



## Management of rectovaginal fistula

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### ABSTRACT

Rectovaginal fistulas remain a challenging problem for surgeons to correct despite advances in surgical techniques. These fistulas may be caused by a variety of disease processes and multiple options exist for the repair of a rectovaginal fistula. The etiology, location, and status of the surrounding tissue determine the most appropriate option for repair. Low, small fistulas caused by cryptoglandular disease or obstetrical trauma, are generally amenable to local repairs. In contrast, high or more complex fistulas and ones that result from inflammatory bowel disease, malignancy, or radiation often warrant more extensive repairs often with the protection of proximal diversion. Finally, the choice of repair depends on the status of the anal sphincter muscle both in terms of the option chosen for repair and the functional outcome. Patient preference and the surgeon's experience are also factors in the choice of technique.

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### Introduction

Although not life threatening disorders, rectovaginal fistulas are among the most vexing disorders for surgeons. While they are not indications for urgent surgical intervention, the symptoms associated with these entities may result in physical discomfort and psychological distress.

In 2006, the global incidence of rectovaginal fistula was estimated to be two million; the most common etiology is obstetrical-related injury.<sup>1</sup> Although it is difficult to determine an accurate incidence given 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 to 100,000 new cases annually worldwide.<sup>2</sup> In the US, most of these fistulas are secondary to obstetrical injury, although inflammatory bowel and cryptoglandular disease also cause a significant portion. Cancer and cancer-related treatments as well as operative and accidental trauma are less frequent etiologies.

The usual classification of fistulas is based upon location of the fistula and size and etiology 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. Others describe fistulas as rectovaginal if the

opening is at or above the dentate line or anovaginal if the fistula opening is below the dentate line.

Fistula complexity and size are important variables for classification.<sup>4</sup> Simple fistulas are small (< 2.5 cm) and low. They are typically caused by obstetric trauma, as well as infectious processes such as cryptoglandular infection. Complex fistulas are large, high, or associated with inflammatory bowel disease, neoplasm, or radiation, or persistent following failed repairs. For surgical planning, the location of the rectal opening relative to the sphincter complex might be a more useful basis for classification but that has not been tested.

Healthy, undisrupted tissue is paramount to the success of repair. The surgical approach to treat rectovaginal fistula depends not only on etiology but also on the presence or absence of a sphincter defect. Vathanan et al.<sup>5</sup> describe that 64% women sustain some form of perineal damage, 4% of which are anal sphincter injuries. Sphincter defects mean the anterior perineal tissue will be scar rather than well-vascularized muscle. In addition, there are functional consequences 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 arguably has more impact on surgical planning.

### 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.

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Information concerning bowel function, symptoms of inflammatory bowel disease, and continence-related issues should be solicited. Physical examination focuses on identifying the fistula and status of the surrounding tissue. Fistulas can be typically identified as a palpable dimple in the anterior midline of the rectum. On vaginal examination, dark red rectal mucosa or granulation tissue posteriorly can be visualized against the lighter-colored vaginal epithelium. Biopsies are important in patients with history of malignancy and radiation to exclude recurrent cancer. Endoscopic evaluation is key in patients with inflammatory bowel disease, cancer, or unexplained associated symptoms.

If the site of rectovaginal fistula is not easily identified, a dye test may aid in the determination of diagnosis. This test is performed by instilling a water enema colored with methylene blue or blue food coloring after placing a vaginal tampon. The presence of blue staining on the tampon is diagnostic.

Radiographic techniques including vaginography, computed tomography, magnetic resonance imaging, and ultrasonography can often be helpful in confirming the diagnosis of rectovaginal fistula and the status of the surrounding tissue. Vaginography carries an overall sensitivity of 79–100% in detecting fistula but is less useful in the identification of low vaginal fistulas than for colovaginal and enterovaginal fistulas.<sup>7</sup> Both computer tomography (CT) and magnetic resonance imaging (MRI) have the added benefit of information about the surrounding tissue. MRI done with vaginal gel can 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>

Ultrasonography serves multiple purposes in both the diagnosis and preoperative planning regarding fistula disease. It is particularly helpful in patients with a history of obstetrical injury or symptoms of fecal incontinence. Injection of hydrogen peroxide prior to the ultrasound may assist in fistula tract identification,<sup>9</sup> but can be difficult in patients with rectovaginal fistulas.

### Surgical management

Initial approach to repair of simple fistula should be local procedure. Complex fistulas are more likely to require either a transabdominal approach or perineal tissue transposition and consideration of fecal diversion. The etiology, location and size of the fistula, status of the anal sphincter, and surrounding tissue are important factors in the timing of surgery and choice of repair. Unfortunately, for both types of fistulas, multiple repairs are frequently necessary before closure is achieved.

### General considerations

Before surgery is undertaken, sepsis must be controlled with drainage of infection and possibly placement of a seton. Waiting until all inflammation has resolved is critical. For patients with inflammatory bowel disease, medical management of active bowel disease must be undertaken and may reduce the symptoms related to the fistula. Once the local tissue is free of infection, soft and pliable, definitive repair may be undertaken. General anesthesia is typically used as well as the prone jackknife position. Operative exposure may be enhanced by the use of a Lone Star retractor, Pratt bivalve or Fansler anoscope, Wylie renal vein retractors, and narrow Deaver or malleable retractors.<sup>10</sup>

### Transanal advancement flaps

Transanal approaches are ideal choices for repair of fistulas without associated sphincter defects. Proponents cite the

**Table 1**

Results of endorectal advancement flaps.

Study	N	Success (%)	Etiology
de Parades et al. <sup>11</sup>	23	65	Mixed
Hull et al. <sup>13</sup>	37	62	Mixed
Jarrar et al. <sup>14</sup>	17	41	Mixed
El-Gazzaz et al. <sup>15,26</sup>	37	62	Mixed
Pinto et al. <sup>16</sup>	75 <sup>a</sup>	56	Mixed
Ellis et al. <sup>17</sup>	29	62	Crohn's excluded
Uribe et al. <sup>18</sup>	56	86	Mixed
Mizrahi et al. <sup>19</sup>	32	56	Mixed
Sonoda et al. <sup>20</sup>	37	43	Mixed
Zimmerman et al. <sup>21</sup>	21	48	Crohn's excluded
Baig et al. <sup>22</sup>	19	74	Crohn's excluded
Lowry et al. <sup>23</sup>	81	83	Mixed
Tsang et al. <sup>6</sup>	27	41	Mixed
MacRae et al. <sup>12</sup>	23	29	Mixed

<sup>a</sup> With or without sphincteroplasty.

advantage of repair on the high-pressure side and flexibility of the rectal wall. Endorectal advancement flaps aim to occlude the internal opening of the fistula with healthy tissue.

Closure of the fistula is the definition of success; continence status is not uniformly reported in reports of outcomes of advancement flaps. Success rates widely vary from 29% to 86%, with better outcomes reflected for the primary procedure, in simple fistulas, or fistulas related to obstetrical trauma (Table 1)<sup>2,12–24</sup>. The explanation of the wide variation is uncertain but may be related to mixed etiologies, surgical technique, variable timing of surgery, and previous failed repairs.

Sonoda et al.<sup>20</sup> found that higher age, higher body surface area, prior incision and drainage of abscess, and prior seton placement were associated with significantly higher success rates after endorectal advancement flaps for both rectovaginal and fistulas in ano. Crohn's disease and longer duration of symptoms decreased the chance of success. Similarly, Mizrahi et al.<sup>19</sup> also identified Crohn's disease as a predictor of failure among women undergoing advancement flaps.

Smoking has been implicated as a negative predictive factor, thought to be related to impaired blood flow.<sup>24,25</sup> El-Gazzaz et al.<sup>26</sup> also identified tobacco smoking as a factor in success in patients with Crohn's-related rectovaginal fistula regardless of the technique used.

### Vaginal flaps

Transvaginal approaches are similar to endorectal advancement flap in technique; however, the repair is performed on the vaginal side. A flap of vaginal wall is raised and vaginal and rectal openings are then closed with absorbable sutures. After approximating the levator ani muscles in the midline, the flap is sutured in place with absorbable material.

### Anocutaneous flaps

Anocutaneous flaps are an alternative approach to the repair of extremely low fistulas.<sup>27</sup> A flap of anoderm and perineal skin is created and advanced into the anal canal. Limited data is available regarding results and success rates.

### Prosthetics and biologics

In recent years, bioprosthetic plugs were introduced as alternative approaches in the management of fistulas to limit risk of incontinence. Plug extrusion from short fistula tracts is described as contributing to high failure rates in anal fistulas of

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