



The #Enzian classification: is it time to rethink the impact of endometriosis on IVF?

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Introduction

Although the impact of endometriosis on OS has been widely studied, the results are not conclusive. Most studies have focused on the impact of endometriomas rather than endometriosis. The possibility of diagnosing pelvic endometriosis in a detailed and non-invasive manner has opened up new scenarios in assessing the impact of this condition on fertility and IVF. Several indices have been developed to predict the impact of endometriosis on natural fertility, such as EFI or rASRM. To date, no score has ever been evaluated to predict the IVF outcomes in patients with endometriosis.

Objectives

A retrospective cohort study was conducted at our IVF Unit between January 2023 and December 2024. The study included 61 women with at least one ultrasound feature of endometriosis who underwent ovarian stimulation for IVF. All women underwent ultrasound examination before ovarian stimulation: the pelvis was examined in the anterior, lateral and posterior compartments and deep infiltrating endometriotic lesions were considered for this study. All lesions were classified according to the #Enzian classification. The primary endpoint is the number of eggs retrieved. Poor oocyte recovery was defined as a number of oocytes collected of less than 4. Secondary endpoints are: number of metaphase II oocytes; number of fertilized oocytes; number of blastocysts and cleaved embryos obtained. Blastulation rate and fertilization rate were also evaluated. The impact of #Enzian classification was assessed by univariate logistic regression model. Odds Ratios (OR) are displayed with two-sided 95% confidence interval.

Results

The mean age of the population was 37 ± 3.2 years. Mean BMI and serum AMH levels were 22.42 ± 2.5 kg/m² and 2.26 ± 3.34 ng/ml, respectively. According to the #Enzian classification, 26 patients (43%) had lesions classified in compartment O, 18 (29.5%) in compartment A, 47 (77%) in compartment B, and 10 (16%) in compartment C. Twelve patients (20%) had previously undergone surgery for endometriosis: 12 patients (20%) underwent ovarian surgery, while 8 (13%) had deep endometriosis eradication surgery. In the univariate analysis, endometriosis of compartment C was associated with poor oocyte yield (OR: 8.33; 95% CI: 1.13-69.7; p-value <0.02). Endometriosis of compartments A, B and O was not correlated with poor oocyte yield. After adjusting for the effect of female age, endometriosis of compartment C was still significantly associated with low oocyte recovery (adjusted OR: 8.32, 95% CI: 1.13-69.6, p-value <0.03). Moreover, endometriosis of compartment O was associated with no blastocyst development (OR: 5.99; 95% CI: 1.52-30.4; p-value <0.01). After adjusting for the effect of female age, endometriosis of compartment C was still significantly associated with no blastocyst development (adjusted OR: 5.7, 95% CI: 1.46-58.9, p-value <0.04).

Conclusions

In clinical practice, correct characterization and classification of endometriosis by ultrasound can help predict poor oocyte recovery and no blastocyst development. Further investigations are needed to better understand the mechanisms that extra-ovarian endometriosis has on oocyte recovery. This study is inherently limited by its retrospective design and relatively small sample size.

Recommended reading

- Dirou C, Fondin M, Pabic EL, et al. Association of preoperative Enzian score with postoperative fertility in patients with deep pelvic endometriosis. *J Gynecol Obstet Hum Reprod.* 2022;51(7):102408.
- Goncalves MO, Siufi Neto J, Andres MP, et al. Systematic evaluation of endometriosis by transvaginal ultrasound can accurately replace diagnostic laparoscopy, mainly for deep and ovarian endometriosis. *Hum Reprod.* 2021;36(6):1492-500.
- Keckstein J, Hoopmann M. Endometriosis, ultrasound and #Enzian classification: the need for a common language for non-invasive diagnostics. *Ultraschall Med.* 2023;44(3):233-9.
- Russo C, Lazzeri L, Siciliano T, et al. Reproducibility of #Enzian classification by transvaginal ultrasound and its correlation with symptoms. *Facts Views Vis Obgyn.* 2024;16(1):47-58.