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Review Article

Laparoscopic shaving for colorectal endometriosis: a literature review

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ABSTRACT

Colorectal endometriosis is one of the most challenging conditions to manage. Surgical treatment is required when lesions are symptomatic, impairing bowel, urinary, sexual, and reproductive functions. Preoperative radiological examination should be extensive to determine the appropriate surgery: laparoscopic shaving, disc excision or rectal resection. We demonstrated that in the hands of experienced surgeons, shaving technique is possible in more than 95% of colorectal endometriotic nodules, with low complication rates compared to resection. Shaving and bowel resection are associated with comparable recurrence rates. As shaving is indicated whatever the size of deep lesions, surgeons should first consider rectal shaving to remove deep bowel endometriosis. Bowel resection should only be performed in case of major rectal stenosis (>80%), multiple or posterior lesions and stenotic colorectal nodules.

Keywords: Colorectal endometriosis, Shaving, Complications, Recurrence

INTRODUCTION

The rectum and recto-sigmoid are the most frequently involved sites of bowel endometriosis accounting for 70 to 88% of all cases.[1] Typically, endometrial implants involve the bowel wall from the serosa and can extend to the muscularis propria and submucosa only. Rarely, it can involve mucosa and be responsible for bowel stenosis. Surgical approach of colorectal endometriosis is an option if lesions are symptomatic, impairing bowel or reproductive functions or when medical treatment is no longer effective. Three recognized surgical techniques have been described for colorectal endometriosis: rectal shaving, discoid excision and segmental resection. There are helpful recommendations for different approaches based on characteristics of the lesion including the size, length, depth of invasion, circumference of the rectum involved, number of lesions amongst other factors. Rectal shaving is well suited for smaller lesion (typically <3 cm) without entering the bowel lumen.[2] Recently, Donnez and Roman concluded that surgeons should consider rectal shaving as first-line surgical treatment of deep endometriosis, irrespective of nodule size or association with other digestive sites.[3,4] The goal of this paper is to review the available literature on shaving technique in terms of complications and recurrence comparing it with other techniques.

PREOPERATIVE EVALUATION

Preoperative investigation is an essential step to define the correct surgical strategy. Clinical examination alone has poor diagnostic accuracy and reliability for colorectal endometriosis, considering its poor performance for accurate identification of rectal infiltration. Nonetheless, vaginal speculum, bimanual examination and rectovaginal examination always serve as the starting point for the entire evaluation. Actually, transvaginal ultrasound (TVU) is widely available with a low relative cost that should be considered as a first-line imaging technique providing detailed dynamic images of the pelvis with minimal discomfort for the patients. In addition of degree of bowel

wall infiltration, number of lesions and its diameter, TVU evaluate the distance of bowel lesions from the anal verge. The uterosacral ligaments can be used as a reference point to discriminate between lower and upper rectal lesions. In case of low rectal lesion, the distance from the anus can be assessed by transrectal sonography positioning the tip of the probe on the lowest aspect of the endometriotic lesion and measuring the length of the probe.[1]

Magnetic resonance imaging (MRI) is thought to be the main preoperative imaging method for the comprehensive assessment of colorectal endometriotic lesions. It allows precisely positioning and comprehensively evaluating endometriotic lesions at multiple planes and the image data acquired enable surgeons to analyze the condition personally. MRI remains the best radiologic tools for evaluating the importance of colorectal wall invasion. Chen et al found that the sensitivity and specificity of MRI for diagnosis of rectal muscularis layer involvement was 73.3 and 92.9% respectively, that agree with the results of other papers.[6-8] MRI is better suited to discriminate between multifocal lesions and for identifying higher lesions, located above the rectosigmoid junction, which cannot be visualized by TVS due to the limited field-of-vision. However, MRI remains less precise for detection of rectal mucosal or submucosal invasion.[6] Additionally, artifacts associated with the presence of fecal residuals and enhanced bowel movement may limit its diagnostic performance. Other diagnostic procedures such as computed tomography urography may be indicated in case of suspected ureteral invasion.

INDICATIONS

Considering nodule size, donnez et al found that more than 95% of deep endometriosis cases can be managed with the shaving technique, irrespective of nodule size.[5] Similar data were also reported by numerous endometriotic surgeons, who treated more than 80 percent of their patients using this technique.[9-11] Actually, the shaving technique is possible for rectal nodules exceeding five cm in diameter.[5,12,13] In case of sigmoid endometriotic nodules, majority of authors consider that radical approach is more appropriate. In fact, the muscularis of the rectum is thicker than the sigmoid, resulting in better tolerance to shaving; in the other hand, sigmoid endometriotic lesions are usually more stenotic than rectal lesions.[5] Three criteria for not using the shaving technique were identified: rectal mucosal invasion, severe rectal stenosis affecting more than 80% of the lumen or circular rectal invasion.[12] In these cases, radical approach must be considered for best postoperative outcomes.

SURGICAL TECHNIQUE

Shaving technique for colorectal endometriosis was first reported in 1991 by Donnez and Reich and consists in the separation of the nodule from the anterior wall of the rectum to reach the correct cleavage plan.[14,15] However, the surgical technique of shaving seems to be unique to each team. In fact, some authors defined shaving as the excision of endometriotic nodule reaching at most the rectal muscularis without sutures, while others include in rectal shaving the resection of the nodule beyond the muscularis and up to the opening of the lumen of the digestive tract followed by simple suture.[11,16-20] Chou et al have demonstrated in an article video the important steps of the procedure as follow:[2] Suspension of ovaries, Mobilization of diseased segment of the rectum, Dissection of the nodule from the anterior part of the rectum, Checking for integrity of bowel wall and Suture of the muscularis defect after excision of lesion from muscularis layer of the bowel.

Noted that both side ureterolysis must be realized as the first step of this surgery, in case of lateral extension, to avoid ureteral injury. This procedure is feasible with different devices with no superiority: CO2 laser, cold scissors, Ultracision, plasma energy and monopolar hooks.[9,21,22] Once the rectum has been shaved, additional fragments of the endometriotic nodule from the posterior wall of the vagina, cervix and uterine corpus must be removed to avoid recurrence. Opening the vagina during surgery has been identified as a risk factor for rectovaginal fistulas, but this risk is only real in case of concomitant bowel resection and not shaving.[23] Procedures like gas and blue dye tests may be performed to ensure rectal integrity. However, these tests should not exclude later postoperative bowel perforation, as thermal rectal injury may still occur, leading to possible necrosis and late rectovaginal fistulas. Use of Indocyanine green, after procedure, to evaluate vascularization of the bowel is a good tool to decrease postoperative risk of rectovaginal fistulas, but prospective randomized studies are needed.[24,25]

COMPLICATIONS

Surgery for treatment of colorectal endometriotic nodules shows lower complication rates after conservative approach than after bowel resection, especially in terms of rectovaginal fistulas, anastomotic leakage, anastomotic stenosis and long-term bladder catheterization.[4] Donnez et al have reported 0.06% of rectovaginal fistulas in 3298 cases of deep endometriosis operated by shaving technique.[12] Authors concluded in this paper that this complication appears to be related to opening and resection of the bowel than the vagina, especially when managing lower lesions.[12] In a systemic review conducted by Bendifallah et al the overall rate of per operative hemorrhage requiring blood transfusion observed after shaving, disc excision and segmental resection of colorectal endometriosis was 0.1, 1.1 and 1 % respectively.[26] Only few papers have described bowel function after rectal shaving. Roman et al described good functional outcomes for postoperative constipation and anal continence after shaving compared to bowel resection.[27] However, a randomized multicenter trial comparing functional outcomes following conservative and radical approach of rectal endometriosis does not show any significant superiority.[28] We must note in this paper

that shaving and disc excision were both considered as conservative approach, resulting in bias.[28] Noted also that compared to segmental colorectal resection and disc excision, patients with shaving technique has a shorter operating time and hospital stay, consequently less postoperative thromboembolic risk.

RECURRENCES

The post operative pain recurrence rates reported in the literature appear to be higher after bowel resection and disc excision than after rectal shaving (17.2%, 11.7% and 10% respectively).[4] Roman et al observed 4% recurrence rate after 3 years of follow-up, and 8.7% after 5 years.[21,27] Similar results have been reported by Donnez et al who observed a significantly lower recurrence rate of pelvic pain (7%) after conservative surgery.[29] Moreover, high recurrence rates needing reoperation (24% after 20 months of follow-up and 27.6% after 24 months) were reported in two studies, secondary to persistent foci after shaving technique.[30,31] Residual lesions are also frequent after bowel resection and disc excision and some authors have reported positive margins on bowel specimens. In many reported case series, occult microscopic endometriotic implants are left behind on the bowel extending as far as 3 cm in 19% of cases.[32,33] Consequently, there is no strong evidence to determine the precise risk of recurrence of colorectal endometriosis following the three techniques and we should not assume that a radical approach is associated with more complete treatment of deep endometriosis.

CONCLUSION

Colorectal shaving is a valuable surgical procedure, feasible in majority of colorectal endometriosis cases and leading to a low complication rate, good improvement in digestive function and satisfactory fertility outcomes.

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