INTRAMURAL FIBROIDS AND INFERTILITY, AN UPDATE REVIEW

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Introduction: Uterine fibroids occur in up to 30% of reproductive age women (Verkauf 1992). However, the effect of intramural fibroids not distorting the uterine cavity on the outcome of IVF treatment remains poorly understood with studies yielding conflicting results. The first question is: does the current literature support the contention that fibroids decrease fertility in general, as well as IVF pregnant rates more specifically? Then, what specific characteristics (size, location or both) predict the type of fibroid that alters fertility?, and Does removal of such fibroids return fertility and IVF success to normal?

Intramural fibroids and infertility: Several studies failed to report any relevant impact of intramural fibroids on infertility and the outcome of IVF (Pritts 2001; Donnes and Jadoul (2002).

On the other hand, results from the meta-analysis of Benecke et al (2005) showed a lower pregnancy rate in women with intramural fibroids. In a meta-analysis by Sunkara et al (2010) in which 19 observational studies were included. It was found there is a statistically significant 21% relative reduction in live birth rate in women with non-cavity-distorting intramural fibroids compared with women without fibroids (RR = 0.79, 95% CI: 0.70-0.88, P<0.0001). Results showed a statistically significant 15% reduction in clinical PR in women with non-cavity-distorting intramural fibroids, following IVF treatment (RR = 0.85, 95% CI: 0.77 – 0.94, p = 0.002).

Meta-analysis of the 13 studies that reported clinical pregnancy as an outcome in which the mean age of the women was less than 37 years showed a significant 18% reduction in the clinical PR in women with intramural fibroids (RR = 0.82, 95% CI: 0.73-0.92, p = 0.0005).

The inverse relationship between IVF outcome and the presence of non-cavity distorting intramural fibroid may be explained by altered uterine vascular perfusion, myometrial contractility, endometrial function, gamete migration or myometiral/endometrial gene expression (Arslan et al 2005).

Rational of the association between fibroids and infertility:

Detrimental effects may be mediated by the occurrence of abnormal uterine contractility. An inadequate blood supply to the endometrium has also been advocated to explain reduced embryo implantation (NG and Ho 2002).

Although transvaginal ultrasound can precisely measure the size of fibroids, it is not accurate at determining the exact location of fibroids within the uterine body.

However, according to some reports, sonohysterogram can provide 100 percent sensitivity and specificity for identifying the exact location of a fibroid. Direct hysteroscopic visualization of the uterine cavity may most accurately identify those fibroids with a submucosal component.

Finally, magnetic resonance imaging (MRI) may provide the best means by which to assess whether an intramural fibroid impacts the endometrial cavity either through actual distortion or through its relationship to the junctional zone (the anatomically distinct segment of the uterus that represents the endometrial-myometrial transition). This ability to correctly identify the location and size of a patient's fibroids is critical for determining which patients require surgical management, as the current literature suggests that certain fibroids have a greater impact on fertility than others.

Intramural fibroids may disrupt the junctional zone of the myometrium without dramatically altering the contour of the uterine cavity. The junctional zone is structurally and hormonally different from the other layers of the uterine body and further research may elucidate its role in fertility and how disruption of this zone by fibroids and/or adenomyosis can reduce implantation.

Pritts et al in a systematic review (2008) reported that women with IM fibroids produced significantly lower clinical pregnancy rates, implantation rates, and ongoing pregnancy/live birth rates and significantly higher spontaneous abortion rates. When the analysis is restricted to prospective studies, only the clinical pregnancy rate loses statistical significance. When the analysis is limited to those studies using a high-quality method to assess the uterine cavity in all subjects, only implantation rate maintains statistical significance.

Myomectomy and pregnancy after IVF: A few studies have been conducted to examine the effect of myomectomy on ART outcomes, but most are limited by small sample size. Bulletti and colleagues conducted a prospective evaluation of 193 women. All patients were evaluated with ultrasound, hysterosalpingogram or hysteroscopy and had one to five fibroids, with at least one >5 cm in diameter, and no submucosal fibroids. Patients were given the choice of myomectomy or no surgery prior to IVF. In the myomectomy group, IVF cycles were performed at least 3 months following surgery. Women who underwent myomectomy prior to IVF had higher clinical pregnancy rate (34 vs. 15%) and higher delivery rate (25% vs. 12%) compared to women who did not elect surgery. Lack of randomization to treatment or no-treatment groups is another limitation of this study.

Buttram and Reiter (1981) reported a 40% pregnancy rate following abdominal myomectomy (480 out oc 1202 cases). Three studies have evaluated the positive impact of previous myomectomy on IVF outcome (Seoud et al 2992, Narayan et al 1994 and Surrey et al 2005). A more recent comprehensive review of articles published between 1982 and 1996 on the success rate after abdominal myomectomy confirmed this rate of success. The post-surgical pregnancy rate across prospective studies was 57% (95% CI: 48-65). Despite a large number of series reporting on the pregnancy rate after myomectomy, randomized studies are lacking.

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