

Pelvic Endometriosis – A Survey of Knowledge and Practice Among Gynecologists

Endometriose Pélvica – Enquete com Médicos Ginecologistas

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ABSTRACT

Purpose: Endometriosis affects a large number of reproductive age women. Clinical manifestations of the disease are cyclic pelvic pain and infertility. Women with endometriosis usually seek medical advice from a gynecologist for their symptoms. The role of the gynecologist is therefore crucial in identifying, treating, and, when appropriate, referring these patients promptly to specialised centers. Methods: A brief questionnaire was completed anonymously by 40 Brazilian gynecologists. Results: 67.5% of the respondents perform surgery for endometriosis. Approximately half (55%) of the respondents stated that the physical examination can diagnose cases of deeply infiltrating endometriosis; 92.5% do not exclude the possibility of deep endometriosis when serum CA-125 levels are normal. Magnetic resonance imaging, transvaginal ultrasound and colonoscopy are important in the preoperative assessment of the patient for 72.5%, 70%, and 62.5% of the respondents. For 62.5% of the respondents, GnRH analogues are the best medical management for endometriosis. Only 17.5% of the gynecologists think that all hormone-based treatments have similar outcomes. Although 80% of gynecologists responded that complete resection of the disease is the best treatment for deep lesions, 44% of the gynecologists that perform surgery for endometriosis recommend only diagnostic laparoscopy in these cases. Only 7.4% of the respondents are able to treat deep endometriosis with bowel involvement without the aid of a general surgeon or a colorectal surgeon. Conclusions: More education is required among gynecologists on the subject of endometriosis, in order to identify and treat patients with this disease. Referral to a center with the necessary expertise to offer all available treatments in a multi-disciplinary context is important to improve the surgical outcomes of deep infiltrating endometriosis.

Key words: Endometriosis. Diagnosis. Treatment. Deep endometriosis. Laparoscopy.

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INTRODUCTION

Endometriosis is a benign gynecological disease defined as the presence of endometrial tissue – consisting of gland and/or stroma – outside of the uterine cavity.¹ This condition is predominantly found in women of reproductive age and affects approximately seven to ten percent of all women, 71% to 87% of women with chronic pelvic pain, and 38% of women with infertility.²

The deep infiltrating disease has been defined as endometriosis that penetrates more than 5mm below the peritoneal surface and is strongly associated

with severe chronic pelvic pain, dyspareunia and dysmenorrhea. In this situation the endometriotic implants may involve the uterosacral ligaments, pouch of Douglas (retrocervical endometriosis), rectovaginal septum and even the rectum, bladder and ureters.³

The diagnosis includes deep history, physical examination and complementary imaging tests to stage the disease and plan a possible surgical treatment.^{4,5}

Treatment should be individualized for each patient. Hormonal treatments are effective for controlling pain related to endometriosis, but are not an option in women wishing to get pregnant.^{6,7} Surgical treatment is indicated for the histopathologic diagnosis

of the disease and is necessary in symptomatic patients to complete medical treatment. In general, the evidence suggests that complete excision of endometriosis offers prolonged symptom relief, particularly in women with severe or debilitating symptoms. To ensure complete removal of disease and for the best results in terms of quality of life, several procedures may be required, including surgical manipulation of the bladder, ureters, rectum, and vagina.

The complication rate for laparoscopic surgery for deep endometriosis is estimated to be 3.4%, and may reach 10% to 22% when intestinal resection is necessary.³ Postoperative intestinal fistula have a deleterious impact on women's fertility and quality of life and is the most worrisome complication of this type of surgery.

In this article, we report our assessment of the knowledge of a group of Brazilian gynecologists with regard to clinical evaluation and treatment of endometriosis using hypothetical cases.

METHODS

From June to December 2010 we surveyed gynecologists about endometriosis. A questionnaire (available in the Appendix of this article) was sent electronically to 400 members of the Society of Obstetricians and Gynecologists of Paraná (SOGIPA), chosen randomly, and was hand-delivered to 40 physicians taking laparoscopy courses (Gynelaser) held in Brasília.

Data analysis was conducted using version 8.0 of the STATISTICA statistical software package.

Os dados foram inseridos no programa STATISTICA 8.0 e avaliados.

RESULTS

Only the questionnaires hand-delivered in the laparoscopy courses were completed ($n = 40$), accounting for only 9.1% of the 440 questionnaires distributed. No gynecologist answered the survey electronically.

Gynecologists who answered the survey had been in a practice an average of 15.2 ± 10 years (range 1-40 years). Thirty percent of gynecologists reported having specific training in the treatment of endometriosis; 45% responded that they perform laparoscopic surgeries. Forty-five percent reported performing open surgery for the treatment of deep endometriosis, and 30% said they perform laparoscopic surgery for deep endometriosis. As three of the 40 gynecologists (7.5%) reported performing both open and laparoscopic surgery for endometriosis, the total percentage of gynecologists among survey respondents that treat deep endometriosis was 67.5%. Fifty percent of gynecologists have already participated in or accompanied surgeries of deep endometriosis involving the retrocervical region, the rectovaginal septum, or the intestine.

Regarding the diagnosis of endometriosis, 55% stated that the diagnosis of endometriosis can be suspected or established by the gynecological examination. For 65% of the gynecologists the value of serum CA-125 levels is important for the diagnosis of endometriosis, but 92.5% do not rule out the diagnosis of endometriosis when the CA-125 level is normal.

Table 1 shows the imaging studies gynecologists consider important in the preoperative investigation of deep endometriosis.

Table 1 - Responses to the question: "Which tests do you consider important for the preoperative diagnosis and investigation of deep endometriosis?"

Imaging Test	Yes	No
Transvaginal Ultrasound	28 (70%)	12 (30%)
Transvaginal Ultrasound after bowel prep	22 (55%)	18 (45%)
Ultrasound of the urinary tract	16 (40%)	24 (60%)
CT of the Pelvis	12 (30%)	28 (70%)
Magnetic Resonance Imaging of the pelvis	29 (72.5%)	11 (27.5%)
Colonoscopy	25 (62.5%)	15 (37.5%)
Transrectal Ultrasound	16 (40%)	24 (60%)

In the setting of a clinical suspicion of endometriosis, but without abnormal findings on physical examination, or in imaging studies or laboratory tests, 57.5% of gynecologists recommend a diagnostic laparoscopy and 42.5% said they try a therapeutic trial with an oral contraceptive.

In patients with endometriosis lesions larger than 1 cm in diameter in the uterosacral ligament, 35% of gynecologists believe that colonoscopy is the most important test to include in the preoperative investigation. For 30% of gynecologists computed tomography of the pelvis is the most important test and for 22.5% ultrasonography of the urinary tract should be ordered as part of the pre-operative evaluation (Figure 1).

For deep endometriosis, 80% of the gynecologists surveyed considered complete resection of the lesion the ideal surgical treatment and 15% favor bipolar coagulation of lesions. Five percent of the gynecologists responded “I don’t know.” Of the 27 gynecologists who reported performing surgery for deep endometriosis, 81.5% responded that they do complete resection of the lesions (Table 2).

For 52.5% of gynecologists, the deep lesions of endometriosis in uterosacral ligament exceeding 1 cm in diameter should be treated by means of complete resection of the lesion associated with ureterolysis (Figure 2).

Thirty-five percent of the gynecologists think that laparoscopic uterosacral nerve ablation (LUNA) is the most important procedure to prevent recurrence of endometriosis in patients with endometriotic nodules in the rectovaginal septum involving the vagina. Thirty percent responded that they “don’t know” and only 20% considered that resection of the posterior fornix of the vagina is the procedure that helps reduce the risk of recurrence (Figure 3).

In the opinion of 62.5% of gynecologists, the GnRH analogue Zoladex is the most effective medication for the medical management of endometriosis. Only 17.5% believe that all medical treatments have a similar effect (Figure 4).

Regarding the surgical techniques for resection of an endometriosis lesion involving the intestine, 25% know only segmental resection with anastomosis, 35% stated they “don’t know”, and 40% know the three techniques mentioned in question (segmental resection with anastomosis, discoid resection, and rectal shaving).

For cases of deep endometriosis involving the intestine or the rectovaginal septum, 57.5% of gynecologists state they perform complete resections

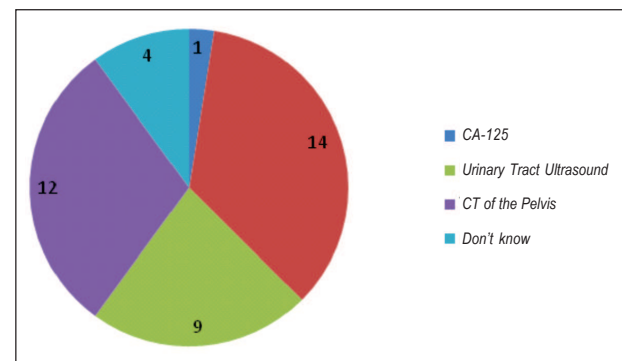


Figure 1 - Responses to the question: “In a patient with a deep endometriosis lesion larger than 1 cm in the uterosacral ligament, which do you consider important as part of the preoperative evaluation?”

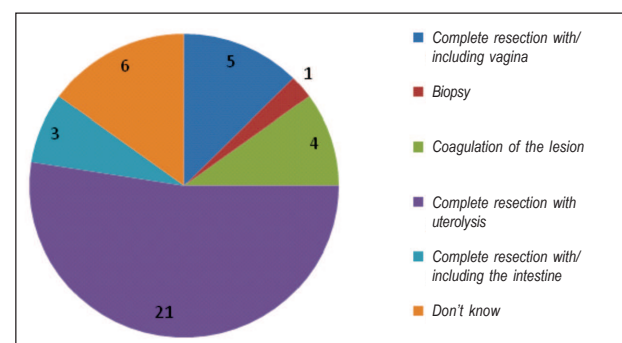


Figure 2 - Responses to the question: “In a patient with deep endometriosis of the uterosacral ligament > 1cm (lateral lesion), what procedure should be performed in most cases?”

Table 2 - Surgical treatment of deep lesions of endometriosis.

Surgical Treatment	Does not perform endometriosis surgery	Performs endometriosis surgery
Bipolar coagulation of the lesion	2 (15.4%)	4 (14.8%)
Complete Resection of the lesion	10 (76.9%)	22 (81.5%)
Don't know	1 (7.7%)	1 (3.7%)

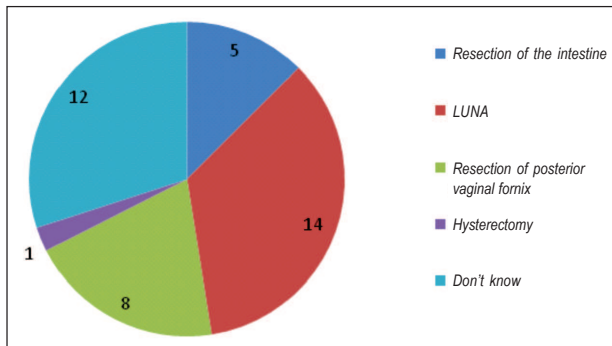


Figure 3 - Responses to the question: "For a patient with an endometriosis nodule in the rectovaginal septum on imaging and a palpable vaginal lesion during the gynecological exam what procedure should be performed to reduce the risk of recurrence?"

LUNA = laparoscopic uterine nerve ablation

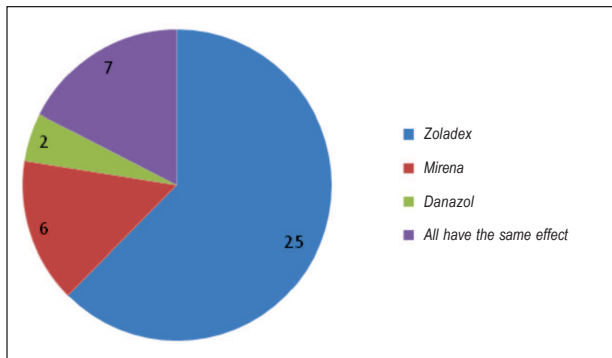


Figure 4 - Responses to the question: "What is the best medication for the medical management of endometriosis?"

of the lesions, 55% state they operate with the help of a general surgeon or coloproctologist, and 2.5% operate without resorting to the assistance of another professional. Considering only those gynecologists who said they operate on endometriosis, 44.4% responded

that they recommend diagnostic laparoscopy rather than complete resection of the lesion (Table 3).

In the case of severe (stage IV) endometriosis with obliteration of the posterior fornix and the possibility of intestinal involvement, only 7.4% of gynecologists who perform surgery for endometriosis reported having the training to perform the procedure without the assistance of a general surgeon or a coloproctologist (Table 4).

For 72.5% of gynecologists the presence of an endometrioma is a risk factor for presence of deep disease (Table 5).

When asked which treatment option would maximize the chance of pregnancy for a woman with a clinical suspicion of endometriosis, infertility for 1 year, an increased CA-125, and deep lesions of endometriosis involving the rectovaginal septum, 40% responded that it is complete resection of the lesion followed by *in vitro* fertilization, 25% said it is complete resection associated with Zoladex, and 17.5% chose *in vitro* fertilization (without surgery) (Figure 5).

Table 6 shows the procedures that gynecologists who responded to the questionnaire are trained to perform.

DISCUSSION

In this paper we describe preliminary results of a survey conducted with gynecologists about pelvic endometriosis, demonstrating that there are still some pitfalls in the diagnosis and treatment of patients with endometriosis.

The preoperative diagnosis of Deep endometriosis is very important for surgical planning and in order to be able to discuss with patients the risks and potential complications of surgery. Deep endometriosis

Table 3 - Responses to the question: "In a case of a patient with suspected endometriosis involving the intestinal or the rectovaginal septum, you recommend".

Surgical Treatment	Does not perform endometriosis surgery	Performs endometriosis surgery
Diagnostic Laparoscopy with biopsy	3 (23.1%)	7 (25.9%)
Referral to surgeon or coloproctologist	0	1 (3.7%)
Diagnostic Laparoscopy and Zoladex	1 (7.7%)	5 (18.5%)
Complete surgery with the presence of a surgeon or coloproctologist	9 (69.2%)	13 (48.2%)
Complete surgery without the presence of a surgeon or coloproctologist	0	1 (3.7%)

Table 4 - Responses to the question: “When during surgery you encounter with AFS stage IV-R endometriosis, with total obliteration of the posterior fornix and the possibility of intestinal involvement, what is your approach?”

Surgical Treatment	Does not perform endometriosis surgery	Performs endometriosis surgery
Interrupt the surgery and use Zoladex	1 (7.7%)	6 (22.2%)
Interrupt the surgery and refer to surgeon or coloproctologist	1 (7.7%)	5 (18.2%)
Summon a surgeon or coloproctologist to assist and continue the surgery	6 (46.1%)	14 (51.8%)
Continue the surgery alone	5 (38.5%)	2 (7.4%)

Table 5 - Responses to the question: “In the case of a patient with an endometrioma of 4 cm in diameter, what is important to keep in mind when you recommend surgery?”

Response	Number (%)
Oophorectomy	7 (17.5%)
Endometrioma is a marker of deep disease	29 (72.5%)
Surgery not indicated	2 (5%)
Don't know	2 (5%)

involving the uterosacral ligaments, retrocervical region, pouch of Douglas, and posterior vaginal fornix can usually be palpated on digital vaginal examination when they exceed 5 to 10mm in diameter. The physical examination is important because guides the selection of laboratory and imaging tests to be ordered. The clinical/physical examination should include: (1) inspection of the retrocervical area as well as the upper portion of the posterior vaginal wall in search of typical bluish lesions, and (2) vaginal examination in search of nodules in the uterosacral ligaments and pain upon extension of the uterosacral ligaments. By re-examining the patient during the menstrual period we can increase the performance of the exam.⁹ In our study, only 55% of gynecologists responded that deep endometriosis nodules can be felt on physical examination, this probably has a direct impact on clinical diagnosis. Gynecologists who think that the disease cannot be felt on physical examination probably do not search for retrocervical nodules or nodules in the posterior vaginal fornix during the vaginal digital examination, which may be one of the reasons for failure to diagnose this disease and for delay in diagnosis. This is consistent with the findings of Arruda et al¹⁰ who showed that the time between symptom onset and diagnosis of endometriosis in Brazilian women is about seven years.

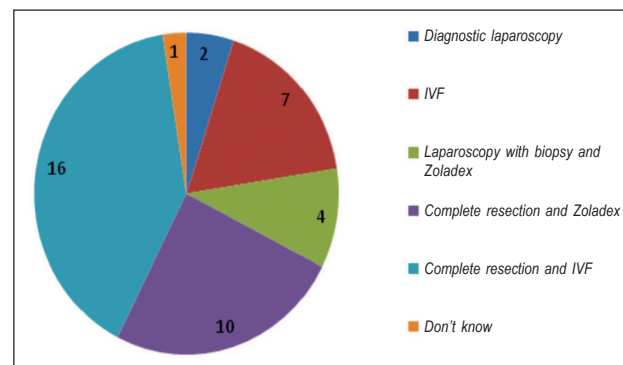


Figure 5 - Responses to the question: “For a woman with clinical suspicion of endometriosis, with infertility for one year, with an elevated CA-125, and deep lesion of endometriosis involving the rectovaginal septum, which would be the treatment of choice (that gives the best results for pregnancy) if her main goal at that moment is to get pregnant?”

The presence of a high CA-125 level in a young patient with symptoms of endometriosis increases the suspicion of endometriosis, but a normal value does not exclude the possibility. Normally no biologic test is necessary for the diagnosis of endometriosis. The increase in the CA-125 is related to the volume of deep endometriosis lesions.⁹

One report suggests¹¹ that the use of a panel of six serum markers (interleukin 6, interleukin 8, tu-

Table 6 - *Surgical procedures that the gynecologists reported having the technical knowledge to perform.*

Procedure	Yes	No
Bladder resection	17 (42.5%)	23 (57.5%)
Ureterolysis	13 (32.5%)	27 (67.5%)
Segmental intestinal resection and anastomosis	10 (25%)	30 (75%)
Rectal shaving	6 (15%)	34 (85%)
Double J catheter placement	8 (20%)	32 (80%)
Ureteral anastomosis	13 (32.5%)	27 (67.5%)
Ureteral reimplantation	6 (15%)	34 (85%)

mor necrosis factor alpha, high-sensitivity protein C, CA-125 and CA-19-9) to test specimens obtained during the secretory phase or during menstruation allow the diagnosis of both minimal and mild and moderate to severe endometriosis, with high sensitivity and clinically acceptable specificity.

Kafali et al¹² showed that it may be possible to make a clinical diagnosis of endometriosis by evaluating differences in CA-125 levels during the menses with the rest of the menstrual cycle. In their study of 28 women, there was a 22% increase in serum CA-125 levels during the menstrual period (12.2 U / ml) compared with the rest of the menstrual cycle (10 U/ml) in the control group. This increase was also observed in women with endometriosis, but the levels varied 198.3%. The mean CA-125 levels in these patients was 35.8 U/ml during menses compared with 12 U/ml during the rest of the menstrual cycle. In our survey, 65% of gynecologists said that CA-125 is important for the diagnosis of endometriosis, but 92.5% would not rule out the possibility of deep endometriosis when the CA-125 value is normal.

Several imaging studies have been used to map the lesions of deep endometriosis. The most commonly reported in the literature are transvaginal pelvic ultrasound (with or without a bowel preparation), magnetic resonance imaging, and transrectal ultrasonography. Abrao et al⁴ evaluated the ability of the clinical examination, transvaginal ultrasonography, and magnetic resonance imaging to diagnosis endometriosis with retrocervical or recto-sigmoid involvement.

One hundred and four women with a clinical suspicion of endometriosis were evaluated using these three diagnostic methods which were later correlated with the surgical specimen histopathologic findings. Endometriosis was confirmed histologically in 94.2% of patients. Regarding recto-sigmoid or retrocervical

region involvement, respectively, the digital examination had a sensitivity of 72% and 68%, a specificity of 54% and 46%, positive predictive value of 63% and 45%, negative predictive value of 64% and 69%, and an accuracy of 63% and 55%. For transvaginal ultrasound, the sensitivity was 98% and 95%, the specificity was 100% and 98%, positive predictive value was 100% and 98%, negative predictive value was 98% and 97% and the accuracy was 99% and 97%. MRI had a sensitivity of 83% and 76%, a specificity of 98% and 68%, positive predictive value of 98% and 61%, negative predictive value of 85% and 81% and an accuracy of 90% and 71%.

In a similar fashion, Bazot et al⁵ compared the value of the physical examination, transvaginal ultrasound, transrectal ultrasound, and magnetic resonance imaging in the evaluation of different locations of deep infiltrating endometriosis. Ninety-two patients with clinical evidence of pelvic endometriosis were evaluated retrospectively. The sensitivity and positive and negative likelihood ratios for physical examination, transvaginal ultrasound, transrectal ultrasound, and magnetic resonance imaging were respectively 73.5%, 3.3, and 0.34; 78.3%, 2.34, and 0.32; 48.2%, 0.86 and 1.16; and 84.4%, 7.59, and 0.18 for endometriosis in uterosacral ligaments; 50%, 3.88 and 0.57; 46.7%, 9.64 and 0.56; 6.7%, –, 0.93; and 80%, 5.51, and 0.23 for vaginal endometriosis; and 46%, 1.67, and 0.75; 93.6%, –, and 0.06, 88.9%, 12.89 and 0.12; and 87.3%, 12.66 and 0.14 for intestinal endometriosis. The authors concluded that MRI has results comparable to transvaginal ultrasound and transrectal ultrasound for the diagnosis of intestinal endometriosis, but has a greater sensitivity and higher likelihood ratios for the diagnosis of endometriosis in the uterosacral ligaments and in the vagina.

Several authors¹³ have shown that injection of ultrasound gel inside the vagina and rectum to perform magnetic resonance imaging can identify rectovaginal endometriosis with a sensitivity of 90.9% and a specificity of 77.8%. For the presence of a deep lesion, the sensitivity can reach 94.1% and specificity 100%. These findings were confirmed by Chassang et al¹⁴ who also showed that the opacification of the vagina and rectum with ultrasound gel significantly improved the sensitivity of MRI for the detection of deep endometriosis, allowing better delineation of the pelvic organs. This was especially apparent for lesions in the vagina and rectovaginal septum.

Ultrasonography of the urinary tract is important in cases of lateral lesions infiltrating the uterosacral ligaments and large volume midline lesions in order to assess ureteral involvement. Donnez et al¹⁵ prospectively evaluated 405 women with severe dysmenorrhea or deep dyspareunia due to recto-vaginal endometriosis nodules using intravenous pyelography. Ureteral stenosis with hydronephrosis was observed in 18 patients (4.4%). A significantly higher prevalence (11.2%) was observed in nodules equal to or exceeding 3 cm in diameter. Five women had complete ureteral stenosis. Renal scintigraphy revealed damage to renal parenchymal function ranging from 18 to 42%.

Computed tomography is another potential option as an imaging modality for the evaluation of deep endometriosis,¹⁶ but most groups with experience in deep endometriosis prefer MRI. Given that the endometriosis deposits have a predilection for the outer layers of the wall intestinal,¹⁷ colonoscopy has a limited role in identifying lesions of intestinal deep endometriosis since it is better suited for evaluating the bowel mucosa.

In the opinion of gynecologists who responded to the study, transvaginal ultrasonography and pelvic MRIs are the studies most frequently ordered for the investigation of deep endometriosis (70% and 72.5%, respectively), which is consistent with the recent literature. Nevertheless, 62.5% still feel that colonoscopy is a study to be used in the investigation of deep endometriosis. Only 22.5% of gynecologists remembered the importance of urinary tract ultrasonography in the evaluation of women with posterolateral lesions of deep endometriosis (in the uterosacral ligaments).

Treatment of endometriosis must be customized for each patient and can be divided into

medical and surgical, or a combination of both. The therapeutic approach varies depending on the wishes of the patient: the treatment for infertility is different than the treatment of painful symptoms.

The clinical treatment has a role in the strategy of the management of endometriosis when administered for a prolonged period of time. It has been shown that progestins can prevent the implantation and growth of regurgitated endometrial inhibiting the expression of matrix metalloproteinases and angiogenesis, as well as having various anti-inflammatory effects *in vitro* and *in vivo* that may reduce the inflammatory state generated by metabolic activity of the ectopic endometrium. Oral contraceptives increase the abnormally low apoptotic activity of the endometrium of women with endometriosis. Furthermore, anovulation, decidualization, amenorrhea, and establishing an estrogen-progestin balance contribute to the quiescence of the disease.¹⁸

Empirical treatment for painful symptoms whose probable cause is endometriosis, but without definitive pathological diagnosis includes counseling, analgesia, nutritional therapy, and the progestins or combined oral contraceptives. It is unclear whether the latter should be administered in a conventional manner, continuously or in a tricyclic regime.¹⁹ Among the gynecologists who answered the survey, 42.5% said they prescribe a therapeutic trial of an oral contraceptive when they have a clinical suspicion of endometriosis; the remaining 57.5% recommend laparoscopy.

Similar efficacy has been observed with several medical treatments for women with endometriosis confirmed by histopathology following surgery. Thus, the combined oral contraceptives and progestins, based on their favorable safety profile, good tolerability and low cost, should be considered first-line agents, both as an alternative to surgery and for postoperative adjuvant use. In situations where the progestin and oral contraceptives are ineffective, poorly tolerated or contraindicated, GnRH analogs, Danazol or gestrinone can be used. As the reproductive prognosis is not improved by medical therapy, is not indicated for women who want to get pregnant.⁷

In a Cochrane review including 4935 women,²⁰ the GnRH analogues seem to be more effective in relieving pain associated with endometriosis than a placebo or no treatment. There was no evidence of a difference in pain relief between

GnRH analogues and Danazol, although more side effects have been reported in the groups that used analogues. There was no evidence of a difference in pain relief between the GnRH analogues and levonorgestrel. The literature also suggests that there is no evidence of a difference in the results of treatment of painful symptoms associated with endometriosis using oral contraceptives and GnRH analogues.²¹

For patients with a clinical diagnosis of adenomyosis, the levonorgestrel IUD appears to be effective in reducing uterine volume, with improvement of vascularization and relief of symptoms. Sheng *et al*²² treated severe dysmenorrhea due to adenomyosis using the levonorgestrel IUD and followed the patients for three years. There were declines in pain scores measured using a visual analogue scale, a reduction in uterine volumes, and a reduction in CA-125 levels. The most common side effect was weight gain (28.7%), followed by formation of simple ovarian cysts (22.3%), and pelvic pain (12.8%). In 36 months, the overall satisfaction rate was 72.5%.

Even in women with rectovaginal endometriosis, the effect of clinical treatment in terms of improvement in pain appears to be substantial, with pain relief, reduction in lesion size during treatment, and improved quality of life.

Progestins and combined oral contraceptives have repeatedly been shown to be safe, well tolerated, and effective in the long-term treatment of women with symptomatic endometriosis, as have danazol and GnRH analogues.

The best candidates for long-term medical management are those women who do not wish to get pregnant and those who have undergone surgery without success. The patients who have not responded or adhered to treatment or who do not want to use medical treatment for a long period of time – even if well tolerated – should be considered surgery. It is important to remember that hormonal treatments should not be offered in the presence of obstructive uropathy, symptomatic intestinal stenosis, or the presence of a suspicious adnexal mass.⁶

Only 17.5% of gynecologists in this survey responded that the medical treatments for endometriosis have a comparable clinical response profile. The great majority of them (62.5%) still think the best medical treatment for endometriosis is a GnRH analog.

Surgical treatment of endometriosis is a complex procedure. While superficial endometriosis can be treated safely and effectively by most gynecologists, the deep infiltrative disease must be treated in specialized endometriosis centers. For women to be treated appropriately, it is necessary to try to identify pre-operatively whether or not they have deep endometriosis.²³ Normally the surgery entails a combination of several procedures, including release of adhesions, oophoroplasty or oophorectomy, ureteral procedures (double-J catheter placement, ureterolysis, uretero-ureteral anastomosis or ureteral reimplantation), bladder procedures (partial cystectomy), vaginal procedures (resection of the posterior vaginal fornix) or intestinal procedures (shaving, discoid resection, or resection with anastomosis). The professional who performs surgery for deep endometriosis must be qualified to perform all these procedures or should work in a multidisciplinary team that is able to perform these surgical procedures.

The presence of an ovarian endometrioma should make the gynecologist pay attention to the fact that there may be other concomitant lesions of deep endometriosis. Among the gynecologists who answered the survey, 72.5% agreed with this statement. In 1999, Redwine²⁴ noted that superficial or deep ovarian endometriosis is a marker for the presence of extensive intestinal and pelvic disease. The surgeons who diagnose and treat endometriomas may be underdiagnosing and undertreating their patients. Banerjee *et al*²³ prospectively evaluated 295 women with histologically confirmed endometriosis - 61 (21%) had ovarian endometriomas. A higher proportion of women with endometrioma had endometriotic disease involving the intestine compared with women without endometrioma (77% vs. 21%, $P < 0.001$).

A strong relationship was observed between the presence of endometrioma and obliteration of the posterior fornix, disease involving the recto-sigmoid, and involvement of the sero-muscular layer of the intestine. The presence of endometrioma significantly increased the probability of having the disease in the sigmoid-rectum, with a positive likelihood ratio of 6.96 (95% CI: 4.04 to 12). With a negative likelihood ratio of 0.55 (95% CI: 0.45 to 0.67) the absence of endometrioma, however, did not rule out the presence of disease in the sigmoid-rectum.

A study by Chapron *et al*²⁵ included 500 women with deeply infiltrating endometriosis. Among

women with associated ovarian endometrioma, the number of isolated lesions of deep endometriosis was lower (41.9% vs. 61.1%). The average number of lesions of deep endometriosis was statistically higher in women with associated ovarian endometrioma (2.51 ± 1.72 vs. 1.64 ± 1). For women with associated ovarian endometrioma, deep endometriosis lesions were more severe, with higher rates of lesions in the vagina, intestine, and ureter.

ESHRE guidelines recommend laparoscopic ovarian cystectomy in cases of endometrioma equal to or exceeding 4 cm in diameter to confirm the diagnosis histologically, reduce the risk of infection, improve access to follicles and possibly improve ovarian response. Coagulation or laser vaporization without the excision of the pseudocapsule is associated with an increased risk of cyst recurrence.¹⁹

Several surgical techniques have been described to address endometriotic lesions involving the intestine, including rectal shaving, discoid resection, and bowel resection with colorectal anastomosis. In 2005, Mohr et al²⁶ described 187 women treated laparoscopically for intestinal endometriosis. Complete pain relief in the immediate postoperative period was significantly higher with partial bowel resection compared to shaving alone (92% vs. 80%, respectively, $p < 0.04$). The shaving, a less invasive procedure, was associated with a lower complication rate: 6% compared with 23% for discoid resection ($p < 0.007$) and 38% for bowel resection ($p < 0.001$), and higher pregnancy rates. In the experience of the gynecologic service of Clermont-Ferrand³, the rate of major postoperative complications in women undergoing treatment for severe endometriosis requiring some bowel procedure was 9.3%.

Post-operative complications occurred in 6.7% of women who underwent rectal shaving and 24% of women who underwent segmental bowel resection. In a prospective analysis of 500 cases of deep endometriosis nodules treated by rectal shaving,²⁷ major complications included seven cases of rectal perforation (1.4%), four cases of ureteral injury (0.8%), bleeding exceeding 300 ml in one case (0.2%), and urinary retention in four cases (0.8%). Of the 388 women who wanted to become pregnant, 221 (57%) conceived spontaneously and 107 (27.6%) through in vitro fertilization. Ultimately, 328 (84.5%) conceived. The recurrence rate was 8% and was significantly lower ($p < 0.05$) in women who became pregnant (3.6%) than in women who did not become

pregnant (15%). Among the women who did not want to become pregnant or failed to become pregnant, severe pelvic pain recurred in 16% to 20%.

In those patients with a lesion that is palpable on digital vaginal examination, it seems that the surgery is only complete when the resection of the posterior vaginal fornix is performed. Matsuzaki et al²⁸ assessed 61 women with recto-vaginal endometriosis nodules larger than 2 cm in diameter and found that the distance between the vaginal mucosal epithelium and the endometriotic glands was < 1 mm in 30 patients (49.2%) and < 5 mm in 60 patients (98.4%), which provides histological evidence that the excision of the posterior vaginal fornix is necessary to completely remove voluminous rectovaginal endometriotic nodules. Complete surgical excision of deep endometriosis with excision of tissue adjacent to the posterior vaginal fornix improves quality of life with long-term persistence of results in patients who don't respond to medical management.²⁹

Patients with endometriosis and moderate to severe ureteral dilatation may require concomitant procedures for excision of endometriosis, including ureterolysis, uretero-ureterostomy, nephrectomy or uretero-cystoneostomy.^{30,31} Ureteral involvement is a serious and silent complication that should be considered in all cases of deeply infiltrative endometriosis. Isolation and laparoscopic retroperitoneal inspection of both ureters helps diagnose silent ureteral involvement. Conservative laparoscopic surgery provides a safe and feasible modality for the management of ureteral endometriosis.³² In a study by Seracchioli et al³² which included 30 women with laparoscopic diagnosis of endometriosis with ureteral involvement, confirmed histologically, the diagnosis was presumed preoperatively in only 40% of patients. Ureteral involvement occurred on the left side in 46.7%, on the right side in 26.7%, and bilaterally in 26.7%. It was associated with endometriosis in the ipsilateral uterosacral ligament in 100% of the cases, in the bladder in 50%, in the rectovaginal septum in 80%, in the ovaries in 53.3%, and in the bowel in 36.7%.

Concerning the role of laparoscopic uterine nerve ablation (LUNA) in the management of the pelvic pain associated with endometriosis, a Cochrane review published in 2005,³³ assessed the effectiveness of surgical interruption of pelvic nerve for the treatment of primary and secondary dysmenorrhea. For the management of secondary dysmenorrhea, treatment

with LUNA combined with surgical treatment of endometrial implants versus surgical treatment of endometriosis alone showed that the addition of LUNA did not help in relieving pain. For presacral neurectomy combined with the treatment of endometriosis versus treatment of endometriosis alone, there was an overall difference in the pain control, although the data suggest that this may be specific for laparoscopy and only for midline abdominal pain. Adverse effects were most common for pre-sacral neurectomy; however, most were complications such as constipation, which can improve spontaneously.

With regard to gynecologists' practice when faced with deep endometriosis lesions, 80% said that the ideal surgical treatment is complete resection of the lesion. However, when we put a scenario of a patient with deep endometriosis with intestinal or rectovaginal septum involvement, 44.4% of the gynecologists who responded said they do endometriosis operations responded that they recommend a diagnostic laparoscopy and not a complete resection, which contradicts the answer to the previous question.

Only one of the gynecologists (7.4%) reported that they performed this type of surgery without the assistance of a surgeon general or a coloproctologist. Only 20% of gynecologists remembered the need for resection of the posterior fornix of the vagina for deep lesions palpable on digital vaginal examination, and 35% still believe that LUNA has an important role in

preventing the recurrence of symptoms and of the lesions.

The relationship between endometriosis and infertility is still controversial.¹ Several factors can affect spontaneous fertility in women with deep endometriosis including the woman's age³⁴ (especially above age 35), the presence of uterine adenomyosis,³⁵ the presence of associated male infertility, and couples' attitudes about natural conception and infertility treatments. Treatment with intrauterine insemination appears to improve the fertility in cases of minimal or mild endometriosis. *In vitro* fertilization (IVF) treatment is the appropriate treatment when tubal function is compromised, when there is male infertility or when other treatments have failed, but pregnancy rates with IVF are still lower in patients with endometriosis than those with infertility due to tubal factors.¹⁹

We conclude that more education is necessary among gynecologists with respect to endometriosis in order to identify and treat patients with this disease. Referral to specialized centers that offer all available treatments in a multidisciplinary context is important to improve the surgical results of deep infiltrative endometriosis.

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RESUMO

Objetivo: A endometriose afeta um grande número de mulheres em idade reprodutiva. As manifestações clínicas da doença são dor pélvica cíclica e infertilidade. As mulheres com endometriose geralmente procuram atendimento médico devido à sua sintomatologia. O papel do ginecologista é, portanto, crucial na identificação, no tratamento e, quando necessário, no encaminhamento das pacientes para centros especializados. **Métodos:** Um questionário anônimo foi completado por 40 ginecologistas brasileiros. **Resultados:** 67,5% dos avaliados realizam cirurgia para endometriose. Aproximadamente metade (55%) dos avaliados declararam que o exame físico pode diagnosticar casos de endometriose profunda e 92,5% não excluem a possibilidade de doença profunda quando os níveis de CA-125 séricos são normais. Ressonância nuclear magnética, ultra-som transvaginal e colonoscopia são importantes na avaliação pré-operatória das pacientes para 72,5, 70 e 62,5% dos avaliados. Para 62,5% dos avaliados, os análogos de GnRH são o melhor tratamento clínico para endometriose. Apenas 17,5% dos ginecologistas acham que todos os tratamentos clínicos hormonais têm resultados semelhantes. Embora 80% dos ginecologistas responderam que a ressecção completa da doença é o melhor tratamento para a doença profunda, 44% dos ginecologistas que realizam cirurgia para endometriose indicam apenas laparoscopia diagnóstica nesses casos. Apenas 7,4% dos avaliados são capazes de tratar endometriose profunda com comprometimento intestinal sem o auxílio de um cirurgião geral ou um cirurgião colo-retal. **Conclusões:** Mais educação é necessária entre os ginecologistas com relação à endometriose, a fim de identificar e tratar pacientes com esta doença. O encaminhamento para centros especializados que ofereçam todos os tratamentos disponíveis em um contexto multi-disciplinar é importante para melhorar os resultados cirúrgicos da endometriose profunda infiltrativa.

Palavras chave: Endometriose. Diagnóstico. Tratamento. Endometriose profunda. Laparoscopia.

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APPENDIX

SURVEY ON SURGICAL TREATMENT OF DEEP ENDOMETRIOSIS

Dear colleague,

Thank you for your willingness to participate in this survey regarding the surgical treatment of endometriosis. As we know, there is a high prevalence of endometriosis in women of reproductive age and it is up to us, gynecologists, to advise the best treatment, whether medical, surgical, or a combination of the two.

After you respond to the questionnaire, we will be sending you several articles on the subject.

Number of years practicing gynecology: _____ years

Have you had some specific training in the management of endometriosis? (Please circle only one option)

YES NO

Do you perform laparoscopic procedures?

YES NO

Do you perform open surgeries to treat deep endometriosis?

YES NO

Do you perform laparoscopic surgeries to treat deep endometriosis?

YES NO

Have you had the opportunity to accompany or participate in a surgery for deep endometriosis involving the retrocervical region, rectovaginal septum, or intestine?

YES NO

Can the diagnosis of endometriosis be established by the physical examination?

YES NO I don't know

Do you believe that the CA-125 level is important for the diagnosis of endometriosis?

YES NO I don't know

When the CA-125 is normal, do you dismisses the diagnosis of deep endometriosis?

YES NO I don't know

What tests do you consider important for the diagnosis and preoperative investigation of deep endometriosis? (Please circle the tests that you normally order. If a test is not indicated, please note "NI")

Transvaginal pelvic ultrasound _____

Transvaginal pelvic ultrasound with bowel preparation _____

Ultrasound of the urinary tract _____

Computed tomography of the pelvis _____

Magnetic resonance imaging of the pelvis _____

colonoscopy _____

Transrectal ultrasound _____

I don't know

In the setting of a clinical suspicion of endometriosis, but no physical examination findings, laboratory or imaging, you would:

Try a therapeutic trial with contraceptive

Dismiss endometriosis

Indicates a laparoscopy

I don't know

In a patient with deep endometriosis lesions > 1cm in the uterosacral ligament, which test do you considers important as part of the pre-operative work-up:

CA-125

colonoscopy

Ultrasound of the urinary tract

Computed tomography of the pelvis

I don't know

What is the best form of surgical treatment of deep lesions of endometriosis?

Biopsy of the lesion

Coagulation of injury with bipolar cautery

Complete resection of the lesion

I don't know

In a patient with deep endometriosis of the uterosacral ligament >1cm (lateral lesion), what procedure should be performed in most cases?

Complete resection of the lesion with a portion of the vaginal vault
 Biopsy of the lesion
 Coagulation of the lesion
 Complete resection of the lesion with ureterolysis (release of the ureter)
 Curative resection with bowel resection
 I don't know

A patient has an endometriosis nodule in rectovaginal septum found on imaging and a vaginal lesion palpable to the touch. What procedure should be performed to reduce the risk of recurrence?

Bowel resection
 Laparoscopic Uterine Nerve Ablation (LUNA)
 Resection of the posterior fornix of the vagina
 Hysterectomy
 I don't know

What is the best medication for the medical management of endometriosis?

Zoladex
 Oral contraceptive
 Progestin (oral or intramuscular)
 Mirena
 Danazol
 All have the same effect
 I don't know

What are the surgical techniques for resection of a lesion of endometriosis involving the intestine?

Intestinal resection and anastomosis
 Discoid resection of the rectum
 Shaving
 All of the above
 I don't know

In the case of a patient with suspected endometriosis involving the intestine or the rectovaginal septum, you would:

Recommend a diagnostic laparoscopy with biopsy
 Refer to a digestive surgeon or coloproctologist
 Recommend a diagnostic laparoscopy and adjuvant treatment with Zoladex
 Recommend a complete surgery including bowel resection or rectal shaving, if necessary, along with a digestive surgeon or coloproctologist
 Recommend a complete surgery including bowel resection or rectal shaving, if necessary, without resorting to a colleague from another specialty

When you encounter intra-operatively AFS-R stage IV endometriosis with total obliteration of the posterior fornix and the possibility of intestinal involvement, what is your approach?

Halt the operation and postoperatively execute medical management with Zoladex
 Halt the operation and refer to a digestive surgeon or digestive coloproctologist
 Summon a digestive surgeon or coloproctologist during the procedure and continue to surgery
 Continue the surgery; as you have experienced in the surgical manipulation of the urinary and gastrointestinal tracts, address involvement of the ureter or recto-sigmoid as necessary.

In the case of a patient with an endometrioma of 4 cm in diameter, which is important to keep in mind when they recommend surgery?

One should remove the entire ovary to prevent recurrence, since the recurrence rate of endometrioma is high.
 Endometrioma is a marker of deep endometriosis and there is a possibility of other associated lesions (retrocervical, rectovaginal septum, intestine, ureter)
 There is no indication for surgery for an endometrioma of this size
 I don't know

For a woman clinically suspected of having endometriosis, who has been infertile for one year, with an elevated CA-125, and a deep lesion of endometriosis involving the rectovaginal septum, which would be the treatment of choice (with the best success for pregnancy) if the main objective at that time is to get pregnant?

Recommend laparoscopy to confirm the diagnosis of endometriosis

Refer for *in vitro* fertilization (IVF)

Recommend laparoscopy with biopsy and take Zoladex post-operatively

Recommend complete resection of the lesion and then treat with Zoladex

Recommend complete resection of the lesion and then *in vitro* fertilization

I don't know

What surgical procedures would you have no difficulty performing, if necessary, during an operation?

Resection of bladder

Ureterolysis

Segmental bowel resection and anastomosis

Rectal shaving

Double-J catheter

Ureteral anastomosis

Ureteral reimplantation

**THANK YOU FOR YOUR TIME!
ALL INFORMATION CONTAINED IN THIS
QUESTIONNAIRE
IS CONFIDENTIAL**

I DECLARE THAT I ACCEPTED TO
PARTICIPATE IN THIS SURVEY
VOLUNTARILY

signature

THE INITIALS OF YOUR NAME:

DATE: ____ / ____ /2010