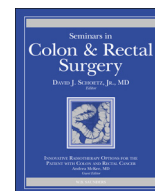




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## Surgical management of rectovaginal fistula

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## A B S T R A C T

Despite various advances in surgical technique, improvements in technology and the ongoing accumulation of knowledge gained by clinical experience, rectovaginal fistulas remain complicated entities to treat. Arguably, achieving definitive success in its repair can be as troublesome to the surgeons undertaking the challenge of treatment as it is debilitating to those that suffer from its manifestations. Multiple options exist in the armamentarium to repair rectovaginal fistula. Low, small fistulas, typically a result of cryptoglandular disease or obstetrical trauma, are amenable to local repairs, often without protective diversion. In contrast, high or more complex fistulas, typically those that are sequelae of inflammatory bowel disease, malignancy, or radiation, often warrant more extensive repairs incorporating tissue interposition with the protection of temporary proximal diversion. Finally, the choice of repair depends on the presence or absence of associated sphincter injury, as many patients with obstetrical trauma will have an anterior sphincter defect. It is critical to address associated sphincter defect during repair of this subset of rectovaginal fistulas if such a defect is identified. If no sphincter defect is identified, the choice of local repair becomes a matter of surgeon preference and experience.

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Rectovaginal fistulas are amongst the most vexing disorders encountered within the discipline of colon and rectal surgery. Often complications of a preexisting process or a result of injury, rectovaginal fistulas remain a challenge to definitively treat. While they are not indications for urgent surgical intervention, symptoms associated with these entities commonly result in significant physiological debilitation as well as psychological distress.

Worldwide, the incidence of rectovaginal fistula was estimated to be two million in 2006; these entities most commonly arise as a result of obstetrical-related injury.<sup>1</sup> Although it is exceedingly difficult to ascribe an accurate incidence secondary to the paucity of epidemiologic data, it has been estimated that just over one million women are afflicted in sub-Saharan Africa and South Asia alone, with approximately 6000 new cases yearly in these two world regions, and 50,000–100,000 new cases annually worldwide.<sup>2</sup> In the US, most of these fistulas are secondary to obstetrical injury as well, although a large constituent also spontaneously arises in the setting of Crohn's disease. Neoplasm, infectious diseases, and operative and non-operative trauma are also contributory causes.

With increasing reports of rectovaginal fistula worldwide in recent years, more attention has been directed towards management of these fistulas. As a result, comprehensive evaluation of the

traditional classification system is warranted. Rates of success have overall been disappointingly suboptimal; when long-term success is achieved, it is typically a result of multiple procedures. An understanding of the limitations of traditional classification systems may guide us to better define a system that may ultimately improve surgical outcomes by providing a better framework within which to select surgical approach.

The classification of fistulas takes into account multiple factors, including location of the fistula along the rectovaginal septum, the location of the rectal or vaginal opening, and size and complexity of the fistula.<sup>3,4</sup> Daniels<sup>3</sup> proposed a classification system that defines fistulas as low when the rectal opening is at the dentate line and the vaginal opening just inside the vaginal fourchette. In high fistulas, the vaginal opening is at or near the cervix. Middle fistulas occur in the area between low and high fistulas. Alternatively, a fistula has traditionally been described as rectovaginal if the opening is at or above the dentate line, or anovaginal, if the fistula opening is below the dentate line, though this terminology is inconsistent.

Fistula complexity and size are important variables for classification.<sup>4</sup> Simple fistulas are small (< 2.5 cm) and low. They are typically secondary to operative or obstetric trauma, as well as infectious processes such as cryptoglandular infection with resultant perianal or perirectal abscess. Fistulas are categorized as complex if large, high, or associated with inflammatory bowel disease, neoplasm, or radiation, or if persistent following failed repairs (Table 1).

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**Table 1**  
Classification of rectovaginal fistula.

<i>Simple</i>
< 2.5 cm
Low in location
Obstetric trauma <sup>a</sup>
Cryptoglandular infection
<i>Complex</i>
> 2.5 cm
High in location
Inflammatory bowel disease
Neoplasm
Radiation

<sup>a</sup> Can be complex.

Historically, surgical management has been dictated by location of the fistula, i.e., whether they are low or high. This terminology, while often used to describe anovaginal or true rectovaginal fistula, respectively, can be inconsistent. Rather, recognition of whether the fistula is simple or complex and whether the fistula passes through the sphincter complex or exists proximal to the sphincter musculature may better guide management and thus improve outcomes.

Initial approach to repair of simple fistula should be local (perineal, transanal, or transvaginal) repair. Complex fistulas are more likely to involve a transabdominal approach and often require resection, tissue or muscle interposition, and at times, fecal diversion. Further, it is not uncommon to require multiple attempts to repair high or complex fistulas.

While descriptive, the aforementioned classification systems do not adequately reflect the status or integrity of local surrounding tissue, as well as degree of involvement of the sphincter musculature, two factors which heavily influence success of surgical repair. Healthy, undisrupted tissue is paramount to the success of repair. The surgical approach to treating rectovaginal fistula depends not only on etiology, but also the presence or absence of a sphincter defect. In attempt to evaluate risks of sustaining obstetric anal sphincter injury during childbirth, Vathanen et al.<sup>5</sup> describe that 64% women sustain some form of perineal damage, 4% of which are anal sphincter injuries. The presence of sphincter injury in association with rectovaginal fistula must be preoperatively assessed, as it has been demonstrated that 48% of women with fistula complain of fecal incontinence.<sup>6</sup> Identification of the relationship of the fistula to the sphincter complex is arguably more critical than its relationship to the dentate line, as sphincter involvement influences surgical approach and may even be a predictor of post-operative prognosis.

### Evaluation of the patient with suspected rectovaginal fistula

As with the evaluation of any disorder, thorough history and physical examination are essential. Knowledge of concomitant disease, such as neoplasia or inflammatory disease, as well as radiation or obstetric history provides important information. Information concerning bowel function, symptoms of inflammatory bowel disease, and continence-related issues should be solicited. Physical examination, including digital rectovaginal examination, of women with suspected fistula will typically confirm the presence of disease while often imparting additional integral information regarding location and size of the fistula, associated disease processes, and sphincter function. Fistulas can be typically identified as a palpable dimple in the anterior midline. On vaginal examination, dark red rectal mucosa on the posterior wall that may be mistaken for granulation tissue can be visualized against the lighter-colored vaginal epithelium. A low threshold

should exist for biopsy, particularly in those patients with history of malignancy and radiation.

If the site of rectovaginal fistula is not easily identified, a methylene blue test may aid in the determination of diagnosis. This test is performed by placing a vaginal tampon and rectally instilling a 20–30 mL of methylene blue-colored enema. The presence of blue staining on the tampon is diagnostic. Similarly, saline can be inserted into the vagina with the patient in lithotomy position and the vagina observed for bubbles following insufflation of the rectum with air.

Radiographic diagnostics, including vaginography, computed tomography, magnetic resonance imaging, and ultrasonography can often be helpful in confirming the diagnosis of rectovaginal fistula. Vaginography utilizes fluoroscopy following the injection of contrast into the vagina. Though the technique carries an overall sensitivity of 79–100% in detecting fistulas, it is less useful in the identification of low vaginal fistulas than it is for the confirmation of colovaginal and enterovaginal fistulas.<sup>7</sup>

Computed tomography and magnetic resonance imaging may be useful diagnostic modalities as they not only provide information regarding the fistula tract but also delineate the status of the surrounding tissue. In recent years, magnetic resonance imaging has established itself as an important modality with which to identify the primary fistula tract, as well as to identify edema and abscesses within the rectovaginal septum, secondary fistula extensions, and concomitant sphincter damage.<sup>8</sup> Fistulas will appear as high-signal-intensity linear abnormalities extending between the anal canal and vagina on T2-weighted images. It is helpful to have gel in the vagina to optimize imaging.

Endorectal, endoanal, and transvaginal ultrasonography serve multiple purposes in both the diagnosis and preoperative planning regarding fistula disease. These modalities are especially critical in those patients whose fistulous processes are secondary to obstetric injury or those suffering from fecal incontinence as they allow delineation of sphincter anatomy. On ultrasonography, fistulous disease is visualized as hypoechoic defects. Unfortunately, artifacts from scar and fibrosis may confound interpretation. Injection of hydrogen peroxide during ultrasonographic scanning may assist in fistula tract identification, as these tracts will appear hyperechoic on injection.<sup>9</sup> However, the injection of hydrogen peroxide during outpatient ultrasonography presents a technical challenge in patients with rectovaginal fistulas.

### Surgical management

Complete eradication of rectovaginal fistulas often requires multiple surgical approaches. While numerous management strategies exist for the treatment of fistula, it is critical to utilize an approach that encompasses all facets of injury, including etiology of the fistula, size and location of the fistula, local tissue integrity, and concomitant sphincter defect, as the latter mandates an approach that encompasses sphincter repair. Knowledge of the etiology of the fistula is integral to successful treatment as some preexisting conditions, such as inflammatory bowel disease, require specific approaches. Fistulas associated with inflammatory bowel disease are discussed elsewhere.

### General considerations

Prior to consideration of definitive operative intervention, the patient must be assessed for any signs or symptoms of perianal sepsis. Sepsis must be controlled, with eradication of infection, utilizing non-cutting setons for drainage, if necessary. Waiting until all inflammation has resolved is critical. Once control of

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