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Case Report

Rectovaginal Fistula Repair Utilizing a Cadaveric Dermal Allograft

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Abstract: Rectovaginal fistula repair is commonly performed through the vagina. When recurrent fistulae occur, healthy tissue such as a muscle or fat pad may be interposed to facilitate healing and prevent recurrence. A woman developed a postpartum rectovaginal fistula after her third-degree perineal laceration failed to heal completely. Two subsequent fistula repairs were performed, with recurrence following each procedure. The fistula was ultimately repaired by performing a layered closure and interposing a cadaveric dermal allograft between the rectovaginal septum and vaginal epithelium. Allogenic cadaveric graft may be a viable alternative to traditional autologous flaps for the repair of recurrent or complicated rectovaginal fistulae.

Keywords: Allograft; Cadaver fascia; Martius flap; Rectovaginal fistula

Introduction

Rectovaginal fistulae most commonly occur after obstetric trauma, resulting from a breakdown of a third- or fourth-degree perineal laceration [1]. Additional causes include injury or necrosis due ot gynecologic operations, trauma, hematomas, abscesses, Crohn's disease, diverticulitis and advanced malignancy, especially in association with pelvic irradiation. Rectovaginal fistulae are caused by damage to the rectal mucosa which results in creation of an epithelialized fistulous tract. Despite the use of preoperative antibiotics and meticulous surgical technique, repair of a rectovaginal fistula continues to be a challenge for the gynecologic surgeon.

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Rectovaginal fistula repair can be accomplished through the vagina, abdomen, perineum, sphincter and rectum. Regardless of the approach, certain basic principles should be followed, including excision of the epithelialized tract, complete closure of the rectal opening, inversion of the rectal edges, adequate tissue mobilization, hemostasis, and tension free multilayer closure. Recurrent or complicated fistulae, such as those associated with irradiation, often require a complicated operation. This may include using a colostomy or interposing healthy tissue (as a pedicle graft from omentum, peritoneum, muscle or fat pad) to facilitate healing. We report the successful repair of a rectovaginal fistula utilizing an allogenic cadaveric graft during layered closure in a patient in whom two previous surgeries failed.

Case Report

A 32-year-old gravida 3 para 3 African-American woman developed a postpartum rectovaginal fistula after a surgically repaired third-degree perineal laceration failed to heal. Over the next 24 months the patient saw two different gynecologists, who attempted to repair the fistula utilizing a transvaginal fistula excision and layered closure technique. Both attempts failed and resulted in a persistent symptomatic rectovaginal fistula. The patient had no history of diabetes, HIV or immunosuppressive/steroid drug use. She was referred to the urogynecology unit for evaluation and treatment.

Office evaluation confirmed a single midline rectovaginal fistula approximately 2 cm in diameter in the lower third of the vagina. The anal sphincter was intact and the surrounding tissue was well healed. The patient also complained of stress urinary incontinence, which was confirmed by multichannel urodynamic studies. The patient felt that her condition warranted surgical

correction and gave informed consent after the use of an allogenic cadaveric graft as an interposing tissue had been explained.

The patient was placed on a clear liquid diet for 48 hours prior to the operation. One gram of cephalothin was given preoperatively. A laparoscopic Burch urethropexy was performed prior to the rectovaginal fistula repair while she was under general anesthesia. This procedure has been previously described [2]. The patient was placed in the dorsal lithotomy position and the rectovaginal fistula identified. The fistula was circumcised with a scalpel through the vaginal wall, with a margin of healthy tissue. Vertical incisions were made cranially and caudally in the vaginal epithelium, extending away from the circular incisions and increasing access to the subepithelial plane. The vaginal epithelium was mobilized in all directions from the underlying rectovaginum septum. The fistula was then excised from the rectum with the surrounding scar tissue. The fistula was closed in two layers with a 3/0 interrupted absorbable sutures under minimal tension. The sutures included the entire wall of the rectum except the mucosa. The second layer imbricated the first suture line in a parallel fashion. Rectovaginal examination confirmed closure of the rectal side and excluded rectal injury. Prior to closing the vaginal epithelium a 2.0 × 4.0 cm AlloDerm acellular dermal graft (LifeCell Corp, The Woodlands, TX) was placed over the rectovaginal septum incision line and anchored to the rectovaginal septum laterally using 2/0 non-absorbable suture. The vaginal epithelium was closed using 3/0 chromic suture.

The patient was discharged within 24 hours. She was placed on a clear liquid diet for 3 days, followed by a low-residue diet for 3 weeks. Stool softeners and oral hydration were encouraged for 6 weeks, and intercourse discouraged for 12 weeks. The patient has been followed for 6 months without recurrence of the fistula or complication from placement of the dermal graft.

Discussion

Surgical correction of the rectovaginal fistula can be a challenging case for the gynecologic surgeon. Simple fistulae are most often treated with transrectal advancement or transvaginal layered closure techniques, and are associated with good surgical results. However, complicated or recurrent fistulae often require additional procedures with meticulous surgical technique and tissue handling. Traditional autologous flaps, such as a Martius bulbocavernosus fat pad or gracilis muscle flap, involve additional surgery with associated morbidity. In addition, the effective use of these flap procedures is dependent on surgical experience and knowledge of pelvic anatomy. Our technique, which utilizes a cadaveric dermal allograft in the surgical repair of a recurrent rectovaginal fistula, minimizes the need for additional surgery and is based on common anatomical principles well known to the gynecologic surgeon.

The use of autologous flaps is based on the hypothesis that the interposition of tissue between the suture lines will result in enhanced blood supply to the devascularized epithelium, obliteration of dead space and the interruption of sutures lines along the length of the multilayer closure. Similar principles are seen in the treatment of urethral diverticulum. The use of a natural allograft adheres to these principles but emphasizes interruption of the suture lines, so as to prevent recurrence of the fistulous tract. Compared to traditional autologous flaps, a cadaveric allograft is readily available, cost-effective, and associated with minimal complications or morbidity. The use of synthetic tissues for this application is discouraged owing to the increased risk of fistula recurrence, infection and erosion.

The AlloDerm product is an acellular dermal graft which has been extensively used in the area of plastic and dental surgery. Specifically, it has been used in burn victims for dermal grafting [3], soft tissue deficit correction [4] and closure of septal perforation [5]. After implantation the graft integrates into the surrounding tissue and undergoes remodeling, with little inflammatory response or absorption. To date, there are few data regarding its use in gynecologic surgery. However, our initial experience with allografts in prolapse repair has been encouraging and the indications for their use have increased. To our knowledge, this is the first report of the use of an allogenic cadaveric graft in the successful repair of a recurrent rectovaginal fistula. A greater number of cases using cadaveric dermal grafts in recurrent rectovaginal fistula repairs are needed before they can be recommended over the traditional autologous flaps.

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