outcome in this complex case. In situations where **local vaginal tissue is insufficient to reconstruct the posterior vaginal wall,** the combination of pull-through coloanal anastomosis and myocutaneous flap interposition provides **adequate, well-vascularized tissue** for reconstruction. This strategy allows restoration of the posterior vaginal wall with sufficient tissue volume and vascularity, thereby enhancing healing and reducing the risk of recurrence.

Declarations

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