

## CASE REPORT

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# Conservative management of ovarian endometrioma with sclerotherapy using ethanol prior to in vitro fertilization

## Manejo conservador del endometrioma ovárico con escleroterapia usando etanol previo a la fecundación in vitro

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### ABSTRACT

Ovarian endometrioma is a cyst with ectopic endometrial tissue associated with decreased ovarian reserve. Its management in infertility is controversial. We present the case of a 32-year-old woman with decreased ovarian reserve and endometrioma larger than 100 mm. She underwent ultrasound-guided transvaginal aspiration and subsequent sclerotherapy with ethanol, achieving a 65% reduction in size after three months. Subsequently, in vitro fertilization (IVF) was performed, and pregnancy was achieved. The excision of the endometrioma is controversial because it reduces the ovarian reserve. Sclerotherapy has been shown to preserve ovarian reserve, is associated with a low recurrence rate and facilitates ovarian accessibility. Ethanol sclerotherapy of endometrioma is a safe and effective outpatient technique that allows pregnancy in women with infertility. **Key words:** Endometrioma, Sclerotherapy, Ethanol, Infertility, In vitro fertilization.

### RESUMEN

El endometrioma ovárico es un quiste con tejido endometrial ectópico que se asocia a disminución de la reserva ovárica, siendo su manejo en infertilidad controversial. Presentamos el caso de una mujer de 32 años con reserva ovárica disminuida y endometrioma mayor de 100 mm. Fue sometida a aspiración transvaginal ecoguiada y a escleroterapia con etanol, lográndose reducción del tamaño en 65% a los tres meses. Posteriormente se realizó fecundación in vitro (FIV), consiguiéndose embarazo. La exéresis del endometrioma es controversial, debido a que reduce la reserva ovárica. La escleroterapia demuestra conservarla, se asocia a una tasa baja de recurrencia y facilita la accesibilidad ovárica. La escleroterapia con etanol del endometrioma es una técnica ambulatoria, segura y eficaz que permite el embarazo en mujeres con infertilidad.

**Palabras clave:** Endometrioma, Escleroterapia, Etanol, Infertilidad, Fertilización in vitro

### INTRODUCTION

Sampson's disease or endometriosis is a benign, polymorphous, estrogen-dependent, chronic inflammatory disease. It represents one of the gynecological disorders of complex management given its association with pelvic pain and infertility<sup>(1)</sup>. Histologically it is defined as the presence of endometrial glands and stroma outside the uterine cavity<sup>(2)</sup>. Its etiology is unknown, but retrograde menstruation is the most accepted theory<sup>(3)</sup>.

The typical clinical picture is that of chronic pelvic pain associated with infertility. The prevalence of endometriosis in infertile women reaches 50% and up to 80% in women with unexplained infertility<sup>(4)</sup>.

The American Society for Reproductive Medicine (ASRM) classification, updated in 1996, is the most widely accepted. It classifies endometriosis in 4 stages, the fourth stage being the one that expresses ovarian involvement, that is, the presence of an endometrioma<sup>(5)</sup> that seriously affects the ovarian reserve<sup>(6)</sup>.



The ovarian endometrioma is a cyst internally lined with tissue histologically and functionally similar to the endometrium. The contents are produced by accumulation of menstrual debris generated by active implants within the cyst<sup>(2)</sup>. The management of endometriomas in fertility is controversial. In its latest consensus 2022, the European Society of Human Reproduction and Embryology (ESHRE) recommends cystectomy in endometriomas larger than 3 cm, instead of drainage and coagulation alone<sup>(7)</sup>. Recurrence is known to be as high as 50% 5 years after cystectomy. Muzzi (2015) and Younis (2019) refer that performing a new cystectomy damages healthy tissue and consequently decreases ovarian reserve. In addition, one study found that surgery for recurrent endometriomas is more harmful than the first surgery for healthy ovarian tissue and ovarian reserve, as histologically the removal of healthy tissue is greater and has an inverse relationship with the antral follicle count<sup>(8,9)</sup>.

There are alternative or conservative management options, such as transvaginal aspiration and ethanol sclerotherapy<sup>(10)</sup>. Two types of sclerotherapies have been described: needle-directed sclerotherapy (NDS) and catheter-directed sclerotherapy (CDS)<sup>(11)</sup>. The former was described in 1988 by Akamatsu et al<sup>(12)</sup>. At that time there were several technical limitations, such as the ultrasound equipment, with poor visibility of the needle during aspiration and the consequent risk of needle displacement which was complicated by subsequent spillage of the contents or sclerosant into the peritoneal cavity.

The second was described 30 years later (2018) by a group of interventional radiologists who used a pigtail drainage catheter for sclerotherapy, instead of a needle, which helps to better aspirate the thick, sticky cystic contents and allows repositioning after ethanol injection. This procedure is performed under ultrasound and MRI guidance. MRI raises costs and makes it less accessible<sup>(11)</sup>.

## CASE REPORT

A 32-year-old woman with a surgical and histological diagnosis of severe endometriosis for 6 years attended for 3 years of gestational desire, with an obstetric history of 2 pregnancies, 1 miscarriage and 1 delivery. The catamenial regimen was 5/30 days, with severe dysmenorrhea. Sur-

gical history included cesarean section and right salpingo-oophorectomy for ovarian endometrioma in 2016.

Laboratory reported antimüllerian hormone (AMH) 0.8 ng/dL, TSH 1.87 mIU/L, prolactin 15 ng/mL and CA-125 135IU/mL. The couple was 34 years old, without pathological history and with normozoospermia seminal study.

Bimanual palpation of both iliac fossae revealed an enlarged uterus, regular and painful surface. In the left adnexa a painful mass with little mobility was palpated. Ultrasound showed an 11 cm uterus with an endometrioma measuring 110 x 100 mm in the left adnexa (Figure 1).

Due to the low ovarian reserve, it was decided to perform transvaginal aspiration of the endometrioma and sclerotherapy using 96% alcohol, to reduce ovarian damage and prior to IVF. Under sedation, endometrioma aspiration was performed with transvaginal ultrasound guidance (Mindray model Z5) and a follicular aspiration needle with echotip of 35 cm and 17 GA gauge. Due to the consistency of the endometrioma content, a conventional open surgical aspiration machine (Hospivac 400 Full surgical aspiration pump) was used, and the entire content of approximately 250 mL of chocolate secretion was extracted. Its content was replaced with 96% alcohol, approximately 150 mL (60% of the total endometrioma contents); this solution was maintained for 20 minutes and then aspiration was performed (Figures 2 and 3).

Three weeks later, during menstruation, a control ultrasound was performed and a heterogeneous image of 59 x 53 mm was found. Leuprolide acetate 3.75 mg intramuscular was prescribed

FIGURE 1. 100 MM ENDOMETRIOMA IN A SINGLE OVARY.

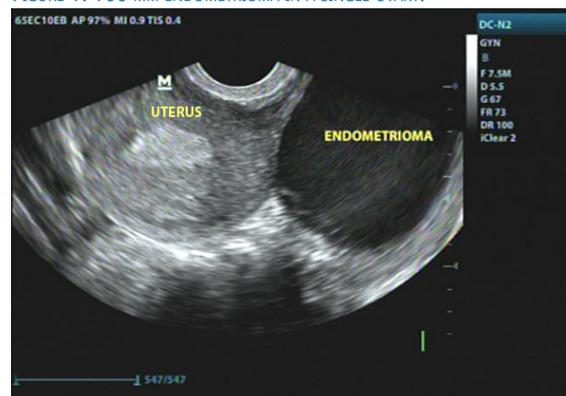




FIGURE 2. ASPIRATION OF THE ENDOMETRIOMA.



FIGURE 3. APPEARANCE OF THE ENDOMETRIOMA CONTENT.

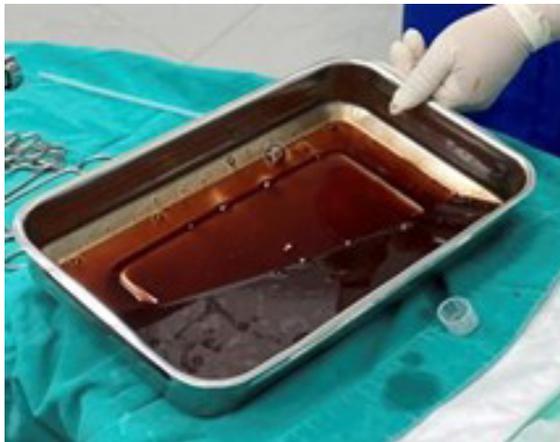
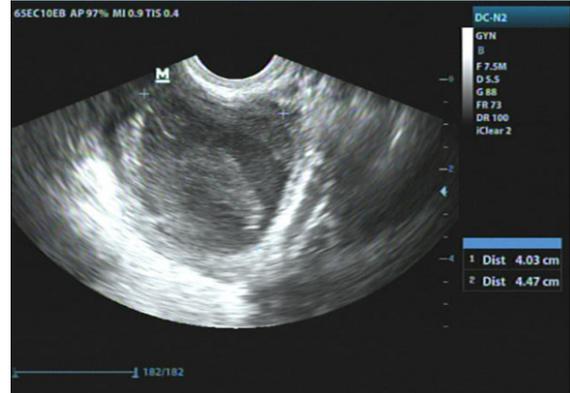


FIGURE 4. ENDOMETRIOMA THREE MONTHS AFTER SURGERY.



## DISCUSSION

The management of endometrioma in infertility is controversial. Medical treatment of endometriosis does not improve fertility prospects with a grade of evidence A<sup>(7)</sup>. Surgical treatment prior to assisted reproductive therapies has not been shown to improve outcomes. The Spanish Fertility Society (SEF) and the ESHRE recommend cystectomy, with a grade of evidence B, accepting the disadvantage of reduction of the ovarian reserve by this procedure<sup>(7)</sup>.

In the case we present, the patient had a desire for gestation, presenting a recurrent endometrioma of more than 100 mm in diameter that occupied the cul-de-sac of Douglas and involved her only ovary. Because of the diminished ovarian reserve due to endometriosis, the previous salpingo-oophorectomy, the possible follicular loss in case of a new exeresis, the possibility of damage to the oocytes upon contact with the endometrioma contents and the difficulty due to the large size of the endometrioma for ovarian capture, conservative management with sclerotherapy was chosen. This treatment was previously performed by Cohen et al, who found that the number of oocytes retrieved was higher after endometrioma sclerotherapy compared to laparoscopic cystectomy<sup>(13)</sup>. Sclerotherapy of endometrioma under ultrasound guidance is a therapeutic option that helps preserve the ovarian reserve already compromised by the disease itself.

Currently, ultrasound equipment has better resolution and the needles available on the market have echotip, allowing permanent ultrasound visualization during aspiration, thus reducing

monthly for 3 months. Due to the maternal genetic desire, it was decided to start ovarian stimulation with recombinant gonadotropins and gonadotropin-releasing hormone antagonist. The baseline ultrasound showed 4 follicles and a heterogeneous mass of 40 x 44 mm in her only ovary (Figure 4). The laboratory reported AMH 0.78 ng/dL and CA-125 52 IU/mL. On the day of ovular capture, 2 eggs were obtained, which were inseminated with the conventional technique. A 5AA embryo was obtained, biopsied and vitrified. It was sent for preimplantation genetic study and three weeks later was reported as a euploid embryo. Endometrial preparation was started with estradiol valerate 6 mg/day and in the second control a trilaminar endometrium of 10 mm was evidenced, so progesterone 800 mg/day was added. Five days later the embryo transfer was programmed prior intake of serum progesterone (12 ng/mL). The embryo was thawed and the embryo transfer was performed under ultrasound guidance. Two weeks later a  $\beta$ -hCG of 1,358 mIU/mL was obtained.



complications and making the procedure more effective. For the above-mentioned reasons, we performed the endometrioma aspiration using a needle with echotip, unlike Akamatsu, who used a needle without contrast, which increased the risks for the patient<sup>(12)</sup>. Regarding guidance, unlike the group of interventional radiologists<sup>(11)</sup>, we used transvaginal ultrasound, which is by far more affordable than MRI.

To date, several sclerosing agents have been used, such as tetracycline, methotrexate, interleukin-2 and ethanol<sup>(14-16)</sup>. The latter is the most widely used because of its accessibility. A high concentration of ethanol in the endometrioma induces protein denaturation in the internal epithelium without penetrating the adjacent normal ovarian stroma. Sufficient duration of treatment will result in regression of the inflammatory cyst. Various treatment regimens have been described. For example, Akamatsu et al<sup>(12)</sup> reported the first study using 99.9% ethanol for 30 minutes in six patients with endometrial cysts, without recurrence. Noma and Yoshida obtained a recurrence rate of 9.1% with pure ethanol treatment for 10 minutes, which was better than the 62.5% recurrence rate with instillation of less than 10 minutes<sup>(17)</sup>. Guided by these references, we opted for 20 minutes, an average time between the two, achieving a 65% reduction of the endometrioma at three months of follow-up, which allowed us to initiate ovarian stimulation and subsequent ovarian capture.

Chang et al. found a pregnancy rate of 17.8% after sclerotherapy, with better results in cysts smaller than 5 cm<sup>(18)</sup>. Miquel et al, after a large study, also found a significantly higher probability of live birth in women exposed to sclerotherapy prior to IVF treatment. This supports our result, as sclerotherapy facilitated ovarian capture without diminishing ovarian reserve and thus achieving IVF pregnancy after the procedure<sup>(19)</sup>.

We propose conservative management with sclerotherapy as the procedure of choice to preserve the follicles in women with a high risk of reduction of the ovarian reserve in an exeresis, if they have high surgical risk due to pelvic adhesions, in the recurrence of endometrioma and when the cyst interferes with access to the follicles during ovarian capture.

In conclusion, in the case presented, sclerotherapy of endometrioma with ethanol under transvaginal guidance was a safe and effective outpatient technique that made it possible to initiate fertilization treatment in a short time and achieve pregnancy.

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