



Surgical Interventions for Subfertility in Patients With Endometriosis

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Endometriosis is a known cause of subfertility in women, but therapies exist that can improve patients' chances of conceiving. Gregory M. Christman, MD, of the University of Florida, Gainesville, USA, discussed the surgical management of endometriosis-associated subfertility and pain.

There are 3 different manifestations of endometriosis: endometriotic implants, endometriomas, and rectovaginal adenomyotic nodules. Although all are defined as endometriosis, they tend to have different behaviors and treatment outcomes.

Endometriosis is present in about 30% of subfertile women [ACOG. *Obstet Gynecol* 1999] and is associated with reduced fecundity [Hughes EG et al. *Fertil Steril* 1993]. This may be the result of an inadequate peritoneal environment and distorted pelvic anatomy, which may have negative effects on oocyte, sperm, embryo, endometrial, or fallopian tube function [Monsour G et al. *Fertil Steril* 2009; Halis G, Arici A. *Ann NY Acad Sci* 2004; Martinez-Roman S et al. *Hum Reprod* 1997]. In addition, endometriosis is associated with reduced ovarian reserve when compared with patients who do not have endometriosis [Shebl O et al. *Gynecol Endocrinol* 2009; Hock DL et al. *J Reprod Med* 2001].

Patients with more advanced stage endometriosis have been shown to have worse fecundity, and typically they require *in vitro* fertilization (IVF) for fertility treatment. Patients who have stage III or IV endometriosis and undergo IVF have a pregnancy rate of 13.8%, whereas 21.1% of patients with stage I or II endometriosis and 27.7% of patients without endometriosis were successful at achieving pregnancy (odds ratio, 0.46; 95% CI, 0.28 to 0.74) [Bernhart K et al. *Fertil Steril* 2002]. However, patients with stage III or IV endometriosis who received oocyte donation from a single donor without endometriosis had a live birth rate similar to that of patients without endometriosis.

When managing endometriomas, surgical excision, rather than ablation, is the favored technique for endometriomas >4 cm [Alborzi S et al. *Fertil Steril* 2004; Beretta P et al. *Fertil Steril* 1998]. In addition, excision is associated with reduced rate of recurrence and superior improvement in pain [Hart RJ et al. *Cochrane Database Syst Rev* 2008]. There is uncertainty, however, about when endometriomas should be managed surgically. One study suggested that surgery does not appear to improve fertility when compared with expectant management [Vercellini P et al. *Am J Obstet Gynecol* 2006]. However, a systematic review and meta-analysis of patients with endometriosis who then went on to undergo IVF, suggested that removal of the endometrioma resulted in favorable IVF outcomes [Tsoumpou I et al. *Fertil Steril* 2009]. Conversely, another meta-analysis found that the pregnancy rates following surgery with or without medical management had no positive effect on fertility [Vercellini P et al. *Acta Obstet Gynecol Scand* 2009; Hughes E et al. *Cochrane Database Syst Rev* 2000]. Considering these data, Prof. Christman commented that surgery is warranted for any patient who has pain, and it may have the added benefit of slightly improving spontaneous pregnancy rates. For patients who have no pain, there is not enough improvement in fertility to recommend surgery.

In conclusion, patients with minimal or moderate endometriosis may benefit from laparoscopic surgery and removal of endometriotic implants. For patients with more advanced endometriosis, although they have lower conception rates, IVF remains the most successful treatment for them. Additionally, surgical management in the case of endometriomas may offer slightly increased conception rates, but it should be done only in symptomatic patients.

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