
What is cord tissue and placenta tissue banking?

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The practice of storing cord blood dates back decades but the idea of banking placental tissue is relatively new, and has some important differences when compared with storing cord blood.

The placenta is a highly specialized organ that develops very early in pregnancy. It attaches to the uterine wall, with the umbilical cord emerging from it and connecting the fetus directly to mom. The placenta provides oxygen and nutrient-rich blood to the baby, which in turn provides all the nutrients a growing baby needs until he or she is born. It also serves as an important filter, helping to keep certain substances from passing through to baby, while at the same time allowing carbon dioxide and other waste products from the baby to be removed from the in utero environment.

Just like umbilical cord blood, the placenta is an excellent source of immature stem cells (called mesenchymal stem cells). These powerful cells can differentiate into a wide range of adult cells, which may make them powerful therapeutic tools to help treat disease.

The placenta, however, has one important difference: while umbilical cord blood only contains stem cells that are a perfect genetic match with the baby, the placenta tissue contains stem cells that are a perfect genetic match for both mom and baby.

According to a study that appeared in the *Journal of Stem Cells*, placental stem cells have several other advantages over stem cells obtained from umbilical cord blood or other adult donors, including:

1. The placenta is usually discarded after birth, so there are no ethical concerns with stem cells obtained from placental tissue.
2. Placenta-derived stem cells and tissue are less likely to trigger an immune system response and may be useful to help in wound healing, burn treatment, and even some kinds of reconstructive surgery like oral reconstruction.
3. Different regions of the placenta yield different types of cells and tissues, and researchers are still trying to figure out which areas are the most important.

While the research into placenta tissue stem cells is still developing, a number of promising studies have come out in recent years. Several research groups have published findings showing that treatment with placenta-derived stem cells helps improve symptoms of peripheral arterial disease (PAD) in animal models. This type of disease can be very dangerous and cause limb amputation or death later in life.

Other scientists are studying the use of placenta-derived stem cells and tissue in treating conditions such as stroke and hypertension, as well as pre-eclampsia in pregnant women.

However, certain drawbacks do exist. The placenta is not a sterile organ and can have bacterial growth. It is well-known that many types of bacteria and viruses (such as the chicken pox virus, herpes, and rubella) may cross the placenta, and this has to be taken into account when using any biological tissue. This field of study is also still relatively new, and much more research needs to be done before this type of collection is routinely recommended by most major medical organizations.

Placental tissue banking is a relatively new option for parents. If you have questions about placenta tissue banking, ask your OB/GYN about the potential benefits and procedures, as well as the costs. Placenta tissue can be privately banked or donated to a public tissue bank for research or therapy.

Reviewed by Jennifer Lincoln, March 2020

Takeaways

- Umbilical cord tissue and placenta tissue can be banked for future use, similar to umbilical cord blood.
- Placenta and umbilical cord tissue contain fetal stem cells, which have potential therapeutic use in a wide range of diseases.
- Placenta tissue also contains an exact genetic match for Mom's cells.
- Research into uses for stem cells derived from placenta and the umbilical cord is very preliminary.