Choosing the right surgical technique for deep endometriosis: shaving, disc excision, or bowel resection?

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Deep endometriosis (DE) remains the most difficult endometriotic entity to treat. Medical treatment for DE can reduce symptoms but does not cure the disease, and surgical removal of the lesion is required when lesions are symptomatic, impairing bowel, urinary, sexual, and reproductive functions. Although several surgical techniques such as laparoscopic bowel resection, disc excision, and rectal shaving have been described, there is no consensus regarding the choice of technique or the timing of surgery. Our review of publications reporting results and complications of surgery for rectovaginal DE reveals a relatively higher complication rate after bowel resection compared with shaving and disc excision, especially for rectovaginal fistulas, anastomotic leakage, delayed hemorrhage, and long-term bladder catheterization. Data show that shaving is feasible even in advanced disease. The risk of immediate complications after shaving and disc excision is probably lower than after colorectal resection, allowing for better functional outcomes. The presumed higher risk of recurrence related to shaving has not been demonstrated. For these reasons, surgeons should consider rectal shaving as a first-line surgical treatment of rectovaginal DE, regardless of nodule size or association with other digestive localizations. When the result of rectal shaving is unsatisfactory (rare cases), disc excision may be performed either exclusively by laparoscopy or by using transanal staplers. Segmental resection may ultimately be reserved for advanced lesions responsible for major stenosis or for several cases of multiple nodules infiltrating the rectosigmoid junction or sigmoid colon. (Fertil Steril® 2017;108:931–42. ©2017 by American Society for Reproductive Medicine.)

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Endometriosis is one of the most frequently encountered benign gynecological diseases, known to occur in 7%–10% of women of reproductive age (1). It is well established that three different forms of endometriosis can coexist in the pelvis: peritoneal endometriosis, ovarian endometriosis, and deep endometriosis (DE) of the rectovaginal septum (2). Most rectovaginal DE lesions originate from the posterior part of the cervix and secondarily infiltrate the anterior wall of the rectum (3, 4).

Medical treatment of rectovaginal DE can reduce the symptoms but does not cure the disease and is often associated with side effects such as erratic bleeding, weight gain, decreased libido, and headache (5). Pregnancy does not seem to prevent disease progression (6), and resection of rectovaginal DE seems to improve fertility outcomes (3, 7). Moreover, among pregnant women with endometriosis, rectovaginal DE is associated with prematurity, hospitalization, and low birthweight (8, 9). Surgical removal of rectovaginal DE lesions is required when lesions are symptomatic, impairing bowel, urinary, sexual, and reproductive functions. Although several surgical techniques such as laparoscopic bowel resection, disc excision, or rectal shaving have been described, there is no consensus regarding the choice of technique or when surgery should be proposed.

Although infiltration up to the rectal mucosa and invasion of >50% of the circumference have been suggested as an indication for bowel resection (10, 11), this remains a subject of debate (3, 4, 12). In their review of the literature, Meuleman et al. reported that out of 3,894 patients, 71% underwent bowel resection, 10% had disc excision, and only 17% were treated with so-called superficial surgery (13). Conversely, in a more recent survey enrolling 1,135 patients

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managed for colorectal endometriosis in France in 2015, almost half (48.1%) were treated by rectal shaving, with wide disparities between the approaches of different surgical teams involved in the survey (14). Similarly, Malzoni et al. (15) reported a series of 670 cases with endometriosis invading the bowel, 62.9% of which were operated on by shaving and 37.1% by bowel resection. These discordant data result from the lack of consensus concerning the optimal surgical management of DE infiltrating the bowel.

The aim of this paper was to review the available literature comparing the conservative approach (shaving technique and discoid resection) and the more radical approach (bowel resection) in terms of surgical outcomes, complications, and recurrence rates.

SHAVING TECHNIQUE: DEFINITION

The shaving technique for the surgical treatment of rectovaginal DE of the Douglas pouch was first described in 1991 (16). The first large series was published in 1995 (17) and followed by larger series from the same team between 1997 and 2013, with the largest series so far described of about 3,298 cases (3, 4, 17–19).

To individualize the uterus, vagina, and the rectum, a uterine manipulator is necessary, as well as a sponge placed into the vagina and a probe inside the rectum. These three manipulators should be individually mobilized. The principal steps of the shaving technique involve the lateral identification of the ureter far from the lesion itself. For nodules measuring >3 cm, there is ureter involvement in 10% of cases (20), requiring ureterolysis with or without previous ureteral stenting. When lateral spaces are freed, the uterosacral ligaments are cut to leave the bowel attached to the nodule (Supplemental Video 1). Then shaving consists in the separation of the nodule from the anterior part of the rectum to reach the cleavage plan of the rectovaginal septum (Supplemental Video 2). Shaving is a more than superficial surgical treatment of rectovaginal DE (13) and consists in excision of the DE nodule, even if during this procedure the bowel lumen could be inadvertently opened. In this case, a bowel suture must be performed in one or two layers (Supplemental Video 3). Three steps have been described: [1] separation of the anterior rectum from the posterior vagina, [2] excision or ablation of the DE nodule from the posterior part of the cervix, and [3] resection of the posterior vaginal fornix and vaginal closure (Supplemental Video 4).

Shaving Technique: Surgical Outcomes

Outcomes are presented in Table 1. Shaving of the rectum can be performed using the CO_2 laser (3, 18, 21, 27, 29), cold scissors (33, 34), ultrasound scalpel or plasma energy (34), and monopolar hook (33).

The mean size of the resected lesions was around 2–3 cm (3, 4, 23, 30, 32, 34, 35). However, resection of nodules measuring up to 6 cm has been repeatedly described (4, 23, 24) (Supplemental Video 5). The mean surgical time was usually <3 hours (3, 4, 16, 21, 24, 25, 29, 31, 33, 34). However, in a series of 500 endometriotic nodules with a mean size of 3.4 cm (2–6 cm), Donnez and Squifflet (3) achieved a mean surgical time of 78 minutes (31–128 minutes). In a series of 122 lesions measuring >3 cm, Roman et al. (34) reported an operating time of 162 ± 72 minutes. Most patients required a short hospital stay, between 2 and 3 days (3, 28, 31, 33).

It should be noted that the follow-up period was usually short, with a mean of 3 years (3, 25, 26, 27, 28, 34). However, data on more than 3 years of follow-up (30, 32, 35) with a maximum of 7 years are available.

Shaving Technique: Complications

Among five studies on patients managed by shaving, disc excision, or segmental resection, postoperative complications were not specifically stratified according to technique (14, 24, 25, 26, 32). Only two studies encountered no complications at all (23, 30), but they involved small numbers of patients, 23 and 18, respectively. No follow-up was reported for the first series (23), while patients benefitted from a 68-month follow-up period in the second one.

Among studies reporting precisely the complications related to the shaving technique (3, 4, 21, 23, 27–35), bowel perforation during surgery was encountered in 1.74% (n = 83/4,470). In all cases, the bowel was sutured during surgery and no unfavorable outcomes occurred.

Severe bowel complications included late bowel perforation requiring or not colostomy and rectovaginal fistulas. Late bowel perforation requiring colostomy occurred in three studies (4, 21, 35). Koninckx et al. (21) and Roman et al. (35), respectively, described 1.7% and 2.2% of late bowel perforation requiring colostomy, while Donnez et al. reported 0.03% in a series of 3,298 cases (4). Bowel complications (3, 4, 21, 23, 27–31, 34, 35) were reported in 0.13% of the cases (n = 6/4,706) operated on by the shaving technique.

Rectovaginal fistulas were signaled in 0.24% of the cases (n = 13/5,297) (3, 4, 14, 21, 23, 27–31, 33–35). Eight studies did not bring back any rectovaginal fistulas at all (3, 21, 23, 27, 28, 30, 33, 35), while three studies reported between 1% and 2.6% (29, 31, 34). Only Donnez et al. reported 0.06% of rectovaginal fistula in a series of 3,298 cases (4), and Roman et al. reported 0.6% in a snapshot of 546 cases (14).

Any intraoperative hemorrhage was described. Jatan et al. (28) and Donnez et al. (4) reported delayed hemorrhage in, respectively, 1.6% and 0.09% of cases. This complication occurred in 0.08% of cases (n = 4/4,568) (3, 4, 21, 23, 27–31, 33–35).

Two studies (34, 35) revealed 6.6% and 2.2% of long-term bladder catheterization after shaving, but this was not documented in another 10 studies (3, 4, 21, 23, 27–31, 33). The overall rate of long-term bladder catheterization was 0.19% (n = 9/4,731) (3, 4, 21, 23, 27–31, 33–35). It is important to stress, however, that bladder atony was not permanent and catheterization was required for a maximum duration of 6 weeks ± 4 (35).

Few studies analyzed bowel function after shaving. However, an objective assessment of neurological intestinal alteration after rectal shaving of rectovaginal DE suggested that this surgical technique preserves neurological bowel activity