

Endometriosis and Infertility

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As we know, Endometriosis, is a common cause of pelvic pain and infertility in our female patients. The primary goal for treating these patients is to relieve pain and/or improve fertility. Despite extensive research, the management of endometriosis is unclear. The management pathway often depends upon the goal of the patient. Both medical and surgical treatment options are available, yet there is no evidence that any medical management will improve future

fertility. Therefore, treatment decisions are often individualized for the patient with endometriosis. Patients suffering from symptomatic endometriosis will often benefit most from conservative surgical intervention, with the objective of resecting and abating pelvic endometriosis while preserving the uterus and ovarian tissue for future fertility. Depending upon a patient's age, her desire to conceive, and her current ovarian reserve, Assisted Reproductive Technologies (ART) may be the best option for a patient prior to surgery, or immediately following surgery for endometriosis.

Mechanisms of infertility associated with endometriosis have been debated and depend largely upon the stage of disease. Patients with severe endometriosis may have anatomic abnormalities such as adhesions, endometriomas, and altered tubo-ovarian relationship that can directly inhibit conception. It is also theorized that endometriosis may result in an overproduction of cytokines, growth factors, prostaglandins, and metalloproteinases that can cause a "hostile" pelvic environment inhibiting fertilization and implantation. This theory has been supported by studies that have shown women with endometriosis having increased macrophages and cytokines in their peritoneal fluid, which in turn may inhibit sperm function and ciliary function in vivo. Therefore, even mild endometriosis can cause infertility. In many cases, mild or severe endometriosis can be treated successfully with fertility treatments following surgery, or even without surgery.

Laparoscopy offers many advantages for treatment of endometriosis for the infertile patient. It is minimally invasive and allows for effective surgical removal of pelvic endometriosis, while reducing the risk of post-operative adhesions, which in turn can cause infertility. Laparoscopy remains the gold standard for establishing the diagnosis of endometriosis and provides the opportunity for conservative surgical treatment. If endometriosis is encountered, the primary goal of surgery should be to ablate or excise the implants of endometriosis, after assessing the sever-

ity with the American Society of Reproductive Medicine (ASRM) staging system. Removal of any pelvic adhesions and restoring normal pelvic anatomy is also critically important for patients that hope to conceive in the future. If the disease is limited to the pelvic peritoneum, then ablation of the implants with micro-bipolar cautery is often effective treatment. Any deep, infiltrating, or nodular endometriosis needs to be surgically excised in order to minimize recurrence, improve pelvic pain symptomatology, and improve fertility. The efficacy of surgical excision of advanced endometriosis to improve fertility has not been proven in randomized research trials, but data from observational studies support this approach.

The diagnostic role of laparoscopy for all infertile patients has become less common practice over the last 2 decades, as ART treatments have become more successful. If a patient has no symptoms of endometriosis, or lacks evidence of endometriosis on examination, then laparoscopy performed routinely as part of a comprehensive infertility evaluation may not be cost effective. Laparoscopy does require anesthesia, carries a small risk of complications, and requires time away from work for surgery and recovery. In the absence of a definitive laparoscopic diagnosis of endometriosis, patients can be treated empirically for infertility, based on research studies showing acceptable pregnancy rates with ART. Depending upon an infertile woman's age, her ovarian reserve, and prior history of surgery, the patient may be best served with superovulation therapy combined with intra-uterine inseminations (IUI), or in-vitro fertilization (IVF). In women under age 35, with normal ovarian reserve and patent fallopian tubes, clomiphene citrate (Clomid) plus IUI is a reasonable and cost effective approach initially. For women over age 35, or who have failed Clomid with IUI, gonadotropin injections should be considered first-line therapy with IUI. Evidence from randomized trials shows that treatment for these patients should combine ovarian stimulation with IUI.

An alternative approach to treatment of infertile patients with endometriosis, is to move directly from Clomid and IUI to IVF, or directly to IVF if there are other concurrent causes of infertility. IVF has been shown in observational studies to be the treatment associated with the highest per-cycle pregnancy rates in women with mild or severe endometriosis. IVF is the preferred infertility treatment in women with endometriosis who fail to conceive with ovarian stimulation and IUI, or as the initial treatment of choice in women with severe endometriosis where fallopian tubes are not patent, severe tubal adhesions are present, or if ovarian reserve is diminished due to severe disease or advanced maternal age. Treatment should be individualized, but IVF is the preferred treatment for patients with severe endometriosis.