PGS Cheat Sheet for Doctors

WHAT'S PGS?
Preimplantation Genetic Screening (PGS) is a screening test used to determine if chromosomal disorders are present in embryos produced through in vitro fertilization (IVF). First, a woman's eggs are extracted and fertilized as part of a routine IVF cycle. The embryos are given a few days to mature. Then the embryologist removes a few cells from each embryo in order to confirm the number of chromosomes present. Later, euploid embryos will be transferred back into the woman's uterus. The current standard of care is blastocyst (day 5 embryo) biopsy and vitrification, Comprehensive Chromosomal Screening (CCS) of the biopsied tissue, and a frozen embryo transfer in a subsequent cycle.

WHY WOULD EGGS HAVE GENETIC ABNORMALITIES?
The most common reason is maternal aging. Embryo aneuploidy rises dramatically once a woman reaches her late thirties. As a woman ages, her most optimal eggs may have already been ovulated. Remaining eggs may be lower quality. Clinically, this may present as a longer time to conception, increased risk for first trimester spontaneous loss, and increased risk for ongoing aneuploid pregnancies such as trisomy 21.

WHY IS PGS USEFUL?
Embryos with genetic problems or abnormalities may not implant successfully, causing an IVF cycle to be unsuccessful. These failed IVF cycles can be costly and very stressful for the patient. As a result, fertility doctors have historically tried to implant several embryos at once, in hopes that at least one will implant successfully. However, if multiple embryos implant, the patient will have multiple pregnancies (twins, triplets). PGS allows us to better ensure a successful IVF cycle with a single embryo, instead of implanting two at once.

WHAT'S WRONG WITH HAVING TWINS?
Multiple pregnancies put both the mother and the fetuses at a much greater risk of complications. IVF twin pregnancies are two times more likely to suffer pre-eclampsia, 7.5 times more likely for extremely premature delivery, 3.8 times more likely to result in NICU admission, and 2 times more likely for perinatal death.

AREN'T THERE OTHER WAYS TO SCREEN EGGS?
Fertility doctors have tried other methods, such as aneuploidy morphology screening. However, these methods can be highly subjective and haven't yet been shown to be very effective.

WHY IS PGS RECOMMENDED?
A single embryo screened with PGS:

- Is more likely to implant successfully than an unscreened embryo
- Can achieve delivery rates similar to implanting two unscreened embryos
- Reduces the risk of multiple pregnancies
- Is less likely to result in preterm delivery than an unscreened embryo
- Typically results in a baby with a higher birthweight than an unscreened embryo
- Has less risk of eventual NICU admission than an unscreened embryo

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