

E-tegrity®: IMPROVING REPRODUCTIVE SUCCESS IN IDIOPATHIC FEMALE INFERTILITY

β3 Integrin Critical in Assessment of Endometrium

The financial and psychological burden that accompanies infertility is heightened for women whose fertility evaluation yields no identifiable cause. Although this medical challenge has long frustrated physician and patient alike, a decade of remarkable advances in reproductive medicine have put forth new strategies in the successful diagnosis and treatment of idiopathic infertility.

Studies have identified a subset of infertile women with alterations in endometrial function that can now be detected by immunohistochemical staining of the $\beta3$ integrin subunit as a marker protein. Adeza Biomedical Corporation (Sunnyvale, CA), a biotechnology company focused on enhancing the quality of women's reproductive health care, introduced the **E-tegrity® Test** in 1998, and it remains the only available test that detects the presence or absence of $\alpha v \beta 3$ vitronectin receptor, or more commonly— $\beta 3$ integrin, a cell-surface receptor that plays an important role in the successful implantation of the human embryo (1).

Clinical studies continue to support the finding that the endometrial window of implantation takes place concurrently with the presence of the $\beta 3$ integrin (2). It has been shown that the assessment of the non-receptive endometrium, when performed *early in the infertility*

evaluation yields crucial insight to the obstetrician/gynecologist or reproductive specialist, often guiding them to an early diagnosis, sparing the patient unnecessary tests and clearing the way for treatment strategies and successful pregnancy.

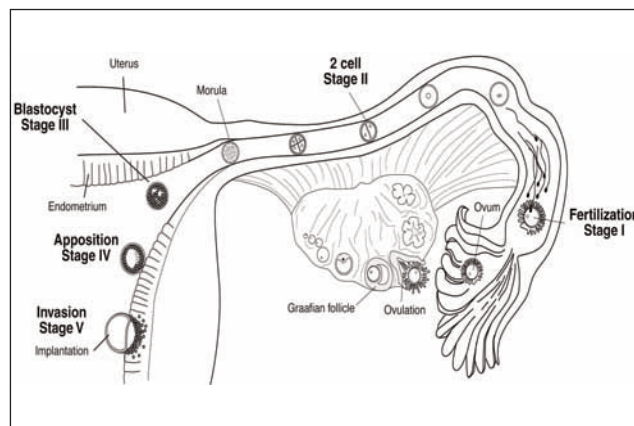
J. Ricardo Loret de Mola, MD, FACOG, FACS, is Chief, Division of Reproductive Endocrinology and Infertility at the Case Western Reserve University, and Director, MacDonald Fertility & IVF Program at the MacDonald Women's Hospital. Says Dr.

Loret de Mola: "We perform E-tegrity testing for failed IVF cycles and in patients with previous out-of-phase biopsies." Continuing, he adds that his patients who have poor endometrial development during gonadotropin stimulation are also good

candidates for E-tegrity testing.

E-tegrity®: More Than A Traditional Endometrial Biopsy

Adeza's CLIA-certified and State of California-licensed clinical laboratory, **Adeza Diagnostic Services (ADS)**, is the only licensed provider of this biochemical means of determining endometrial receptivity. In an intricate staining procedure completed by a clinical laboratory scientist, several antigen-antibody reactions are performed with microscopic readings and counting of endome-



trial glandular tissue. Additionally, a qualified pathologist performs endometrial dating to determine whether histologic development is normal. Both tests must be completed at ADS on the same biopsy specimen. The E-tegrity test provides the following information:

- It is a diagnostic aid for endometriosis;
- It is predictive of successful implantation in *in-vitro* fertilization (IVF); and
- It is an identifier of a pathway for recurrent pregnancy loss (3).

Dr. Loret de Mola notes that his experience with Adeza has been very positive. "The experience has been a good one; they are very responsive with quick turnover of results." He adds that the E-tegrity test "eliminates the need for an additional endometrial biopsy for dating since that information is provided at the time of the report."

The ADS laboratory has serviced such institutions as the National Institutes of Health and has performed testing for several clinical studies that have been the basis of numerous publications.

Test Interpretation

There are three typical patterns of integrin expression. A normal pattern is exhibited when the endometrium is in-phase and $\beta 3$

integrin is present. Lack of expression of $\beta 3$ integrin has been found in two forms of infertility: luteal phase defect and occult defects, which are not typically detectable using routine pathologic diagnosis. Patients lacking $\beta 3$ integrin with an out-of-phase endometrium usually fall into the category of luteal phase defect (1). Patients identified as having one out-of-phase endometrial biopsy (>3 days disagreement between chronological and histologic criteria) are advised, following treatment, to undergo a repeat biopsy to confirm the diagnosis. Patients with in-phase endometrium and lack of the $\beta 3$ integrin are classified as those with occult defects, which have been described as unexplained infertility (1), minimal to mild endometriosis (4), and hydrosalpinx (5).

By assessing the patient's endometrial receptivity, her chances of achieving a successful pregnancy are increased. For example, in women with endometriosis, treatment of this condition with surgery or medical management has improved the pregnancy rates from 10% to 40% and 68%, respectively (6). In women with hydrosalpinges, removal or repair of the damaged fallopian tube(s) results in return of the $\beta 3$ integrin and an improvement in pregnancy rates (5). Women who were missing the endometrial $\beta 3$ integrin achieved pregnancy with more than a 65% success rate when treated for ninety days with the GnRH analog, Lupron Depot.

However, treatment of laser ablation only achieved a 40% success rate and the time to pregnancy was greatly delayed (6).

Idiopathic infertility continues to be a challenge for both physicians and patients. With the aid of diagnostic tests, such as the E-tegrity Test, physicians are able to gain valuable insight, leading to better treatment strategies and higher success rates.



For more information concerning the E-tegrity Test, call Adeza Biomedical at 1-408-745-0975 or 1-877-945-0208, visit Adeza Biomedical's Web site at www.adeza.com.

References:

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