**The Skinny**

Luteal phase deficiency (LPD) has long been implicated as a contributing factor in subfertility and early pregnancy loss. Historically, LPD was diagnosed by endometrial biopsy, and defined as greater than a 2 day lag in endometrial histologic development. Currently, endometrial biopsy is no longer recommended to diagnose LPD because endometrial dating lacks accuracy and precision.

There is no current definitive diagnosis for LPD. However, insufficient amount or duration of progesterone production occurs among women and is still thought to be responsible for some cases of infertility and early pregnancy loss.

Current recommendations involve assessing for LPD by measuring luteal phase duration, with a short luteal phase defined as < 12 days (minimum of 13 days from detection of LH surge, or 11 days of elevated basal body temperature).

Among women with LPD, treatments are aimed at enhancing follicular development and/or providing luteal support to improve the quality and duration of the luteal phase, thus enhancing the ability to conceive.

**Key Points**

**LPD**

- ❑ LPD is estimated to occur in 30% of isolated cycles in fertile women, and in up to 30-40% of infertile women.
- ❑ Screening for luteal phase deficiency (defined as luteal phase < 13 days from detection of LH surge by ovulation predictor kit) should be considered among women with short cycles (< 24 days), unexplained infertility, advanced reproductive age (>35 yo), and history of recurrent pregnancy loss.
- ❑ Endometrial biopsy is no longer indicated to diagnose LPD.
- ❑ When LPD is suspected, patients should be screened for hypothyroidism and hyperprolactinemia, as these endocrine disorders will often first manifest as luteal phase deficiency, only later progressing to irregular cycles, anovulation and amenorrhea.

**Drs. Ringland Murray and Jessica Scotchie**
**6031 Shallowford Road, Suite 101**
**Chattanooga, TN 37421**
**423-876-2229**
**www.trmbaby.com**

**What's Behind the Skinny**

LPD is thought to affect up to 40% of infertile women. The exact etiology of LPD is unknown, but hypotheses include:

- Abnormal hormone production by the corpus luteum
- Decreased FSH production
- Abnormal LH secretory pattern and quantity
- Abnormal GnRH pulsatility
- Hypothyroidism and/or hyperprolactinemia (both interfering with GnRH pulsatility)
- Diminished endometrial response to progesterone, thus impairing receptivity to implantation

Historically, timed endometrial biopsy was used to detect LPD. However 2 recent studies have shown that biopsies are not clinically useful. Out of phase biopsy results are found in 20-30% of normally cycling women, and histologic dating does not appear to be significantly different among fertile and infertile populations. Furthermore, a randomized study found that biopsies lack accuracy and reproducibility regarding endometrial dating.

Timed progesterone level measurements have also been used to measure the adequacy of ovulation, and thus the adequacy of the luteal phase. However, as detailed in the February edition of "REI Pearls," progesterone is secreted in a pulsatile fashion with wide ranges in values during the luteal phase (from 2 ng/ml to 40 ng/ml). Therefore, measuring a single value which happens to fall during a trough in secretion may lead to the erroneous conclusion that a woman has low progesterone levels, and thus an inadequate luteal phase. A commonly held belief is that progesterone levels > 10ng/ml in the mid luteal phase indicate quality ovulation. As described above, this interpretation may sometimes be incorrect if the progesterone level happens to be drawn during a trough instead of a peak. To potentially avoid this pitfall, some investigators suggest measuring three luteal progesterone levels and if the collective value is > 30ng/ml, then the woman likely has normal ovulatory function and adequate progesterone production. However, this requires 3 patient visits and venipunctures, which we find to be cumbersome for patients, and there is no data that progesterone levels above a certain level are more predictive of a "normal" luteal phase compared to simply measuring the length of the luteal phase. Finally, investigators have also found that endometrial histology has poor correlation with progesterone levels, further complicating the interpretation of progesterone levels and what constitutes "normal."

Thus due to the difficulties surrounding progesterone level interpretation in the luteal phase, and the lack of accuracy, precision, and prediction of fertility of endometrial biopsies, measurement of the length of the luteal phase is likely the best indicator of

**Drs. Ringland Murray and Jessica Scotchie**
**6031 Shallowford Road, Suite 101**
**Chattanooga, TN 37421**
**423-876-2229**
**www.trmbaby.com**

luteal phase adequacy at this point in time. Research is ongoing to identify critical genes and proteins expressed in the luteal phase that may be markers for normal luteal phase function and receptive endometrium.

When luteal phase deficiency is suspected based on a short luteal phase (<13 days from detection of LH surge, or <11 days of elevated basal body temperature), screening for hypothyroidism and hyperprolactinemia should be performed as these endocrine disorders commonly present as short luteal phase. Women of advanced reproductive age (>35 yo) often have ovarian dysfunction even though they regularly ovulate, and may demonstrate luteal phase deficiency as well. Many treatment options for LPD are available, each having benefits and relative risks, and we generally tailor the treatment individually based on the patient's history. We welcome any consultations you have involving patients you suspect have LPD.

**Drs. Ringland Murray and Jessica Scotchie**
**6031 Shallowford Road, Suite 101**
**Chattanooga, TN 37421**
**423-876-2229**
**www.trmbaby.com**