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REVIEW ARTICLE

A systematic review of ultrasonography-guided transvaginal aspiration of recurrent ovarian endometrioma

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ABSTRACT

Background: Ovarian endometriosis is present in 17%–44% of women with endometriosis. The main treatment is surgery, but ultrasonography-guided aspiration is a less invasive alternative. **Objectives:** To evaluate the effectiveness of this alternative treatment in recurrent ovarian endometrioma. **Search strategy:** Multiple databases were searched for articles published between 1994 and 2014 using the keywords “ultrasound-guided aspiration,” “ovarian,” and “endometriosis.” **Selection criteria:** Randomized controlled trials and observational studies published in English, Portuguese, or Spanish were included. **Data collection and analysis:** Two researchers independently extracted and reviewed the data. The main outcome of interest was the recurrence rate. **Main results:** Eight studies were eligible. Ovarian endometriosis is associated with high recurrence rates after one ultrasonography-guided aspiration (28.9%–91.5%), but involves less ovarian manipulation. The results of aspiration followed by sclerotherapy are not uniform, but overall the addition of a sclerosing agent does not seem to significantly reduce the likelihood of recurrence (13.3%–75.0%). Repeated aspiration of the cysts can reduce the recurrence rate to 5.4% by the sixth aspiration. **Conclusions:** Repeated ultrasonography-guided aspiration of ovarian endometriomas can be performed for the treatment of recurrent ovarian endometriosis. Further studies comparing the efficacy of this procedure and ovarian surgery are needed.

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1. Introduction

Endometriosis is defined as the presence of tissue similar to that of the endometrium in extrauterine sites. Endometriosis affects 10%–15% of women of reproductive age [1] and is classified into three types: superficial, ovarian, and deep endometriosis [2].

Ovarian endometriosis is present in 17%–44% of women with endometriosis [3]. The most prevalent clinical symptoms are dysmenorrhea (62.2%), infertility (14.0%), and chronic pelvic pain (13.3%) [4]. The ovarian lesions can present as superficial lesions or as retention cysts known as ovarian endometriomas. The clinical suspicion of deep lesions and ovarian endometriomas should be investigated with pelvic examination and imaging including ultrasonography and magnetic resonance imaging [5,6]. Ovarian endometriomas are cysts with thick walls and chocolate-colored content. The presence of ovarian endometriosis is associated with a two- to three-fold increase in the risk of concomitant intestinal involvement [5,7].

Transvaginal ultrasonography is highly sensitive (84%–100%) and specific (90%–100%) in the differential diagnosis of ovarian endometriomas. Most of these lesions present as cysts with homogeneous hypoechoic content. Magnetic resonance imaging of the pelvis can also be used to distinguish ovarian cysts because of its high specificity (98%) [6,7].

The management of these ovarian cysts is not always surgical [8]. Combined oral contraceptives, progestogen alone, or clinical follow-up are more conservative treatment options [9–11]. Surgical treatment is usually favored for ovarian endometriomas that exceed 3 cm in size [11]. A laparoscopic approach with excision of the capsule improves pain symptoms and has a lower rate of recurrence and a higher rate of spontaneous pregnancy than does drainage and cauterization [12]. Generally, cysts recur in 11%–32% of women within 1–5 years after laparoscopic surgery [9].

Because there is follicular loss during surgery, ultrasonography-guided transvaginal aspiration has emerged as a surgical option for the treatment of recurrent ovarian endometrioma [12,13]. It is also used as a minimally invasive method for the differential diagnosis of ovarian diseases. The cytology of the aspirate of an ovarian lesion has a sensitivity of 83% and a specificity of 97% for malignant tumors, follicular cysts, and ovarian endometriomas [14]. As far as we are aware, there are no reports in the literature concerning the accuracy of the

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diagnosis of ovarian endometrioma using ultrasonography-guided transvaginal aspiration.

The aim of the present systematic review was to establish whether ultrasonography-guided transvaginal aspiration is a safe and effective method for the treatment of a recurrent ovarian endometrioma previously treated surgically.

2. Materials and methods

The present review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement. Studies were identified by searching electronic bibliographic databases and by reviewing the reference lists of relevant articles. The PubMed, Cochrane, Embase, Literature in the Health Sciences in Latin America and the Caribbean (LILACS), and the Scientific Electronic Library Online (SciELO) databases were searched for articles published between January 1, 1994, and December 31, 2014, using the keywords “ultrasound-guided aspiration,” “ovarian,” and “endometriosis.” The final search was performed on May 17, 2015.

Studies published in English, Portuguese, or Spanish were eligible for inclusion if they were a randomized controlled trial or an observational study (case–control study, prospective/retrospective cohort study, or descriptive cross-sectional study), analyzing the treatment of ovarian endometrioma with ultrasonography-guided aspiration with or without sclerotherapy. Systematic reviews and case reports were excluded, as were studies in which the aspirations were not performed via the transvaginal approach. The assessment of study eligibility was performed independently in an unblinded standardized manner by two reviewers (F.C.G. and M.P.A.). The title and abstract of identified articles were screened, and full texts of those deemed potentially relevant were obtained. Disagreements between the reviewers were resolved by discussion. The two reviewers independently assessed the articles and extracted data from the selected studies.

The primary outcome of interest of the present study was the recurrence rate after a surgical procedure for the treatment of ovarian endometrioma. Secondary outcomes were the pregnancy rate, pain improvement as assessed by a visual analog scale (VAS), and complications. A narrative review was undertaken; no statistical analysis was performed.

3. Results

3.1. Search results

Of 27 articles identified, eight were included in the systematic review (Fig. 1, Table 1). To organize the presentation of the findings and make them more accessible, the articles are grouped according to whether aspiration was combined with sclerotherapy, and if so, which type of sclerosing agent was used.

3.2. Ultrasonography-guided aspiration without sclerotherapy

Ultrasonography-guided aspiration (without sclerotherapy) of ovarian endometriomas was reported in a prospective study by Chan et al. [15] and a retrospective study by Zhu et al. [16].

In the study by Chan et al. [15], eight endometriomas were aspirated in six patients between December 1999 and May 2000. The inclusion criteria were premenopausal women with a history of surgical excision of an endometriotic ovarian cyst, presence of a cyst at least 6 cm in size whose volume had not varied more than 20% in 6 months, and cytologic confirmation of endometriosis. The mean diameter of the ovarian endometrioma at the time of aspiration was 31.0 mm. After the procedure, all patients received 1 g ampicillin and 500 mg metronidazole intravenously. The patients were followed up for 12 months after aspiration. During this period, the recurrence rate was 83.3%. With regard to

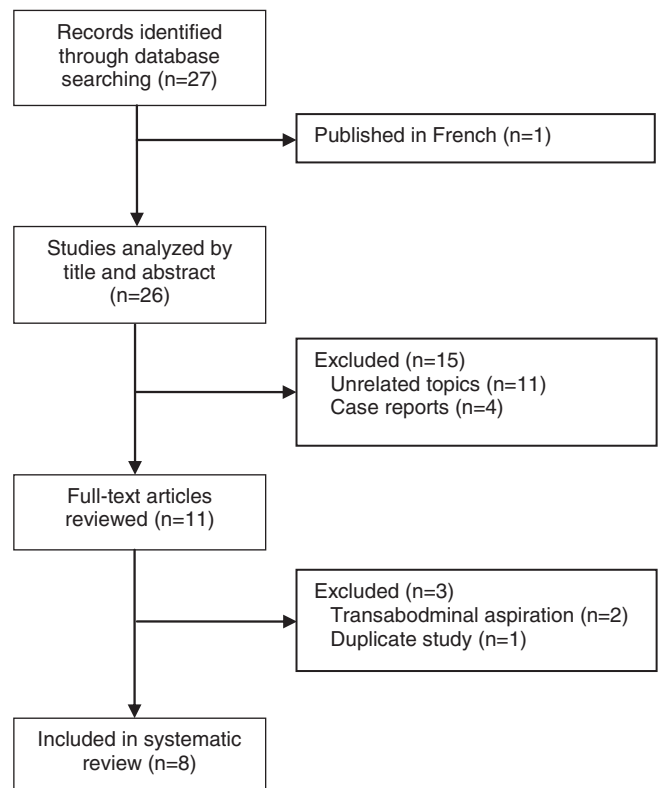


Fig. 1. Flow diagram detailing study selection.

postoperative complications, one patient presented with abdominal pain indicative of an infection and was treated with antibiotics.

In the study by Zhu et al. [16], 129 infertile patients who underwent one or more aspirations between January 2000 and July 2007 were followed up for 24 months. The mean age of the patients was 32.6 ± 4.3 years and the duration of infertility was 4.1 ± 2.2 years. All patients had a prior diagnosis of endometriosis by ultrasonography, laparotomy, or laparoscopy. Before aspiration, 112 patients received hormonal treatment: 47 with danazol, 39 with a gonadotropin-releasing hormone analog (GnRH-a), and 26 with cyproterone/ethinyl estradiol. Previously, 53 patients had undergone surgical treatment of an ovarian endometrioma, 24 by laparotomy and 29 laparoscopically. None received antibiotic prophylaxis.

Forty-eight (37.2%) patients received hormone treatment—in the form of a GnRH-a or cyproterone acetate with ethinyl estradiol—after aspiration without adverse effects. The recurrence rate was 91.5% after the first aspiration, 66.7% after the second, 46.5% after the third, 21.7% after the fourth, 9.3% after the fifth, and 5.4% after the sixth aspiration. The interval between aspirations was 33 ± 6 days.

Hormonal treatment before or after aspiration did not seem to offer significant benefits in terms of recurrence or ease of aspiration. No complications were observed after the procedures. During 2 years of follow-up, the pregnancy rate was 43.4% (56/129), with 12 women conceiving by intrauterine insemination.

3.3. Aspiration followed by sclerotherapy with 95% ethanol

Treatment of recurrent endometrioma after surgery with ultrasonography-guided aspiration associated with sclerotherapy using 95% ethanol was evaluated in two retrospective studies [17,18].

In a study by Chang et al. [18], 196 patients treated between 2001 and 2009 were analyzed. In total, 274 cysts that recurred postoperatively were aspirated and subsequently injected with 95% ethanol. The patients were divided into three groups: in the first group, the time of injection, irrigation, and ethanol withdrawal ranged from 0 to 6 min;

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