



Treatment Protocol
Family Gender Balancing
Pre-implantation Genetic Diagnosis (PGD)

Pre-implantation genetic diagnosis (PGD) is a technique that can be added to *in vitro* fertilization, oocyte donation and gestational surrogacy treatments. With this method, the prospective parents will know the gender of each embryo with close to 100% accuracy prior to their transfer into the uterus.

This procedure can also identify genetically abnormal embryos. There are many incurable diseases or disorders which are genetically based, such as chromosome translocations, deletions and inversions including Cystic Fibrosis, Fragile X, Myotonic Dystrophy, Thalassaemia, Tay-Sachs disease, and others. Using PGD it is possible to select only embryos that do not have a chromosomal abnormality for which they were analyzed.

PGD requires the creation of embryos by *in vitro* fertilization, oocyte donation, or gestational surrogacy. It consists of:

1. Removal of embryonic cells.
2. Embryonic chromosomal analysis.
3. Extended embryo culture.

1. Removal of embryonic cells

Once embryos reach the five to eight cell stage (three days after egg retrieval), an embryo biopsy is performed by creating an opening in the egg shell around the embryo.

Since at this stage any cell inside the embryo has full developmental potential, it is possible to safely remove a single cell through this opening using a micropipette. The procedure is performed under a special microscope with micromanipulators.

2. Embryonic chromosomal analysis

After the biopsy, the embryos are placed back in an incubator to await the results of the genetic analysis. The biopsied cell's chromosomes are then analyzed.

3. Extended embryo culture

The genetic analysis takes approximately one to two days. Once the result of the PGD analysis is obtained, embryo(s) of the desired gender and/or that did not show chromosomal abnormalities is/are transferred. The embryos are typically transferred at the morula (day 4) or blastocyst (day 5) stage.

The accuracy of PGD cell analysis approaches 100% but it is not guaranteed. It is possible, even though highly unlikely, that embryo(s) that have tested as normal may not be genetically perfect.

So far, there is no evidence that PGD embryos result in an increased chance of abnormalities in the baby or that the risk of birth defects is higher than the usual risk of abnormalities (2% to 5%) when compared to conceptions that occur spontaneously.