

Fertility preservation in severe endometriosis

*Chii-Ruey Tzeng & Yen-Ping Ho
Taipei Fertility Center, Taiwan*

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Endometriosis is a progressive disease usually involves young women in their reproductive years. Women diagnosed of endometriosis may need medical or surgical treatment depending on the severity of disease and clinical manifestations. Although pregnancies are well known to be the nature redemption for endometriosis; however, most of the patients are not necessarily pursuing pregnancy at the moment when they are diagnosed or even in the near years after they are diagnosed. Especially when women are diagnosed as severe endometriosis, ovarian involvement or endometrioma are usually manifested. These increased the risk of premature ovarian insufficiency because severe endometriosis is associated with a compromised ovarian reserve caused by several mechanisms involved in progressive follicular depletion and relative environmental oxidative stress. Considering the progressive nature of endometriosis, recurrence of endometriosis is highly possible for women with endometriosis after initial treatment if long-term control of the disease is not well planned. Meanwhile, emerging evidence on the association of surgical treatment of endometriosis with ovarian damage has also accumulated over the years, mainly after procedures of ovarian endometrioma excision. In the long run, the ovarian reserve would be jeopardized and left few opportunity of child-birth for those women with recurrent severe endometriosis or repeated ovarian surgery due to recurrence of endometriosis. Therefore, it raises the question that if fertility preservation technologies (FTP) play a roll in patients with severe endometriosis if they are not currently pursuing for pregnancy.

The use of fertility preservation technologies has become widely approved as a standard of care for women facing a high risk of acute premature ovarian failure due to cancer treatments. FPT include well-established techniques such as oocytes and embryo cryopreservation (OC and EC), as well as ovarian tissue cryopreservation (OTCP). The emerging experience has greatly increased our knowledge and FPT are currently more multifaceted and effective. Nowadays, these FPT are not only applied for the purpose of onco-fertility but also for reasons of benign gynecological diseases such as endometriosis. In the newsletter of ISFP May 2019, Dr. Donnez has given an overview on these methodologies of fertility preservation technologies in endometriosis. Although these technologies are all well-established methods, there are some pros and cons when these technologies are applied in patients with endometriosis (1):

Embryo/oocyte cryopreservation

Pros

- Documented results especially when embryos are frozen
- No risk of procedure-related ovarian reserve depletion
- The pick-up may avoid contact of the oocyte with the detrimental effect of the peritoneal fluid
- Patients suffering from endometriosis are frequent costumers of ART procedure

Cons

- Risk of infections related to oocyte retrieval and abscess formation
- Need of repeated IVF cycles in order to collect an adequate number of oocytes that can be soled

Ovarian tissue cryopreservation

Pros

- Highly effective technique for fertility preservation
- Easily performed during the surgical intervention for the disease
- No need of ovarian stimulation
- Frozen tissue is spared from potential destruction in cases of disease recurrence

Cons

- Laparoscopic procedure in these patients may be more difficult and risky
- Storing tissue surrounding cyst or pseudocapsule - quantity and quality of follicles are questionable
- Storing healthy tissue remote from cyst may result in ovarian damage and reduced ovarian reserve
- Limited results, so far, have been shown in this class of patients.

Unlike onco-fertility that FTP has accumulated considerable clinical experience, only limited results are presented concerning FTP applied in endometriosis. Most of the OTCP data in endometriosis are case reports with limited power to evaluate the effectiveness (2-4). On the other hand, oocyte cryopreservation exhibited considerable high oocyte survival rate (83.2%) and cumulative live birth rate (CLBR) (46.4%) in a retrospective observational study (5). Of the 1044 patients who vitrified their oocytes at the mean age of 35.7 years, with or without a prior surgery for endometriomas, 97.7% had stage III-IV endometriosis and 485 patients returned to use vitrified oocytes to attempt pregnancy (return rate 46.5%). Notably, the ovarian response and CLBR (72.5% vs. 52.8%) were higher in young (≤ 35 years) nonsurgical patients versus the surgical patients, depicting that the effectiveness of oocyte cryopreservation in severe endometriosis was maximized in certain subgroup.

In summary,

ovarian tissue cryopreservation and oocyte cryopreservation are well-established options for fertility preservation in severe endometriosis patients. Fertility preservation in patients with severe endometriosis offers a considerably high cumulative live birth rate even after surgery for endometrioma. However, proper FP counseling should be provided as soon as a diagnosis was made to enhance the

References:

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