

Delaware Valley Institute of Fertility & Genetics

Conceptions

Summer 2019



“Details Matter... It’s Worth Waiting To Get It Right”



Infertility affects 1 out of 10 patients of reproductive age! More than 1 out of 20 babies in the USA are born to couples that have received evaluation for infertility or have received infertility treatment! Over the last decade there are major breakthroughs and considerable success in the reproductive medicine armamentarium for both of these two components of infertility, evaluation and treatment.

The leading treatment that has captured the attention of not only the scientific and medical community, but also the attention and interest of the patients and public, is undoubtedly in-vitro fertilization (IVF). Nonetheless, as we indicated in our previous newsletter, the success of this treatment approach has not improved for several years despite the “adjuvant therapies” that have been implemented in the recent past.

One of these newer therapies is Pre-implantation Genetic Screening or “PGS.” This particular therapy was implemented to identify and exclude those embryos that have a chromosomal abnormality, such as Down syndrome, from being transferred to the prospective mother’s womb.

This leads to a decrease in unnecessary transfers of embryos that are predestine not to be implanted or aborted later on and thus saves time, surgical procedures, resources, not to mention the emotional suffering of a loss or the disappointment of a failed treatment.

Much to our surprise though and despite these measures, 1 out of 3 of those carefully selected embryos either fails to be implanted or leads to a “chemical” pregnancy, and 1 out of 10 of the resulting pregnancies are miscarried. In other words, approximately half of the embryos that were tested and were found to be chromosomally normal do not result in a live birth! Of course we already had the experience of other infertility treatments that provided these same results.

Even after ovulation has been restored to normal in women with ovulatory aberrations, most of them having PCO, the pregnancy rate is lower and miscarriage rate is higher than those of the control population. ☆

As if this was not enough, pregnancies resulting from IVF are known to have an increased incidence of major complications ranging from 30% to 271%. These include pregnancy induced hypertension, gestational diabetes mellitus, placentas previa or abruptio, low birth weight, neonates small for their gestational age, preterm birth and others that affect both the mother and the neonate (Table 1).



Unfortunately these risks are not restricted only to IVF treatments but are encountered with differing frequency in all other infertility treatments, such as ovulation induction, insemination and others (Table 2). These medical events that occur during the pregnancy seem to have a lasting effect on both mother and the neonate. Children born to women that experienced hypertension during pregnancy or had lower birth weight have a higher risk of developing obesity, insulin resistance (IR), diabetes mellitus (DM), hypertension (HTN) and strokes in adulthood.

The adverse effects on the mother are not negligent either. Women that experienced a hypertensive disorder during their pregnancy have twice the risk to develop cardiovascular disorders, such as venous thromboembolism, ischemic heart attack or stroke, and this risk will be realized approximately 8 years earlier than in the general population.

As a matter of fact, the risk of cardiovascular death increases by 2 to 10 times and the earlier in the gestation the disorder occurs the higher is the risk. Gestational diabetes is also associated with long term effects on pregnant women. As soon as 3 months after delivering their baby the lipid profile can become abnormal and DM can occur within the first 5 years after delivery. The chances of developing DM is as high as 9.3 times as compare to those pregnant women that did have that experience during the pregnancy. Also women that had preterm delivery or a neonate with decreased birth weight have an increased risk for cardiovascular disease as the rate of cardiovascular hospitalization studies have revealed. ☆

Taken together and looking at our experiences and facts, it appears that we are really dealing with medical condition(s) that affect reproduction. It appears that they primarily involve the cardiovascular and metabolic systems. ☆

The direction and measures that we have taken so far have a limited effect and have only addressed the most pressing issue, that of having a baby or having a family, and have not placed equal gravity to the underlying cause(s) that prevent a physiological event, such as conception from taking place. Therefore our approach, although well intended, might not be appropriate. ☆

If there are underlying medical conditions that affect the pregnancy and that in turn affects the mother and child they should be addressed in advanced and safeguard the pregnancy and its outcome, instead of having a temporary gratification and paying the dividend later on with health consequences. ☆



At DVIF&G for the last 3 decades we have invested our efforts and utmost attention not only to the technological developments, where we really exceed, but primarily and most importantly to the underlying medical causes of infertility that need to be addressed so that the pregnancy progresses safely without any complications and the baby is healthy, not only at delivery but for ever after.



TABLE 1

Relative Risk

- 1.30 Pregnancy Induced Hypertension (PIH)
- 1.31 Gestational diabetes (GDM)
- 3.71 Placenta Previa
- 1.83 Placenta Abruptio
- 1.29 Postpartum Hemorrhage
- 1.71 Preterm Birth
- 1.61 Low Birth Weight (LBW)
- 1.35 Small for Gestations Age (SGA)
- 1.64 Perinatal Mortality

TABLE 2

% Incidence in Different Groups

	SCG	IFT	IVF
PIH	2.4	3.3	4.7
GDM	3.4	5.9	2.7
Previa	0.6	0.5	3.6
Abruptio	0.7	1.4	2.2
LBW	5.1	7.4	5.9
SGA	1.1	2.1	0.9

SCG spontaneously conceived gestation
 IFT infertility treatment other than IVF
 IVF in-vitro fertilization

What we seem to forget is that reproduction is a fundamental function of any species, including that of human, and as such nature has tested and protected it over many centuries. It is unlikely to fail to that degree so that it will affect 10% of the reproductive population. On the other hand nature is invested in the reproductive system and cares for the outcome, e.g. the baby.

