



Surgical treatment of rectovaginal endometriosis with extensive vaginal infiltration: results of a systematic three-step vagino-laparoscopic approach



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ABSTRACT

Objective: Recto-vaginal endometriosis remains a surgical challenge. We propose a systematic surgical approach combining vaginal and laparoscopic steps for patients affected by deep endometriosis infiltrating the vaginal wall.

Study design: This is a prospective observational study, performed at Campus Bio-Medico of Rome, University Teaching Hospital. All consecutive patients, from 2008 to 2011, affected by symptomatic deep recto-vaginal endometriosis with full thickness vaginal wall involvement, underwent a systematic surgical approach, based on three consecutive surgical steps: vaginal route, laparoscopic approach and final vaginal excision. All patients included in the study were scheduled for two years' follow-up with pelvic examination, transvaginal ultrasound and visual analog scale (VAS) evaluation of symptoms (dysmenorrhea, dyspareunia and chronic pelvic pain) at 3, 6, 12 and 24 months.

Results: Thirty-four patients were enrolled. No major complications were registered. Complications included superficial vascular lesions in two cases (5.9%), ureteral stenosis two weeks after surgery in one patient (2.9%), and bowel obstruction for paralytic ileus in one patient (2.9%). A de novo endometrioma was found at 12 months after surgery and a recurrent endometrioma was evident at 24 months. For all symptoms evaluated, there was a significant improvement within 3 months after surgery ($p < 0.05$) and no statistically significant difference during follow-up (at 3, 6, 12 and 24 months).

Conclusion: The proposed systematic surgical approach consisting of three consecutive steps could simplify the approach to deep endometriosis while at the same time increasing the quality of endometriosis surgery, with important benefit for the women affected.

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1. Introduction

Recto-vaginal endometriosis consists of endometriotic nodules within the connective tissue between the anterior rectal wall and the vagina, in which the fibrotic component is prevalent [1]. When possible, excision of the endometriotic nodule is the proper solution: in the most complex cases, when rectal wall is involved, resection of the affected intestinal tract may be necessary [2]. In these cases, several authors support the role of surgery as first-line treatment. Previous studies have demonstrated the feasibility of laparoscopic-vaginal treatment of deep infiltrating endometriosis with good results in terms of improvement in symptoms, infertility, and quality of life [3–8].

We report a prospective observational study on a systematic surgical approach combining vaginal and laparoscopic steps in

patients with deep recto-vaginal endometriosis infiltrating the vaginal wall, without full thickness bowel involvement. The main goal of the study is description of a new technique and then we present clinical data on pain perception at follow-up (till 2 years).

2. Materials and methods

A prospective database was created for all consecutive patients undergoing excision of recto-vaginal endometriosis at the Department of Gynecology in University Campus Bio-Medico of Rome, from January 2008 to October 2011.

Eligibility criteria were: moderate to severe complaint of at least one pain symptom (dysmenorrhea, dyspareunia, chronic pelvic pain) associated or not with infertility; presence of recto-vaginal endometriosis with vaginal involvement determined by clinical and instrumental investigation; age ≤ 45 years, adequate renal, hepatic and cardiac function; signed informed consent. Exclusion criteria were: radiologic or endoscopic evidence of full thickness bowel endometriosis infiltration with mucosal

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involvement, associated neoplastic disease. The study was approved by Institutional Review Board of Campus Bio-Medico University of Rome.

No woman received hormonal therapy for the three months prior to surgery in order to avoid missing any endometriosis, neither postoperatively.

The pre-treatment evaluation consisted of: complete history, physical and gynaecologic examination, trans-vaginal and/or trans-rectal ultrasound, and pelvic magnetic resonance imaging. Rectosigmoidoscopy and a double-contrast barium enema were also carried out in all patients to rule out bowel wall involvement. Preoperatively patients were asked to evaluate the severity of each symptom by a 11-point visual analog scale (VAS) with a scoring system from 0 (absence of pain) to 10 (most severe pain). According to the information collected, the intensity of pain was classified as mild (score 1–4), moderate (score 5–7), or severe (score 8–10). Data on patient age, body mass index, previous surgery or medical therapy for endometriosis, parity, infertility status, intraoperative disease localizations (the revised American Society of Reproductive Medicine classification), operative procedures, total operative time, intra-operative blood loss, conversion to laparotomy, intra-operative and early postoperative complications, and discharge from hospital were prospectively recorded in a computed database [9,10]. Postoperative fever was defined as temperature elevation $\geq 38^\circ\text{C}$ on two occasions at least 6 h apart within 24 h, starting 24 h after surgery. Wound infection was defined as purulent wound drainage with tissue warmth, erythema and increasing tenderness. All patients were scheduled for a two-year follow-up including pelvic examination, transvaginal ultrasound and VAS symptom evaluation at 3, 6, 12 and 24 months. Data concerning symptom relief and pregnancies were collected. Moreover, clinical recurrence was defined as at least one moderate to severe pain symptom during follow-up; endometriosis recurrence was defined as the presence of disease clinically and instrumentally proved.

2.1. Surgical procedure: the 3-step technique

We introduced a systematic surgical approach to deep recto-vaginal endometriosis with vaginal involvement based on three consecutive surgical steps: vaginal route, laparoscopic approach and final vaginal excision (Fig. 1). All surgical procedures were performed by the same senior surgeon (RA).

2.1.1. Step 1: vaginal route

The procedure starts with examination of the patient under anesthesia, a crucial step because the surgeon can definitely assess the recto-vaginal space involvement. The cervix is pulled anteriorly by a Schroeder's forceps attached to the posterior cervical lip. This allows the complete exposure of the posterior vaginal vault and the surgeon can better visualize the endometriotic lesion. After infiltration with diluted adrenaline (1:200,000), the vagina is incised in a semilunar shape surrounding the endometriotic lesion. This approach permits the surgeon an accurate identification of the correct dissection plan between the fibrotic nodule and the surrounding healthy tissue. The lesion attached to the posterior vaginal wall is carefully dissected from the anterior rectal wall with curved Mayo scissors. Care should be obviously taken in order to maintain the correct surgical plane: dissection should not be too deep because this could lead to rectal perforation but should not be too superficial in order to avoid an incomplete surgical excision. On reaching the pouch of Douglas, it is important not to open the peritoneum in order to facilitate the subsequent laparoscopic step. The endometriotic nodule is left attached to the posterior vaginal wall. Retroperitoneal dissection is continued, isolating the utero-sacral ligaments, if necessary,

according to the endometriosis extension. A uterine manipulator is then positioned.

2.1.2. Step 2: laparoscopic approach

A 10 mm laparoscope is introduced through the umbilicus. Pneumoperitoneum is induced and three ancillary trocars are then inserted: one supra-pubic and two lateral to the epigastric arteries in the left and right lower abdominal quadrants, respectively. The abdominal and pelvic cavities are carefully inspected to identify the extent of the disease and the presence of other endometriotic lesions.

- (a) *Adhesiolysis, resection of endometriotic implants and ovarian cysts stripping*: If present, adhesions are removed in order to separate bowel from uterus and pelvic wall and to directly visualize the recto-vaginal space and pouch of Douglas. If present, other concomitant endometriotic implants are dissected, isolated and then removed; excision is performed with 5-mm bipolar scissors working retroperitoneally in healthy tissue. If ovarian endometrioma is present, laparoscopic excision is performed as previously reported [11].
- (b) *Ureteral evaluation*: The ureters are always identified during the laparoscopic approach in order to evaluate the presence of ureteral endometriosis involvement or retraction. In the case of larger nodules or of lateral extension of the disease, dissection of the ureter is always carried out. The retroperitoneal space dissection and isolation of ureters are started with incision of the peritoneum at the level of the pelvic brim. The dissection is progressively made in the direction of the utero-sacral ligament. If hydronephrosis is present, a JJ stent is inserted [12]. At this point the utero-sacral ligaments are separated from the ureters.
- (c) *Recto-vaginal septum dissection*: The peritoneum is incised laterally to the rectum in the healthy tissue surrounding the endometriotic nodule; pararectal spaces are then opened until the previously dissected vaginal planes are reached. The separation of the endometriotic nodule from lower (recto-sigmoid colon) and lateral (uterosacral ligaments, ureters) tissues is then completed.

2.1.3. Step 3: vaginal excision

The third vaginal step allows the complete removal of the endometriotic nodule from the posterior part of the cervix and subsequent vaginal suturing. At the end of the procedure, a laparoscopic check is performed in all cases, allowing final abdominal rinsing and hemostasis. The total operation time and duration of each separate step are collected.

2.2. Statistical analysis

Normally distributed data are presented as mean \pm SD. VAS scores were compared with the Mann-Whitney test. The *p* value 0.05 was considered statistically significant.

3. Results

Between January 2008 and October 2011, 42 consecutive patients with evidence of recto-vaginal endometriosis were evaluated for inclusion. Eight patients were not eligible for the study protocol because they did not satisfy eligibility criteria (1 had coexisting cancer, 2 were pregnant and 5 had full thickness bowel involvement). Thirty-four patients were finally enrolled: mean age was 32.7 ± 4.4 ; mean BMI was 21.2 ± 3.2 .

Intraoperative data are shown in Table 1. Additional procedures were performed in 29% (10/34) of cases: 8 excisions of endometriomas measuring from 3 to 6 cm, and 2 myomectomies.

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