Endometriosis

Guideline of European Society of Human Reproduction and Embryology

Signs and symptoms

1	The GDG recommends that clinicians should consider the diagnosis of endometriosis in individuals presenting with the following cyclical and non-cyclical signs and symptoms: dysmenorrhea, deep dyspareunia, dysuria, dyschezia, painful rectal bleeding or haematuria, shoulder tip pain, catamenial pneumothorax, cyclical cough/haemoptysis/ chest pain, cyclical scar swelling and pain, fatigue, and infertility.	GPP
	Although currently no evidence exists that a symptom diary/questionnaire/app reduces the time to diagnosis or leads to earlier diagnosis, the GDG considers their potential benefit in complementing the traditional history taking process as it aids in objectifying pain and empowering women to demonstrate their symptoms.	GDG STATEMENT

Clinical examination and diagnostic tests			
2	Clinical examination, including vaginal examination where appropriate, should be considered to identify deep nodules or endometriomas in patients with suspected endometriosis, although the diagnostic accuracy is low.	⊕◯◯◯	Strong recommendation
3	In women with suspected endometriosis, further diagnostic steps, including imaging, should be considered even if the clinical examination is normal.	⊕⊕◯◯	Strong recommendation
4	Clinicians should not use measurement of biomarkers in endometrial tissue, blood, menstrual or uterine fluids to diagnose endometriosis.	⊕⊕⊕◯	Strong recommendation
5	Clinicians are recommended to use imaging (US or MRI) in the diagnostic work-up for endometriosis, but they need to be aware that a negative finding does not exclude endometriosis, particularly superficial peritoneal disease.	⊕⊕◯◯	Strong recommendation

6	In patients with negative imaging results or where empirical treatment was unsuccessful or inappropriate, the GDG recommends that clinicians consider offering laparoscopy for the diagnosis and treatment of suspected endometriosis.		GPP
7	The GDG recommends that laparoscopic identification of endometriotic lesions is confirmed by histology although negative histology does not entirely rule out the disease.		GPP
	Both diagnostic laparoscopy and imaging combined with empirical treatment (hormonal contraceptives or progestogens) can be considered in women suspected of endometriosis. There is no evidence of superiority of either approach and pros and cons should be discussed with the patient.		GDG STATEMENT
8	Follow-up and psychological support should be considered in women with confirmed endometriosis, particularly deep and ovarian endometriosis, although there is currently no evidence of benefit of regular long-term monitoring for early detection of recurrence, complications, or malignancy.	⊕◯◯◯	Weak recommendation
9	The appropriate frequency and type of follow-up or monitoring is unknown and should be individualised based on previous and current treatments and severity of the disease and symptoms.		GPP

26	When performing surgery in women with ovarian endometrioma, clinicians should perform cystectomy instead of drainage and coagulation, as cystectomy reduces recurrence of endometrioma and endometriosis-associated pain.	⊕⊕◯◯	Strong recommendation
27	When performing surgery in women with ovarian endometrioma, clinicians can consider both cystectomy and CO_2 laser vaporisation, as both techniques appear to have similar recurrence rates beyond the first year after surgery. Early post-surgical recurrence rates may be lower after cystectomy.	⊕◯◯◯	Weak recommendation
28	When performing surgery for ovarian endometrioma, specific caution should be used to minimise ovarian damage.	⊕◯◯◯	Strong recommendation
29	Clinicians can consider performing surgical removal of deep endometriosis, as it may reduce endometriosis-associated pain and improves quality of life.	⊕⊕◯◯	Weak recommendation
30	The GDG recommends that women with deep endometriosis are referred to a centre of expertise.		GPP
31	The GDG recommends that patients undergoing surgery particularly for deep endometriosis are informed on potential risks, benefits, and long-term effect on quality of life.		GPP

Surgical treatment			
24	It is recommended to offer surgery as one of the options to reduce endometriosis-associated pain.	⊕⊕◯◯	Strong recommendation
25	When surgery is performed, clinicians may consider excision instead of ablation of endometriosis to reduce endometriosis-associated pain.	⊕⊕◯◯	Weak recommendation
	It can be concluded that LUNA is not beneficial as an additional procedure to conventional laparoscopic surgery for endometriosis, as it offers no additional benefit over surgery alone. PSN is beneficial for treatment of endometriosis-associated midline pain as an adjunct to conventional laparoscopic surgery, but it should be stressed that PSN requires a high degree of skill and is associated with an increased risk of adverse effects such as intraoperative bleeding, and postoperative constipation, urinary urgency and painless first stage of labour.		GDG STATEMENT
26	When performing surgery in women with ovarian endometrioma, clinicians should perform cystectomy instead of drainage and coagulation, as cystectomy reduces recurrence of endometrioma and endometriosis-associated pain.	⊕⊕◯◯	Strong recommendation

Medical therapies as an adjunct to surgery			
35	It is not recommended to prescribe preoperative hormone treatment to improve the immediate outcome of surgery for pain in women with endometriosis.	⊕⊕◯◯	Strong recommendation
36	Women may be offered postoperative hormone treatment to improve the immediate outcome of surgery for pain in women with endometriosis if not desiring immediate pregnancy.	⊕⊕◯◯	Weak recommendation

Medical versus surgical treatment for endometriosis		
37	The GDG recommends that clinicians take a shared decision-making approach and take individual preferences, side effects, individual efficacy, costs, and availability into consideration when choosing between hormone treatments and surgical treatments for endometriosis-associated pain.	GPP
Non-medical management strategies		
38	The GDG recommends that clinicians discuss non-medical strategies to address quality of life and psychological well-being in women managing symptoms of endometriosis. However, no recommendations can be made for any specific non-medical intervention (Chinese medicine, nutrition, electrotherapy, acupuncture, physiotherapy, exercise, and psychological interventions) to reduce pain or improve quality of life measures in women with endometriosis, as the potential benefits and harms are unclear.	GPP

Treatment of endometriosis-associated infertility

Chapter III

39	In infertile women with endometriosis, clinicians should not prescribe ovarian suppression treatment to improve fertility.	⊕⊕◯◯	Strong recommendation
40	Women seeking pregnancy should not be prescribed postoperative hormone suppression with the sole purpose to enhance future pregnancy rates.	⊕⊕◯◯	Strong recommendation
41	Those women who cannot attempt to or decide not to conceive immediately after surgery may be offered hormone therapy as it does not negatively impact their fertility and improves the immediate outcome of surgery for pain.	⊕⊕◯◯	Weak recommendation
42	In infertile women with endometriosis, clinicians should not prescribe pentoxifylline, other anti-inflammatory drugs or letrozole outside ovulation-induction to improve natural pregnancy rates.	⊕◯◯◯	Strong recommendation
43	Operative laparoscopy could be offered as a treatment option for endometriosis-associated infertility in rASRM stage I/II endometriosis as it improves the rate of ongoing pregnancy.	⊕⊕◯◯	Weak recommendation

44	Clinicians may consider operative laparoscopy for the treatment of endometrioma-associated infertility as it may increase their chance of natural pregnancy, although no data from comparative studies exist.	⊕◯◯◯	Weak recommendation
45	Although no compelling evidence exists that operative laparoscopy for deep endometriosis improves fertility, operative laparoscopy may represent a treatment option in symptomatic patients wishing to conceive.	⊕◯◯◯	Weak recommendation
46	The GDG recommends that the decision to perform surgery should be guided by the presence or absence of pain symptoms, patient age and preferences, history of previous surgery, presence of other infertility factors, ovarian reserve, and estimated Endometriosis Fertility Index (EFI).		GPP
	Women should be counselled of their chances of becoming pregnant after surgery. To identify patients that may benefit from ART after surgery, the Endometriosis Fertility Index (EFI) should be used as it is validated, reproducible and cost-effective. The results of other fertility investigations such as their partner's sperm analysis should be taken into account.		GDG STATEMENT

Medically assisted reproduction

47	In infertile women with rASRM stage I/II endometriosis, clinicians may perform intrauterine insemination (IUI) with ovarian stimulation, instead of expectant management or IUI alone, as it increases pregnancy rates.	⊕◯◯◯	Weak recommendation

48	Although the value of IUI in infertile women with rASRM stage III/IV endometriosis with tubal patency is uncertain, the use of IUI with ovarian stimulation could be considered.	⊕◯◯◯	Weak recommendation
49	ART can be performed for infertility associated with endometriosis, especially if tubal function is compromised, if there is male factor infertility, in case of low EFI and/or if other treatments have failed.	⊕⊕◯◯	Weak recommendation
50	A specific protocol for ART in women with endometriosis cannot be recommended. Both GnRH antagonist and agonist protocols can be offered based on patients' and physicians' preferences as no difference in pregnancy or live birth rate has been demonstrated.	⊕◯◯◯	Weak recommendation
51	Women with endometriosis can be reassured regarding the safety of ART since the recurrence rates are not increased compared to those women not undergoing ART.	⊕⊕⊕◯	Weak recommendation

53	The extended administration of GnRH agonist prior to ART treatment to improve live birth rate in infertile women with endometriosis is not recommended, as the benefit is uncertain.	⊕◯◯◯	Strong recommendation
54	There is insufficient evidence to recommend prolonged administration of the COC/progestogens as a pre-treatment to ART to increase live birth rates.	⊕◯◯◯	Weak recommendation
55	Clinicians are not recommended to routinely perform surgery prior to ART to improve live birth rates in women with rASRM stage I/II endometriosis, as the potential benefits are unclear.	⊕⊕◯◯	Strong recommendation

56	Clinicians are not recommended to routinely perform surgery for ovarian endometrioma prior to ART to improve live birth rates, as the current evidence shows no benefit and surgery is likely to have a negative impact on ovarian reserve.	⊕⊕OO	Strong recommendation
57	Surgery for endometrioma prior to ART can be considered to improve endometriosis-associated pain or accessibility of follicles.		GPP
58	The decision to offer surgical excision of deep endometriosis lesions prior to ART should be guided mainly by pain symptoms and patient preference as its effectiveness on reproductive outcome is uncertain due to lack of randomised studies.	⊕OOO	Strong recommendation

Non-medical management strategies for infertility

Regarding non-medical strategies on infertility, there is no clear evidence that any non-medical interventions for women with endometriosis will be of benefit to increase the chance of pregnancy. No recommendation can be made to support any non-medical interventions (nutrition, Chinese medicine, electrotherapy, acupuncture, physiotherapy, exercise, and psychological interventions) to increase fertility in women with endometriosis. The potential benefits and harms are unclear.	GDG STATEMENT

61	Endometriomas may change in appearance during pregnancy. In case of finding an atypical endometrioma during ultrasound in pregnancy, it is recommended to refer the patient to a centre with appropriate expertise.	⊕○○○	Strong recommendation
	Complications related directly to pre-existing endometriosis lesions are rare, but probably under-reported. Such complications may be related to their decidualisation, adhesion formation/stretching and endometriosis-related chronic inflammation. Although rare, they may represent life-threatening situations that may require surgical management.		GDG STATEMENT

Impact of endometriosis on pregnancy and pregnancy outcome

60	Patients should not be advised to become pregnant with the sole purpose of treating endometriosis, as pregnancy does not always lead to improvement of symptoms or reduction of disease progression.	⊕OOO	Strong recommendation

62	Clinicians should be aware that there may be an increased risk of first trimester miscarriage and ectopic pregnancy in women with endometriosis.	⊕⊕◯◯	Strong recommendation
63	Clinicians should be aware of endometriosis-associated complications in pregnancy, although these are rare. As these findings are based on low/moderate quality studies, these results should be interpreted with caution and currently do not warrant increased antenatal monitoring or dissuade women from becoming pregnant.	⊕⊕◯◯	Strong recommendation

Primary prevention of endometriosis			Chapter IX
101	Although there is no direct evidence of benefit in preventing endometriosis in the future, women can be advised of aiming for a healthy lifestyle and diet, with reduced alcohol intake and regular physical activity.	⊕⊕◯◯	Weak recommendation
102	The usefulness of hormonal contraceptives for the primary prevention of endometriosis is uncertain.	⊕⊕◯◯	Weak recommendation
103	Genetic testing in women with suspected or confirmed endometriosis should only be performed within a research setting.		RESEARCH-ONLY

Endometriosis and cancer

Chapter X

104	Clinicians should inform women with endometriosis requesting information on their risk of developing cancer that endometriosis is not associated with a significantly higher risk of cancer overall., Although endometriosis is associated with a higher risk of ovarian, breast, and thyroid cancers in particular, the increase in absolute risk compared with women in the general population is low.	⊕⊕◯◯	Strong recommendation
105	The GDG recommends that clinicians reassure women with endometriosis with regards to their cancer risk and address their concern to reduce their risk by recommending general cancer prevention measures (avoiding smoking, maintaining a healthy weight, exercising regularly, having a balanced diet with high intakes of fruits and vegetables and low intakes of alcohol, and using sun protection).		GPP
	Based on the limited literature and controversial findings, there is little evidence that somatic mutations in patients with deep endometriosis may be predictive of development and/or progression of ovarian cancer.		GDG statement

106	Clinicians should reassure women with endometriosis about the risk of malignancy associated with the use of hormonal contraceptives.	⊕◯◯◯	Strong recommendation
107	In women with endometriosis, clinicians should not systematically perform cancer screening beyond the existing population-based cancer screening guidelines.	⊕⊕◯◯	Strong recommendation
108	Clinicians can consider cancer screening according to local guidelines in individual patients that have additional risk factors, e.g., strong family history, specific germline mutations.		GPP
109	Clinicians should be aware that there is epidemiological data, mostly on ovarian endometriosis, showing that complete excision of visible endometriosis may reduce the risk of ovarian cancer. The potential benefits should be weighed against the risks of surgery (morbidity, pain, and ovarian reserve).	⊕⊕◯◯	Strong recommendation

O-021 Magnetic Resonance Imaging (MRI) evaluation of Quinagolide Vaginal Ring (QVR) treatment on endometrioma, Deep Infiltrating Endometriosis (DIE), and adenomyosis lesion characteristics: QLARITY trial results

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Study question: Can MRI provide a useful assessment of changes to endometrioma, DIE, and adenomyosis lesion burden resulting from QVR treatment?

Summary answer: MRI successfully measured changes in the number, size, diffusion, and perfusion biomarkers of endometriotic and adenomyotic lesions enabling evaluation of QVR treatment efficacy.

What is known already: Endometriosis and adenomyosis are associated with chronic pelvic pain, painful menses, and infertility. Determining treatment efficacy is reliant on patient reported outcomes (PRO) which are sensitive to response style effects and may lag changes in underlying pathology. Availability of biomarkers measuring lesion burden could accelerate the development of therapies treating disease rather than managing symptoms. MRI is routinely used in oncology to provide non-invasive biomarkers of treatment effect, a paradigm adapted in this trial. Quinagolide is a dopamine D2 receptor agonist formulated in an extended-release vaginal ring in development for treatment of endometriosis based on presumed inhibition of lesion angiogenesis.

Study design, size, duration: QLARITY was a randomized, placebo-controlled phase 2 trial investigating the mechanism of action of QVR (1080 µg) administered for four menstrual cycles. Randomization was 1:1 QVR (n = 35) to placebo vaginal ring (n = 32). Primary endpoint was change in the sum of lesion sizes by type from baseline to end of cycle 4 as measured by MRI. Secondary endpoints included changes in lesion volume, PROs and adverse events. MRI-derived imaging biomarkers were analyzed as exploratory endpoints.

Participants/materials, setting, methods: Women, 18-45 years old with at least one type of lesion (endometrioma, adenomyosis, and/or DIE) visualized by MRI, were enrolled. The analyses were performed by treatment for each of the three lesion types individually and for all types combined. Change in lesion size was analyzed using ANCOVA adjusted for baseline. Number of subjects with lesion regression was analyzed using a Chi-Square test. MRI-derived diffusion and perfusion imaging biomarkers were analyzed as exploratory endpoints.

Main results and the role of chance: Demographics and baseline characteristics were comparable between treatment groups. Patients had a mean age of 36.1 years and had been diagnosed for 5.25 years on average. Most patients ($n = 42$, 62.7%) had 2-4 lesions. No statistically significant changes in the sum of lesion sizes or PROs (Numerical Rating Scale, Biberoglu and Behrman Scale, and Endometriosis Health Profile-30) after treatment were noted, when compared to placebo. However, across all lesion types, a statistically significantly higher proportion of QVR patients than placebo patients demonstrated lesion regression of $\geq 65.0\%$ volume (61.3% vs 35.5%, $p = 0.042$). In the DIE group, lesion regression occurred in more patients treated with QVR than those on placebo (36.8% vs 7.7%, $p = 0.016$). For diffusion imaging biomarkers, a significant difference in the diffusion coefficient standard deviation of DIE lesions ($p = 0.039$) was found in the QVR group compared to placebo. For perfusion imaging biomarkers, a statistically significant relationship with the treatment was identified in the endometrioma group for the 25th percentile of difference in fractional volume of extravascular extracellular space (mean difference −1.69, $p = 0.009$) from baseline. Incidence and severity of adverse events were similar between QVR and placebo.

Limitations, reasons for caution: MRI cannot currently detect superficial, highly vascularized endometriosis, which may be more responsive to QVR treatment than the more advanced stage of endometriosis (indicated by relatively large endometrioma and DIE) imaged in QLARITY. Moreover, 4 cycles may not be of sufficient duration for optimal treatment of these lesions.

Wider implications of the findings: QLARITY provides support for the use of MRI to diagnose and characterize changes in endometriotic/adenomyotic lesions. It is also the first MRI characterization of the placebo response in this population. Imaging biomarkers show promise in generating insights. QVR is safe and well tolerated; further studies of its efficacy are warranted.

O-056 Can we tailor ART to endometriosis patients?

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ART remains an effective treatment for endometriosis-associated infertility, although there is evidence that pregnancy rates are diminished in women with endometriosis compared with other etiologies of infertility.

In this lecture, the literature relating to endometriosis-associated infertility will be evaluated and recommendations will be made on the management of patients both pre-ART and during ART in order to improve ART outcomes in women with endometriosis.

Surgery as an adjuvant to ART appears to have a favorable effect in patients with minimal to mild endometriosis prior to IVF. However, this evidence is based on only one study and more research is needed. As deep endometriosis (DE) is usually accompanied by advanced intra-abdominal disease resulting in distortion of the pelvic anatomy and tubal dysfunction, it is not surprising that IVF is considered as first line treatment. Observational data are available on the outcomes of DE surgery regarding conception rates in infertile patients with endometriosis suggesting that surgery may increase natural pregnancy rates as well as improve IVF outcomes. However, randomized trials comparing IVF to DE surgery are non-existent, as DE surgery is still mainly performed for pain and reduced quality of life rather than for treating infertility.

In order to improve IVF success rates in endometriosis, various pre-ART treatments have been suggested. The oldest one relates to the use of gonadotropin releasing hormone (GnRH) agonist prior to IVF. Currently there is uncertainty as to whether long-term GnRH agonist therapy is beneficial when compared to standard IVF/ICSI in endometriosis. In addition, there is no evidence to support the use of oral GnRH antagonists and oral contraceptives as pre-treatment prior to ART, but results of ongoing studies will determine further.

More recent studies support defects in endometrial receptivity as a cause of IVF failure. In recent years a new marker for endometrial receptivity in endometriosis emerged: BCL6, a biomarker for endometrial inflammation as it stimulates endometrial cytokine expression. Prospective cohort data provide a proof of concept that high BCL6 expression is associated with adverse IVF outcomes in women with endometriosis and that patients with high BCL6 expression may benefit from medical and surgical treatment prior to IVF.

It has been hypothesized that applying local endometrial injury might induce a beneficial effect on endometrial receptivity prior to ART. However, scratching the endometrium as well as infusing fluids (Lipiodol and ExEm gel) into the uterine cavity (uterine bathing) in endometriosis patients prior to ART did not improve IVF success.

O-146 Serum Progesterone levels do not differ between patients with endometriosis and unaffected patients who conceive after Hormone Replacement Therapy-Frozen Embryo Transfer (HRT-FET) cycles

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Study question: Do endometriosis women who achieve a live birth (LB) after Hormone Replacement Therapy-Frozen Embryo Transfer (HRT-FET) have different transfer-day progesterone levels than controls?

Summary answer: In women achieving a LB after HRT-FET, serum progesterone levels on the day of the transfer did not differ between endometriosis and unaffected patients.

Study design, size, duration: We conducted an observational cohort study at the university-based reproductive medicine center of our institution, focusing on women who underwent a single autologous frozen blastocyst transfer after HRT using exogenous estradiol and micronized vaginal progesterone for endometrial preparation between January 2019 and December 2021. Women were included only once during the study period. Serum progesterone levels were measured on the morning of the FET by a single laboratory.

Participants/materials, setting, methods: Patients were divided into groups based on whether they had endometriosis or not and whether they achieved a LB. The diagnosis of endometriosis was based on published imaging criteria (transvaginal sonography/magnetic resonance imaging) and/or confirmed histology. The primary outcome was progesterone levels on the day of the HRT-FET leading to a LB in patients with endometriosis compared to unaffected women. Subgroup analyses were performed based on the presence of deep infiltrating endometriosis or adenomyosis.

Main results and the role of chance: A total of 1784 patients were included. The mean age of the women was 35.1 ± 4.1 years. Five hundred and sixty women had endometriosis, while 1224 did not. 179/560 (32.0%) with endometriosis and 381/1224 (31.2%) without endometriosis achieved a LB. Among women who achieved a LB after HRT-FET, there was no significant difference in the mean progesterone level on the day of the HRT-FET between those with endometriosis and those without (13.6 ± 4.3 ng/mL versus 13.2 ± 4.4 ng/mL, respectively; p = 0.302). In the subgroup of women with deep infiltrating endometriosis (n = 142) and adenomyosis (n = 100), the mean progesterone level was 13.1 ± 4.1 ng/mL and 12.6 ± 3.7 ng/mL, respectively, with no significant difference compared to endometriosis-free patients. After adjustment for BMI, parity, duration of infertility, and tobacco use, neither the presence of endometriosis (coefficient 0.38; 95% CI -0.63 to 1.40; p = 0.457) nor the presence of adenomyosis (coefficient 0.97; 95%CI -0.24 to 2.19; p = 0.114) was associated with the progesterone level on the day of HRT-FET. Among women who did not conceive, there was no significant difference in the mean progesterone level on the day of the HRT-FET between those with endometriosis and those without (p = 0.709).

O-147 Role of serum progesterone levels and subcutaneous progesterone supplementation in endometriosis patients undergoing artificial cycle frozen embryo transfer

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Study question: Is there any impact of serum progesterone levels and subcutaneous progesterone supplementation on live birth rate in endometriosis patients undergoing Artificial Cycle-Frozen Embryo Transfer (AC-FET)?

Summary answer: Endometriosis patients have comparable progesterone levels before transfer to those without endometriosis. Progesterone supplementation results in similar live birth rate (LBR) to the general population.

What is known already: Progesterone (P4) resistance is a hallmark of uterine alterations in endometriosis. This disease could disrupt balance between progesterone and estrogen signaling pathways, resulting in estrogen dominance and progesterone resistance at the receptor level, which warrants a deeper exploration for adjusting dosages when performing AC-FET. A recent retrospective study highlights the potential significance of a progesterone threshold when using vaginal and intramuscular progesterone systematically in AC-FET, correlating with a significantly higher LBR for endometriosis-patients. However, no current studies have compared LBR according to P4 the day before blastocyst-transfer and progesterone supplementation in endometriosis versus non-endometriosis-patients undergoing AC-FET with standard vaginal treatment.

Participants/materials, setting, methods: Endometrial preparation involved oral estrogens at 6 mg daily from the begging of menstrual cycle. Micronized vaginal progesterone (600 mg/day) was added when thickness reached 7 mm. P4 was measured before embryo transfer; supplementation (25 mg SC injection) was added if < 10.6 ng/mL. FET occurred 6 days after initiating luteal phase support. Treatment continued until the pregnancy test. If pregnant, treatment ceased at 10 weeks of amenorrhea.

Limitations, reasons for caution: The primary limitation of our study is associated with its observational design. Extrapolating our results to other laboratories or different routes and/or dosages of administering progesterone also requires validation.

Wider implications of the findings: This study shows that patients diagnosed with endometriosis do not require higher progesterone levels on the day of a frozen blastocyst transfer to achieve a LB in hormonal replacement therapy cycles.

What is known already: In HRT-FET, several studies have highlighted the correlation between serum progesterone levels at the time of frozen embryo transfer and LB rates. In the pathophysiology of endometriosis, progesterone resistance is typically described in the eutopic endometrium. This has led to the hypothesis that women with endometriosis may require higher progesterone levels to achieve a LB, especially in HRT-FET cycles without a *corpus luteum*.

Main results and the role of chance: Comparisons between endometriosis and non-endometriosis groups revealed similar baseline characteristics regarding age, BMI, parity, number of embryos transferred, and embryo quality.

The number of cycles with levels ≥10.6 ng/mL before transfer were comparable between patients with and without endometriosis (aOR 0.98, 95% CI 0.65-1.47) according to a multivariable logistic regression analysis adjusting for age, BMI, and prior progesterone levels <10.6ng/mL the day before transfer.

Unadjusted findings demonstrated equivalent clinical pregnancy, miscarriage, and live birth rates in endometriosis compared to non-endometriosis patients.

A subsequent multivariable logistic regression analysis to analyze LBR was conducted, considering four groups:

A subsequent multivariable logistic regression analysis to analyze LBR was conducted, considering four groups:

Group 1: Endometriosis with progesterone <10.6ng/mL and SC supplementation (51 patients)

Group 2: Endometriosis with progesterone ≥10.6ng/mL (117 patients)

Group 3: Non-endometriosis with progesterone <10.6ng/mL and SC supplementation (274 patients)

Group 4: Non-endometriosis with progesterone ≥10.6ng/mL (543 patients)

Adjusted for age, BMI, and embryo quality, Group 1 was considered as the reference. Results showed comparable live birth rates between the reference group and Group 2 (aOR 0.79, 95% CI 0.36-1.74), Group 3 (aOR 0.91, 95% CI 0.45-1.8), and Group 4 (aOR 1.9, 95% CI 0.71-2.74). Subcutaneous supplementation for endometriosis patients with P4<10.6ng/mL the day before embryo transfer led to similar LBR compared to the other groups.

Wider implications of the findings: Endometriosis patients have the same risk to have P4<10.6ng/mL the day before FET as non-endometriosis patients. Vaginal progesterone, with subcutaneous supplementation if necessary, appears user-friendly, leading to a comparable live birth rate to that of patients with normal progesterone levels before transfer, regardless of endometriosis status.

Abstract citation ID: deae108.167

O-148 Does presence of endometriosis adversely affect oocyte morphology? Evaluation of a large number of oocytes obtained from endometriosis patients, 27204 oocytes

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Study design, size, duration: This retrospective, single center study evaluated 29130 ART cycles from August 2011 to March 2023,based on data obtained from Istanbul Memorial Hospital,ART and Reproductive Genetics Center.Study group included endometriosis patients(n=4602 cycles, 27204 oocytes) and control group included non-endometriosis patients(n=24528 cycles, 178774 oocytes).We analyzed demographic and cycle characteristics, oocyte morphology in ART cycles between the two groups.Futhermore, we compared pregnancy outcomes in frozen-thawed embryo transfer(FET) cycles (total number:11116 FET cycles; endometriosis group:2255 cycles,non-endometriosis group:8861 cycles).

Participants/materials, setting, methods: Patients diagnosed with endometrioma by ultrasound, diagnosed with endometriosis by laparoscopy or patients who underwent endometrioma surgery or adenomyosis detected on ultrasound were included in the study (endometriosis) group. In the control group, the patients without endometriosis were included.

Mann Whitney U test and Pearson Chi-square test used. Cliff's Delta effect size (????) for non-parametric tests and Phi effect size (p) for categorical data were reported.

Main results and the role of chance: The sample was very large, so the statistical results were given in terms of effect size, not only p value calculated. Female age was similar. Female body mass index, number of previous cycles, duration of infertility, AMH, total gonadotropin dosage used, duration of ovarian stimulation, estradiol level on trigger day, number of aspirated oocytes, mature and fertilized oocytes, maturation and fertilization rate, rate of blastulation, rate of usable blastocyst (top and good quality), number of embryos transferred, blastocyst stage embryo transfer cycles were statistically different between the two groups ($p < 0.001$). However when the effect size examined, all variables were found to have a negligible association by Cliff's

Delta or Phi effect size calculations. Oocytes obtained from endometriosis patients had statistically significantly higher severe central granulation, large perivitellin space, thick zona, polar body defect abnormalities compared to non-endometriosis patients ($p < 0.001$), Phi effect size showed negligible association for all variables.

In endometriosis group compared to non endometriosis group; biochemical pregnancy (68.9% vs 72.2%, p:0.002, Phi:0.030), clinical pregnancy (61.5% vs 64.5%, p:0.007, Phi:0.025), total pregnancy loss (22% vs 24.4%, p:0.05, Phi:0.022) were statistically higher, but Phi effect sizes were negligible. Live birth were similar (52.5% vs 53.2 P:0.56) between the two groups.

Limitations, reasons for caution: The principal limitation of the study is retrospective design of the analysis. But the strength of the study is that included 27204 oocytes from endometriosis patients.

Wider implications of the findings: To our knowledge, this study includes the largest case group that investigates the endometriosis and oocyte morphology. The results show that endometriosis does not have a negative impact on oocyte morphology. Additionally, it has been shown that the presence of endometriosis does not have a negative effect on pregnancy outcomes.

O-149 The Endometriosis Longitudinal Fertility Study (ELFS): Outcomes for women with moderate or severe endometriosis who are trying to conceive

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What is known already: Although there are hypothesis, theories that altered steroidogenesis and folliculogenesis, higher oxidative stress, reactive oxygen species, altered cell cycle progression, inflammation and angiogenesis in the follicular environment exposes oocytes to a hostile inflammatory environment and alters oocyte quality. There has been much debate and conflicting evidence as to whether the poorer IVF outcomes in women with endometriosis is related to altered oocyte quality. There is some evidence to suggest that impaired oocyte morphology in women with endometriosis may have an adverse impact on fertilization rate, however, most studies have shown that there is no difference in pregnancy outcomes following IVF.

What is known already: Endometriosis is associated with reduced pregnancy rates in women attempting both spontaneous and assisted conception. Monthly fecundity is approximately half that of women without endometriosis and reduces further with increasing severity of disease. At present, the effect of surgery on the fertility outcomes of women with moderate or severe endometriosis remains unanswered. Treatment decisions are complex, particularly in those without pain symptoms seeking to optimise fertility outcomes.

Study design, size, duration: ELFS is a prospective multi-site longitudinal cohort study being conducted over 5-years. This interim report summarises data from August 2021-January 2024 in participants <38 years with evidence of in-situ moderate or severe endometriosis desiring fertility immediately or in the future. ELFS prospectively measures and compares monthly clinical pregnancy and live birth rates in women having either surgical or conservative management of endometriosis. This report assesses outcomes for those trying to conceive naturally or with ART.

Participants/materials, setting, methods: Following consent and baseline questionnaire completion, participants install the purpose-built ELFS App to their mobile phone or use a web-based option to complete cyclical surveys. The timing of surveys is dependent on a learned logic within the App and based on menstrual cycle length and pregnancy status. Participants report

Main results and the role of chance: There are 124 participants enrolled in ELFS, 86 (69%) are in the surgical cohort and 38 (31%) in the conservative cohort. There are 45 participants (36%) who have indicated they are actively trying to conceive during the study and a total of 171 cycles have been recorded from these participants. Of those trying to conceive, 24 (53%) have elected to have surgery during the study period, compared to 23 (29%) who were not trying to conceive. The study has captured 126 cycles with attempted conception. Of these, 42 cycles (33%) utilised ART compared to 84 cycles (67%) of natural conception attempts. Of the ART cycles, 27 (75%) involved IVF with fresh or frozen embryo transfer and there were 9 (15%) IUI cycles. To date, there are 25 reported pregnancies. The pregnancy rate for ART cycles was 22% (8/36) compared to 11% (9/87) in the natural conception cycles. Of those who conceived following surgery, 47% (8/17) of pregnancies were following ART and 53% (9/17) were natural conceptions. There are 2 live births recorded, both from the cohort who had surgery during the study. A total of 5 miscarriages (20%) have been reported, 4 (80%) from the surgical cohort.

Limitations, reasons for caution: In the absence of data to guide management in this area, clinician scope of practice and concurrent pain symptoms are likely to influence recommendations for ART or surgery in those trying to conceive with moderate or severe endometriosis.

Wider implications of the findings: This preliminary data is consistent with the current literature showing reduced natural and assisted conception rates in women with moderate or severe endometriosis. Long-term data will be required to determine if fertility and pregnancy outcomes are influenced by surgical management of endometriosis.

Endometriosis is a complex gynecological condition that not only causes debilitating symptoms but also significantly impacts fertility. As the disease affects approximately 10% of women of reproductive age, addressing fertility preservation strategies becomes paramount. The conventional treatments for endometriosis, such as medical therapy and surgery, often fail to fully address its adverse effects on ovarian reserve and reproductive potential.

It is crucial to acknowledge the challenges and uncertainties associated with fertility preservation in endometriosis patients. Socio-economic factors, patient preferences, and the lack of clear criteria for selecting candidates for OOC pose significant hurdles. Furthermore, the effectiveness and cost-effectiveness of OOC in this population warrant further investigation.

In addition to OOC, alternative fertility preservation options, such as ovarian tissue preservation, could be considered, particularly in cases where ovarian stimulation is not feasible or declined by the patient. However, data on the efficacy and safety of ovarian tissue preservation specifically in endometriosis patients are limited, highlighting the need for further research in this area.

In conclusion, fertility preservation, particularly through OOC, holds promise for mitigating the adverse effects of endometriosis on ovarian function and fertility. While uncertainties persist, integrating fertility preservation discussions into the comprehensive management of endometriosis is essential. This ensures that patients are empowered to make informed decisions about their reproductive health and maximizes their chances of achieving desired fertility outcomes despite the challenges posed by endometriosis.