

Fertility preservation for women with ovarian endometriosis: it is time to adopt it as routine practice
FOR: Fertility preservation is an integral component of the management of women with ovarian endometriosis

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Fertility preservation for women with ovarian endometriosis: it is time to adopt it as routine practice

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Fertility preservation techniques are widely accepted as standard of care for women undergoing treatment for cancer who are at risk of premature ovarian insufficiency. The same approach is not yet well established in benign conditions.

There is ample evidence that women who have endometriosis are twice as likely to experience infertility in the future (Prescott et al. 2016 *Hum Reprod* 31(7):1475-82). Ovarian endometriomas reduce ovarian reserve by exposing healthy ovarian tissue to the pathological process of endometriosis and to mechanical stretch, resulting in a progressive reduction in the pool of primordial follicles. Surgery to treat ovarian endometriomas further reduces ovarian reserve due to loss of normal ovarian tissue during cystectomy and ablation. Following surgical removal, there is a reduction in ovarian reserve, as measured by anti-müllerian hormone (AMH) levels, by 30% in unilateral and 44% in bilateral endometriomas (Raffi et al. 2012, *J Clin Endocrinol Metab.* 97:3146-3154). The risk of premature ovarian insufficiency after bilateral ovarian

endometrioma removal is 2.4% (Busacca et al. 2006, *Am J Obstet Gynecol* 195(2):421-5). Younger women have a higher recurrence rate of endometriomas requiring repeated surgery, which compounds the insult to their ovarian reserve. Accepting this risk, the European Society for Gynaecological Endoscopy, the European Society for Human Reproduction and Embryology and the World Endometriosis Society have collaborated in developing recommendations on the practical aspects of endometrioma surgery to reduce their adverse impact. Women with endometriosis are often subjected to the pressure of early childbearing based on their risk of infertility, whilst there is a societal trend towards delaying parenthood.

Success rates of IVF are dependent on oocyte yield. The number of oocytes retrieved from women with endometriomas undergoing ovarian stimulation is substantially reduced, particularly in the presence of large and bilateral endometriomas (Kim et al. 2020, *RBMO* 40(6):827-834). It is, however, possible to restore cumulative livebirth rates in women with endometriosis when an equivalent number of oocytes is retrieved (Cobo et al. 2021, *RBMO* 42:725–732). There is evidence that almost half of women who had oocyte cryopreservation due to endometriosis subsequently used their oocytes, highlighting substantial utilisation of stored gametes within this group of women (Cobo et al. 2020, *Fertility and Sterility* 113:836–844).

In light of this information, it is difficult to justify excluding women with endometriosis from having fertility preservation. A structured approach is required to grade the risk to fertility in endometriosis rather than questioning the validity of fertility preservation in these women. In order to construct criteria for offering fertility preservation, prospective data collection is required to understand long-term fertility patterns. Size of endometrioma, bilaterality, previous surgery and age are the obvious candidates in determining risk.

An early discussion around reproductive planning is essential in women with ovarian endometriosis regarding the implications of their significant risk of diminished ovarian reserve and premature ovarian insufficiency. Oocyte and embryo cryopreservation offer women with ovarian endometriosis an effective and reliable option to increase their chance of reproductive success, particularly in young women with large or bilateral endometriomas who may require surgical intervention, those who have had previous surgery and those who are not in a position to embark upon pregnancy. It is imperative that the risk to ovarian reserve and fertility as well as the role of fertility preservation are recognised in women with ovarian endometriosis, just as in women undergoing treatment for malignancies.

Word count 500 (excluding references)

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Conflict of Interests

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