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Fertility Conservation in Endometriosis

Key Message

Fertility preservation is an important aspect of management in patients with endometriosis. This can be done by choosing the best surgical techniques, avoiding unnecessary surgery, measuring ovarian reserve before surgery, emergency IVF before laparoscopic surgery, cryopreservation of oocytes and ovarian tissue, and maintaining a healthy lifestyle.



Why is fertility hampered in endometriosis?

Though IVF is the first line of treatment in severe endometriosis it is associated with reduced fertilization rate, implantation rate and pregnancy rate per cycle. The incidence of miscarriage is also higher. All these could be due to either altered peritoneal function, elevated concentrations of inflammatory cytokines in serum and oxidative stress. There also could be endocrine and ovulatory abnormality with granulosa cell dysfunction. Abnormal embryogenesis and decreased endometrial receptivity result in impaired implantation.

Surgery may result in low ovarian reserve and lower response to ovarian stimulation leading to low number of oocyte recovery and higher dose of gonadotropin requirement in women with endometriosis. This warrants fertility preservation in women with endometriosis. Each patient should be assessed on an individual basis, to maximize fertility preservation

What is endometriosis?

Endometriosis is a chronic, estrogen-dependent, inflammatory disorder affecting >100 million women and teens worldwide. Endometriosis is a known cause of infertility in reproductive-aged women. Most treatment plans target pain caused by the disease, and may overlook the possibility that the patient may want to conceive. Early diagnosis and treatment can reduce uncertainty of diagnosis, discomfort, disease progression and complications. Unfortunately, pathogenesis, prognosis, progression and prediction of response to therapy is still unclear.

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Techniques to conserve fertility in endometriosis

1. Choosing the right surgery and avoiding unnecessary surgery

Laparoscopy is considered the gold-standard treatment for endometriosis especially ovarian endometriomas and various techniques that may be used include cystic wall laser vaporization, drainage and bipolar coagulation of the cystic wall, and endometrioma stripping. Surgery can lead to a reduction in ovarian reserve by three main mechanisms: excessive stripping of the ovarian cortex, the use of bipolar coagulation to stop bleeding and the presence of surgery-induced inflammation. However, there is a lack of universal agreement as to which one is most effective in avoiding ovary damage.

The procedure of laparoscopic cyst drainage with laser vaporization using a CO₂ laser to eliminate any remaining endometriotic tissue followed by medical treatment with GnRH agonists for 3 months had a higher antral follicle count (AFC) compared to those who underwent cystectomy with bipolar coagulation.

Surgery is indicated only in the presence of severe pain or endometriomas larger than 4 cm or when there is history of severe dyspareunia, which can prevent spontaneous conception.

Thus avoiding unnecessary surgery and individualization of each patient with careful surgery performed by experienced surgeon limits damage to ovarian reserve. Oophorectomy should be performing only in rare cases of endometriosis associated with cancer.

2. Assessment of ovarian reserve

The assessment of ovarian reserve by measuring the AFC and AMH levels prior to surgery could help to plan the best approach and should be considered a routine test for patients undergoing surgery for ovarian endometriomas. In women with low ovarian reserve surgery can be avoided in some cases.

3. Emergency IVF or cryopreservation of oocytes and ovarian tissue

It is a well-known fact that endometrioma harm the functional ovarian tissue, which is further exacerbated by surgery. In these patients, there is an early decline in the number of antral follicles. Emergency IVF should be considered before surgery especially when ovarian reserve is reduced and embryos frozen for transfer in a subsequent cycle after surgery in an HRT cycle. In the absence of a partner, one could freeze the oocytes or ovarian tissue. Adolescent patients with endometriosis who must undergo surgery for endometriomas, should consider cryopreserving ovarian tissue in an attempt to preserve their fertility.

4. Use of GnRH agonist

If ovarian reserve is not reduced, patients with stage III or IV endometriosis subjected to GnRH therapy 6 months before their IVF–ET cycle show a 30% increase in pregnancy rates per cycle compared with patients who undergo a standard controlled ovarian hyperstimulation.

5. Life style modification

Lifestyle modifications should be considered not only for overall health concerns, but also to improve fertility as endometriosis is an estrogen-dependent disease. Lifestyle that reduces the production of estrogen may reduce the risk of endometriosis and should be adopted. Avoiding late childhood obesity and use of high trans fats especially in smokers along with avoidance of caffeine and alcohol reduces the incidence/severity of endometriosis.

If none of these methods have been used to preserve fertility, oocyte donor programs may be the only remaining option.