PRETERM LABOR – PRIOR PREGNANCY

The following definitions are discussed as a framework to explain our recommended care:

**Preterm Delivery:** Delivery prior to 37 (thirty seven) weeks gestational age;

**Preterm Labor (without delivery):** Involving both painful uterine activity / contractions and cervical change both stopping with medical intervention;

**Symptoms of Preterm Labor:** Involving progressive pelvic pain or pressure, waxing and waning uterine activity moving from cephalad to caudad not accompanied by cervical change;

**Incompetent Cervix:** Involves painless dilation of the cervix often occurring later in gestation in subsequent pregnancies potentially associated with prior significant cervical surgery.

Because of the great significance in terms of potential adverse neonatal outcome, costs associated with Neonatal Intensive Care Unit (NICU) stays and chances of long term developmental sequellae, Desert Women’s Health aggressively diagnoses these conditions and, using principals of Disease State Management, focuses additional time and clinical energy on monitoring and follow-up of patients with these conditions.

Desert Women’s Care has a specifically designed program for Women with Prior Preterm Labor. It is well recognized that bringing appropriate resources to bear on these women decreases the likelihood of recurrent preterm delivery and major neonatal morbidity.1

Approximately, 15% of all preterm births in the United States occur in a woman who had a previous preterm birth.2 Extensive investigation has isolated numerous factors that affect a woman’s chance of recurrence. The risk increases related to the number of prior losses and is inversely related to the gestational age of the preterm delivery or loss.3 Racial predilections have also been noted.

Asian, Hispanic, and White women have an initial risk of preterm birth of approximately 10%. This, however, rises to 20% after one prior preterm birth. Black women have a preterm birth risk in the first pregnancy that exceeds 15% to 16% and a two-fold increase up to approximately 30% with one prior preterm birth.

For a non-black patient with prior preterm birth before 32 weeks gestational age, the likelihood of a recurrence is estimated between 25% and 30%. For a black woman with a prior preterm birth before 32 weeks the likelihood of recurrence rises to 45% to 50%.

In women with more than one prior preterm birth the risk estimate goes up by another factor of 1.5 to 2.0 so that a woman with two prior preterm births may have a recurrence risk that exceeds a total of 50%.

Recurrence of preterm birth or fetal loss is also related to obstetric history (see Figure 1).4
The risk of recurrent preterm birth is also known to be related to cervical length and positive fetal fibronectin test results. Recurrence of preterm birth was less that 10% in women with cervical length > 35 mm and negative fetal fibronectin in the 22 – 24 week range. Recurrence risk exceeds 60% in women with cervical length < 25 mm and positive fetal fibronectin at 22 – 24 weeks.

Various interventions are known to be of benefit in reducing recurrent preterm birth: 1.) smoking cessation; 2.) screening and treatment for asymptomatic bacteruria; 3.) prophylactic administration of progestational agents; and, 4.) cervical cerclage.

Patient is informed that tobacco use in pregnancy leads to increased perinatal morbidity through negative impact on placenta, decreased oxygen carrying capacity of maternal blood, development of intra-uterine growth restriction and prematurity. Tobacco cessation counseling is available and should be used by smokers in pregnancy.

Relationship of bacteruria and preterm labor is also discussed. In an effort to forestall cystitis and ascending urinary tract infection, regular screening for bacteruria in the absence of symptoms is conducted on a regular basis. Treatment in cases where asymptomatic bacteruria is diagnosed will be ordered.

Benefit of progestational therapy was initially published in a 1975 report in the New England Journal of Medicine. That article presented results of a small trial of 17-alpha hydroxyprogesterone caproate (17P) in 43 women with a history of at least two prior pregnancies, preterm births or losses. In that study, 0% of the treatment group and 41% of the placebo group had recurrent pregnancy loss.

Progesterone, however, fell out of favor when the concerns over DES arose. In the recent period, the seminal study on progesterone was published in the New England Journal of Medicine in...
2003. This was a larger, randomized, double-blinded trial conducted by the Maternal Fetal Medicine Unit (MFMU), the network of National Institute of Child Health And Human Development. This study enrolled women with one prior spontaneous preterm birth and involved injections of 17P (250 mg) on a weekly basis with treatment beginning between 16 and 20 weeks gestational age and was continued to either delivery or until 37 weeks gestational age. In the placebo group, 55% of women with prior preterm birth had a recurrent preterm birth but in the treatment group only 36% of women had a repeat preterm birth. This represented almost to 20% decrease in recurrent preterm delivery. A secondary finding of this study was that progesterone was even more effective in preventing recurrent preterm birth in women whose first preterm birth occurred prior to 32 weeks gestational age.

Additional data has also been published in 2007. Of importance in this regard is the trial of 17-hydroxyprogesterone in women with a short cervix published in the New England Journal of Medicine. Spontaneous delivery prior to 34 weeks gestational was less frequent in the progesterone group (19%) and then in the placebo group (34%). It is postulated that progesterone works by relaxing the uterus and alters or blunts the body's response to inflammation which is increasingly thought to be involved as an early trigger in preterm labor.

There is no evidence to suggest the progesterone will help women in active preterm labor, women with ruptured membranes in the current pregnancy, or women with twin pregnancy.

Because of the benefits to women with prior preterm delivery, treatment with 17-hydroxyprogesterone is a mainstay of the Desert Women’s Care management of women with prior preterm birth.

Finally, use of cervical cerclage is of benefit in reducing incidence of recurrent preterm birth. Cerclage can be placed either at or around 13-weeks gestational age or later in pregnancy in response to ultrasonic assessment of cervical length. Cerclage can be placed vaginally (McDonald's or Shirodkar's) or abdominally (laparotomy or laparoscopic techniques). Placement of cerclage is warranted in the Society of Maternal Fetal Medicine treatment algorithm when cervical length is less than 2.5 cm at the 19 week scan.

Evaluation and Treatment

At Desert Women’s Care a thorough history and physical examination forms the basis of the initial evaluation of women with prior preterm birth. Risk factors are modified as discussed above. Women with prior preterm birth or habitual miscarriage are offered a thorough evaluation for Anti-phospholipid syndrome. Laboratory testing includes lupus anticoagulant, antiphospholipid antibody panel and thyroid autoantibodies. Treatment of significant abnormalities can involve baby aspirin, anticoagulants or steroids.

Ultrasound is employed to conduct a thorough anomaly search, initially at the first trimester scan and later in the morphologic study offered between 19 and 20 weeks. Because the relationship between major congenital anomaly and premature delivery is clear, identification of these pregnancies is imperative. Vaginal ultrasound estimation of cervical length at his time identifies women with short cervix (< 2.5 cm) who may benefit from cerclage and/or treatment with 17-OH Progesterone (if they had prior preterm delivery).
Vaginal ultrasound is also used to evaluate the lower uterine segment beginning at least two weeks prior to the gestational age at which the patient had uterine activity or onset of preterm labor in the prior pregnancy. Appropriate antepartum fetal surveillance is conducted based on established criteria. Often home uterine activity monitoring (HUAM) is offered through our association with Alere Healthcare. This commences at approximately 24 to 26 weeks gestational age or sooner should the patient have had a loss earlier.

The additional facet of our management involves episodic tocolytic therapy when necessary (contemporary agents include nifedipine and Magnesium Sulfate) and administration of betamethasone should there be suspicion of impending delivery.
Maternal Fetal Medicine consultation is readily available in the community. Our extensive background in treating women with prior preterm labor and habitual pregnancy loss is highlighted in our website.

References