Transvaginal sonography and rectal endoscopic sonography for the assessment of pelvic endometriosis: a preliminary comparison

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BACKGROUND: Endometriosis and possible rectal involvement are difficult to assess by physical examination. Previous studies have shown the diagnostic value of magnetic resonance imaging and rectal endoscopic sonography (RES) in this setting, but not that of transvaginal sonography (TVS). The aims of this study were to compare the accuracy of TVS and RES for the diagnosis of pelvic endometriosis, and to compare the results with histological findings. PATIENTS AND METHODS: In a prospective study, 30 consecutive patients referred with clinical signs of endometriosis underwent TVS and RES; the images were interpreted blindly with regard to physical findings. RESULTS: Endometriosis was confirmed histologically in 28 (93%) of the 30 patients. Endometriomas were also present in 67% of cases. For the diagnosis of uterosacral endometriosis, the sensitivity, specificity, and positive and negative predictive values of TVS and RES were 75 and 75%, 83 and 67, 90 and 90%, and 45 and 40% respectively. For the diagnosis of rectosigmoid endometriosis, the sensitivity, specificity, and positive and negative predictive values of TVS and RES were 95 and 82%, 100 and 88%, 100 and 95%, and 89 and 64% respectively. CONCLUSION: Despite the large proportion of our patients who had intestinal endometriosis, representing a possible source of bias, our results suggest that TVS is as efficient as RES for detecting posterior pelvic endometriosis and should therefore be used as the first-line examination.

Key words: endometriosis/rectal endoscopic sonography/rectum/ultrasonography/uterosacral ligaments

Introduction

Endometriosis is defined by the presence of endometrial glands and stroma outside the uterus (Clement, 2002). Pelvic endometriosis may involve the uterosacral ligaments, the pouch of Douglas (with partial or complete obliteration), the vagina, the rectum and, occasionally, the vesico-uterine space (Koninckx et al., 1994). It is a cause of pelvic pain, dysmenorrhoea, dyspareunia, dyschezia and urinary symptoms, and is associated with infertility.

Two main aetiological concepts have been proposed for endometriosis, namely the metaplasia theory (Meyer, 1919) and the transplantation theory (Sampson, 1927). Recently, Nisolle and Donnez (1997) suggested that peritoneal, ovarian and rectovaginal endometriotic lesions should be considered as three separate entities with different pathogeneses (including transformation of Müllerian rests in rectovaginal septum involvement).

Transvaginal sonography (TVS) is recommended for the diagnosis of ovarian endometriosis (Mais et al., 1993; Guerriero et al., 1995) and bladder endometriosis (Fedele et al., 1997). To our knowledge, TVS has not been assessed in posterior pelvic endometriosis. Using transrectal sonography, Ohba et al. (1996) found that the uterosacral ligaments normally appeared as low echoic homogeneous arcs on each side of the uterine cervix, while they were thick and irregular in women with endometriosis. Recently, rectal endoscopic sonography was recommended to identify rectovaginal and/or uterosacral involvement by endometriotic lesions (Chapron and Dubuisson, 2001). A combination of rectal endoscopic sonography (RES) and magnetic resonance imaging has been recommended to evaluate posterior pelvic endometriosis (Kinkel et al., 1999; Dumontier et al., 2000).

The aims of this prospective study were (i) to identify new transvaginal sonographic signs of pelvic endometriosis, and (ii)
to compare the diagnostic value of TVS with that of RES in histologically documented pelvic endometriosis.

Patients and methods

**Patients**

From September 2000 to April 2002, 40 patients with signs and symptoms of endometriosis were referred to the gynaecology department of Tenon Hospital, Paris. All the women underwent both TVS and rectal RES. Ten women were excluded from the study, nine because of cancelled surgery, and one because virginity prevented TVS. The study population thus consisted of 30 women. The patients’ characteristics, clinical manifestations and previous history of medical and/or surgical treatments are given in Table I. The median interval between GnRH analogue treatment and surgery was 6 months (range 3–12 months). Clinical uterosacral involvement by endometriosis was suspected when infiltration or a nodule was detected and was compatible with the patient’s pain. Laparoscopy and laparotomy confirmed the presence of endometriosis in 23 and seven women respectively.

**Ultrasound examination**

Each sonographer had >10 years of expertise. The sonographers were informed of the patients’ clinical history and symptoms, but were blinded to the results of the physical examination, other imaging modalities and histology. The physicians who interpreted the TVS examinations were blinded to the results of RES examination, and vice versa. Different physicians performed TVS or RES on different days. The median interval between the two different imaging methods was 2 weeks (range 1–4 weeks). All potential pelvic locations of endometriosis were examined. We distinguished between ovarian and non-ovarian endometriosis involving other pelvic organs.

**TVS**

Ultrasound examinations were performed with an Ultramark HDI 5000 unit (Philips, The Netherlands) or a Siemens Elegra (Siemens, Germany). Pelvic transabdominal sonography was routinely performed with a wide-band 2–4 MHz transducer, and transvaginal examination with a wide-band 5–9 MHz transducer. Colour Doppler examination was performed with a pulse repetitive frequency of 1000–1500 Hz, a wall filter of 50 Hz and a high-priority colour set-up. All scans were performed by the same radiologist (M.B.), who has extensive gynecological experience. Each examination was interpreted in real time and videotaped for review. The uterosacral ligaments, the vagina (and cervix) and the rectosigmoid colon were analysed during each sonographic examination. Pelvic posterior endometriosis was diagnosed if at least one of these locations was abnormal. Posterior endometriosis was defined by hypoechoic linear thickening, or nodules/masses with or without regular contours. The largest diameter of the lesions and infiltration of adjacent pelvic organs were also assessed. In the rectum and/or sigmoid colon, involvement of the muscularis propria, which is hypoechoic and thin (<3 mm), was distinguished from the hyperechoic submucosa and mucosa (Figure 1). Partial or complete obliteration of the pouch of Douglas and the presence of fluid were recorded. Unilateral or bilateral ovarian involvement by endometriosis was defined by the presence of cysts with diffuse low-level internal echoes, multilocularity or hyperechoic wall foci.

**RES**

All the patients underwent outpatient RES before surgery. After a simple rectal enema, RES was performed with an Olympus GF UM 20 Echo endoscope (SCOP Medecine Olympus, Rungis, France) with a diameter of 11.4 mm, at 7.5 and 12 MHz. The procedure was performed under general anaesthesia in 24 consenting women, and with no anaesthetic drugs in six women who refused general anaesthesia. All the scans were performed by two physicians with extensive gastrointestinal experience. The transducer was always positioned in the sigmoid and then slowly withdrawn through the sigmoid and rectum. Studies of the bowel wall and adjacent areas were carried out by moving the probe up and down several times before and after instilling water into the intestinal lumen. Involvement of the utero-sacral ligaments, the vagina and the colo-rectum was analysed. Involvement of the different

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**Table I. Characteristics of the patients with pelvic endometriosis**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Number of patients (%)</th>
</tr>
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<tbody>
<tr>
<td>Mean age (years) (range)</td>
<td>32 (21–50)</td>
</tr>
<tr>
<td>Previous surgery for endometriosis</td>
<td>16 (53)</td>
</tr>
<tr>
<td>Nulliparous</td>
<td>28 (93)</td>
</tr>
<tr>
<td>GnRH analogue treatment before surgery</td>
<td>14 (47)</td>
</tr>
<tr>
<td>Infertility</td>
<td>10 (33)</td>
</tr>
<tr>
<td>Dysmenorrhoea</td>
<td>24 (80)</td>
</tr>
<tr>
<td>Dyspareunia</td>
<td>17 (57)</td>
</tr>
<tr>
<td>Dyschezia</td>
<td>11 (37)</td>
</tr>
</tbody>
</table>

Most of the patients were symptomatic.

**Figure 1.** Sagittal transvaginal sonography passing through the cervix and the rectum, showing the normal anatomy. C = cervix; PVF = posterior vaginal fornix; R = rectum; MP = muscularis propria; MM = mucosa and submucosa.
layers of the colo-rectal wall was evaluated, including the hypoechoic muscularis propria. Obliteration of the pouch of Douglas and the presence of fluid were recorded. Pelvic endometriosis was defined by the presence of a hypoechoic nodule or mass, with or without regular contours. The largest diameter of the lesions, their location from the anus margins, and infiltration of adjacent pelvic organs were assessed. In the rectum and/or sigmoid colon, involvement of the muscularis propria, which is hypoechoic and thin, was distinguished from the hyperechoic submucosa and mucosa (Figure 2).

**Histology**

The histological criteria used for the diagnosis of endometriosis included the presence of ectopic endometrial tissue (ectopic glands together with stroma) (Clement, 2002). Fibrosis and smooth-muscle cells surrounding ectopic endometrial areas were noted. When colorectal resection was carried out, the largest diameter of the lesion was assessed. The size of the lesion was appreciated macroscopically by palpation. The propria muscularis, submucosa or mucosa infiltration of colo-rectum by the endometriotic lesion was noted after colorectal resection. In accordance with Anaf et al. (2000), endometriotic islands, smooth muscle, and fibrotic components in endometrial lesions was semi-quantified using a microscope grid. For each lesion, the proportion of endometriotic islands, smooth muscle and fibrosis was expressed as a percentage (mean ± SD).

**Statistical analysis**

The sensitivity, specificity, positive and negative predictive values, and accuracy of TVS and RES were evaluated for each site of endometriotic involvement.

Parametric and non parametric continuous variables were compared using Student’s t-test, and categorical variables were compared using the χ² test, Fisher’s exact test, the MacNemar test or the Z statistic, as appropriate. P values <0.05 were considered statistically significant.

**Results**

**Clinical diagnosis of endometriosis**

Posterior endometriosis was found by physical examination in 25 (83%) of the 30 women. Sixteen of these 25 women had endometriotic lesions of the uterosacral ligaments (bilateral in 10 cases and unilateral in six cases). One false-positive case of unilateral uterosacral involvement was recorded. Physical examination failed to detect endometriosis in five patients (17%), despite relevant symptoms. The sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and accuracy of physical examination for the diagnosis of pelvic endometriosis were 86, 50, 96, 20 and 83% respectively. The respective values for the diagnosis of rectal involvement were 68, 100, 100, 53 and 77%.

**Perioperative and histological findings**

All the women had signs of endometriotic lesions at surgery. Endometriomas were present in 15 patients (ovarian involvement was bilateral in five cases). Uterosacral ligament involvement was found in 24 patients (bilateral in 20 and unilateral in four). Vesico-uterine nodules were found in three women and vaginal and/or cervix lesions were found in four. Colo-rectal involvement was found in 18 women. All lesions of the uterosacral ligaments, bladder, uterus, vagina and cervix were resected. Four of the 22 patients in whom colorectal involvement was detected perioperatively did not undergo colorectal resection because they had refused major surgery preoperatively. Colorectal resection was performed by laparoscopy in 13 patients and by laparotomy in five patients.
Twenty-seven women (90%) had multiple endometriotic lesions in the pelvic region.

Posterior endometriosis was confirmed histologically in 28 (93%) of the 30 patients. Two patients with clinical and surgical signs of uterosacral ligaments endometriosis were free of disease at histology, but one of these two women also had endometrioma.

Posterior endometriosis was associated with endometriomas in 14 cases (50%). Histology confirmed endometriotic involvement of the muscularis propria, submucosa and mucosa in respectively 18, six and one of the 18 women, respectively, who underwent colo-rectal resection.

Assessment of endometriosis by TVS

Using histological findings as the reference standard, TVS correctly diagnosed endometriotic involvement of pelvic organs in 25 women. There was one false-positive, one true-negative and three false-negative TVS-based diagnoses.

Involvement of the uterosacral ligaments was diagnosed in 18 of 24 patients (Figures 3 and 4). There was one false-positive, five true-negative and six false-negative diagnoses. Involvement of the vagina and/or cervix was diagnosed by TVS in one of four histologically proven cases. The number of false-positive and false-negative TVS diagnoses was zero and three respectively. There were 26 true-negative diagnoses.

Colorectal involvement was diagnosed in 21 of 22 cases (Figure 5). There were eight true-negative diagnoses, no false-positive diagnoses and four false-negative diagnoses.

Partial or complete occlusion of the pouch of Douglas was diagnosed in 18 of 22 cases. There were eight true-negative diagnoses, no false-positive diagnoses and four false-negative diagnoses.

The sensitivity, specificity, PPV, NPV and accuracy of TVS for the diagnosis of endometriotic involvement of the uterosacral ligaments, vagina and colorectum, and for occlusion of the pouch of Douglas, are given in Table II.

Ovarian endometriosis was diagnosed in 18 of 20 cases. The involvement was unilateral in eight cases (two right, six left), and bilateral in five cases. There were no false-positive TVS diagnoses and two false-negative diagnoses. The sensitivity, specificity, PPV, NVP and accuracy of TVS for the diagnosis of endometrioma were 90, 100, 100, 95 and 97% respectively.

Assessment of endometriosis by RES

With histological findings as the reference standard, RES correctly diagnosed endometriotic involvement of pelvic organs in 23 patients. There was one true-negative, one false-positive, and five false-negative RES diagnoses.

Involvement of the uterosacral ligaments was diagnosed in 18 of 24 patients. The number of false-positive and false-negative RES diagnoses was two and six, respectively. There were four true-negative diagnoses.

Involvement of the vagina was diagnosed in one of four cases. The number of false-positive and false-negative RES diagnoses was zero and three, respectively. There were 26 true-negative diagnoses.

Colorectal involvement was diagnosed in 18 of 22 cases (Figure 6). There were seven true-negative diagnoses. The number of false-positive and false-negative RES diagnoses was one and four respectively.

Partial or complete occlusion of the pouch of Douglas was diagnosed in 10 of 22 cases. There were eight true-negative diagnoses. The number of false-positive and false-negative RES diagnoses was zero and 12 respectively.

The sensitivity, specificity, PPV, NPV and accuracy of RES for the diagnosis of involvement of the uterosacral ligaments, vagina and colo-rectum, and for occlusion of the pouch of Douglas, are given in Table III.

Ovarian involvement was diagnosed in 10 of 20 cases. It was unilateral in eight cases (four right, four left) and bilateral in one case. The number of false-positive and false-negative RES diagnoses was four and 10 respectively. There were 36 true-negative diagnoses. The sensitivity, specificity, PPV, NPV and
The accuracy of RES for the diagnosis of endometrioma was 50, 90, 71, 78 and 77% respectively.

**Comparison of TVS and RES**

With histological findings as the reference standard, 22 TVS and 22 RES examinations correctly diagnosed posterior pelvic endometriosis. Using the MacNemar test, no difference was found between TVS and RES as regards diagnostic accuracy for endometriosis.

There was one false-positive case (uterosacral ligament involvement) with each technique, and two false-negative cases when the results of the two techniques were combined (one case of unilateral uterosacral involvement, one case of vaginal involvement). RES gave three false-negative diagnoses (two cases of rectal involvement and one case of bilateral uterosacral ligament involvement); these cases were correctly diagnosed by TVS. The sensitivity, PPV and accuracy of both TVS and RES for the diagnosis of pelvic endometriosis were 93, 93 and 87% respectively. Owing to the absence of true-negative cases in this series, it was not possible to evaluate the specificity and negative predictive value of the TVS and RES combination for the diagnosis of pelvic endometriosis.

The accuracy of the TVS–RES combination for the diagnosis of posterior pelvic endometriosis was 92.9%.

The largest macroscopic diameter of the endometriotic lesions ranged from 15 to 50 mm (mean 20.4 ± 16.9 mm), compared with 12 to 45 mm with TVS (mean 22.8 ± 14.8 mm) and 7 to 30 mm with RES (mean 12.7 ± 9.3 mm). Histology and TVS agreed on the size of colorectal endometriotic lesions ($P < 0.05$, rho = 0.42), while RES underestimated the size of these lesions.

All 18 cases of muscularis propria involvement were correctly diagnosed by TVS, but neither submucosal ($n = 6$) nor mucosal involvement was detected by this method. All 18 cases of muscularis propria involvement, one of six cases of submucosal involvement, and no cases of colorectal mucosal involvement were diagnosed by RES. Both TVS and RES correctly diagnosed rectal wall involvement. However, neither TVS nor RES correctly identified submucosal or mucosal infiltration.

The relative cross-sectional areas (mean ± SD) of endometriotic islands, smooth muscle and fibrotic components in lesions were 12.2 ± 5.7%, 40.3 ± 13.5% and 47.5 ± 15.5%, respectively. No difference in the relative areas of the three components was found according to the site of involvement (uterosacral ligaments, vagina or colorectum). The number of patients was too small to test the possible relation between the size of the smooth-muscle component and clinical, TVS or RES findings.

Contrary to TVS, RES correctly estimated the distance of rectal involvement from the anus (7–18 cm).

**Discussion**

In this series of women with signs and symptoms of posterior pelvic endometriosis, physical examination was diagnostic in 83% of cases, a value higher than the 60% reported by Chapron et al. (2002). This discrepancy could be explained by the higher frequency of multiple and large endometriotic lesions and the high proportion of patients with posterior pelvic endometriosis in our population, which could represent a potential bias. However, the extent of involvement of posterior pelvic organs remains difficult to determine by physical examination, and thus requires further investigations, including RES and magnetic resonance imaging. TVS is rarely used in this setting.

TVS is the first-line procedure for the investigation of pelvic disorders, and has been extensively evaluated in the diagnosis of endometriomas (Mais et al., 1993; Guerriero et al., 1996; Patel et al., 1999). With an accuracy of 93%, our results are in keeping with those of other authors, suggesting that TVS alone is sufficient to diagnose ovarian endometriosis (Mais et al., 1993; Guerriero et al., 1996; Patel et al., 1999). Few authors have evaluated the accuracy of TVS for the diagnosis of anterior pelvic endometriosis (Fedele et al., 1997; Balleyguier et al., 2002). Fedele et al. (1997) found that TVS was the most accurate technique for bladder endometriosis. In contrast, TVS failed to diagnose the three cases of vesico-uterine endomet-

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**Table II. Accuracy of transvaginal sonography for the diagnosis of pelvic endometriosis**

<table>
<thead>
<tr>
<th>Transvaginal findings</th>
<th>Sensitivity (%)</th>
<th>Specificity (%)</th>
<th>PPV (%)</th>
<th>NPV (%)</th>
<th>Accuracy (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uterosacral involvement</td>
<td>18/25 (75)</td>
<td>1/6 (83)</td>
<td>18/19 (95)</td>
<td>5/11 (45)</td>
<td>23/30 (77)</td>
</tr>
<tr>
<td>Vaginal involvement</td>
<td>1/4 (25)</td>
<td>26/26 (100)</td>
<td>1/1 (100)</td>
<td>26/29 (90)</td>
<td>27/30 (90)</td>
</tr>
<tr>
<td>Douglas involvement</td>
<td>18/22 (82)</td>
<td>8/8 (100)</td>
<td>18/18 (100)</td>
<td>8/12 (67)</td>
<td>26/30 (87)</td>
</tr>
<tr>
<td>Colorectal involvement</td>
<td>21/22 (95)</td>
<td>8/8 (100)</td>
<td>21/21 (100)</td>
<td>8/9 (89)</td>
<td>29/30 (97)</td>
</tr>
</tbody>
</table>

PPV = positive predictive value; NPV = negative predictive value.
triotic nodules in our series. This may be explained by the small size of these nodules (5, 5 and 10 mm) in our study relative to those reported by Fedele et al. (1997) (25–40 mm).

To our knowledge, this is the first reported evaluation of the accuracy of TVS for the diagnosis of posterior pelvic endometriosis. Our results demonstrate the value of TVS in the diagnosis of endometriosis involving the uterosacral ligaments, and the colorectum, with an accuracy ranging from 77 to 97%. The main advantage of TVS is the exploration of the whole pelvic cavity, including the bladder, the uterus and its ligaments, the pouch of Douglas, the ovaries, the rectovaginal septum and the colorectum, during the same examination. However, TVS does have some limitations. First, few data have been reported on the normal anatomy of the posterior pelvic organs with TVS. In our hands, TVS successfully distinguished the posterior vaginal wall from the rectal serosa and muscularis. The absence of distinguishable borders between these two organs suggests a tumoral process. Second, virginity ruled out TVS in one case in our study. Finally, the main limitation of TVS is the impossibility of determining the exact distance of rectal lesions from the anal margin and of evaluating the depth of rectal wall involvement. In addition to TVS, Guerriero et al. (1999) suggested that colour Doppler energy could help in the evaluation of the microvascular architecture in women with pelvic disorders, better than conventional colour Doppler. Further studies are required to determine the usefulness of Doppler sonography in the assessment of posterior endometriosis.

In our series the accuracy of RES for the diagnosis of uterosacral ligaments and colorectal involvement by endometriotic lesions was 73 and 83% respectively. Our accuracy rate for the diagnosis of bowel infiltration was lower than that reported by Chapron et al. (1998) and Roseau et al. (2000), who diagnosed all cases of uterosacral ligament involvement and/or bowel infiltration by means of RES. In contrast to these authors, in our hands RES yielded one false-positive and four false-negative diagnoses of colorectal endometriosis. This discrepancy could be partly explained by technical conditions such as incomplete voiding of the rectum and the characteristics of the transducers used. Indeed, RES transducers using higher frequencies than TVS transducers allow good definition of the bowel-wall layers but a narrow view (limited to a few cm) of adjacent pelvic organs. However, like TVS, RES has some limitations. First, RES can accurately diagnose posterior pelvic lesions but may miss anterior pelvic lesions. Secondly, RES has poor sensitivity for the diagnosis of endometriomas and obliteration of the pouch of Douglas. Thirdly, as confirmed here, previous publications have shown that RES can require the use of anaesthesia (Chapron et al., 1998; Roseau et al., 2000; Chapron and Dubuisson, 2001). Finally, in our experience, as the overall accuracy of TVS and RES is similar, RES seems to be required when colorectal involvement is strongly suspected. In addition, further studies are required to evaluate the potential relevance of the combination of TVS with transrectal sonography to evaluate pelvic endometriotic locations.

Histological and RES findings have not previously been compared in terms of the size of endometriotic lesions, particularly those involving the colo-rectum. In our series, a strong relationship was found between histology and TVS as regards the maximal diameter of colorectal lesions. In contrast, RES often underestimated the overall size of colorectal lesions. This discrepancy could be explained by the low accuracy of RES for assessing the lateral extent of endometriosis, especially that involving the uterosacral ligaments, which are often fibrotic in this setting. Moreover, the evaluation of endometriotic lesions might be influenced by the period of the menstrual cycle in which TVS and RES are performed. However, in our experience, the relative cross-sectional area of the endometrial component in endometriotic lesions is small, suggesting that TVS and RES vary little according to the phase of the menstrual cycle. In keeping with a previous study (Anaf et al., 2000), we found that the main components of endometriotic lesions were smooth muscle and fibrosis, irrespective of the location.

From the clinical point of view, our data underline that TVS and RES have similar accuracy for the diagnosis of colorectal endometriosis. Therefore, when a medical treatment option is recommended, TVS examination may be sufficient. From the surgical point of view, one advantage of RES is its ability to determine the distance of colorectal lesions from the anal margins when segmental resection is required. However, the main issue in colorectal endometriosis is to identify women who may benefit from segmental resection. Moreover, there is no consensus as to whether colorectal resection should be restricted only to patients with mucosal involvement. Further clinical studies are required to evaluate the surgical indications for full-thickness involvement.

In summary, our results suggest that TVS and RES have similar accuracy for the diagnosis of posterior endometriosis. TVS is the first-line method of choice for evaluating endometriosis, as it permits extensive exploration of the pelvis and is well tolerated by the patient. Radiologists new to this method should first familiarize themselves with the transvaginal sonographic aspect of the normal colorectal wall. We have now adopted TVS as the first-line imaging procedure to

### Table III. Assessment of pelvic endometriosis by rectal endoscopic sonography

<table>
<thead>
<tr>
<th>Endoscopic rectal findings</th>
<th>Sensitivity (%)</th>
<th>Specificity (%)</th>
<th>PPV (%)</th>
<th>NPV (%)</th>
<th>Accuracy (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uterosacral involvement</td>
<td>18/24 (75)</td>
<td>4/6 (67)</td>
<td>18/20 (90)</td>
<td>4/10 (40)</td>
<td>22/30 (73)</td>
</tr>
<tr>
<td>Vaginal involvement</td>
<td>1/4 (25)</td>
<td>26/26 (100)</td>
<td>1/1 (100)</td>
<td>26/29 (90)</td>
<td>27/30 (90)</td>
</tr>
<tr>
<td>Douglas involvement</td>
<td>10/22 (45)</td>
<td>8/8 (100)</td>
<td>10/10 (100)</td>
<td>12/20 (40)</td>
<td>18/30 (60)</td>
</tr>
<tr>
<td>Colorectal involvement</td>
<td>18/22 (82)</td>
<td>7/8 (88)</td>
<td>18/19 (95)</td>
<td>7/11 (64)</td>
<td>25/30 (83)</td>
</tr>
</tbody>
</table>

PPV = positive predictive value; NPV = negative predictive value.
explore posterior pelvic endometriosis, reserving RES for cases in which colorectal involvement is suspected, and prior to surgery.

References


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