



Saviour Sibling

Why in News

Recently, doctors successfully conducted **India's first 'saviour sibling' experiment.**

- The **Saviour Sibling named Kavya** saved her 6-year-old brother (suffering from Thalassemia).
- 150- 200 ml bone marrow was harvested from Kavya in an hour-long procedure and then given to her brother Abhijeet through transfusion.
- **Kavya suffered low haemoglobin** for some time but it was **corrected with supplements** and she also **endured some pain** in the areas from where the marrow was taken for a few days. Presently, **both Kavya and Abhijeet are healthy.**

Key Points

- **'Saviour Sibling'** refers to **babies that are created to serve an older sibling as a donor of organs, bone marrow or cells.**
 - **Stem cells from the umbilical cord blood or blood of the saviour sibling** are used for **treatment of serious blood disorders like [thalassemia](#), [sickle cell anaemia](#).**
- They are **created with In vitro fertilisation (IVF)** so that they can **undergo pre-implantation genetic diagnosis (or testing)** to rule out any genetic disorders and also check bone marrow compatibility.
 - **Pre-implantation Genetic Testing (PGT)** refers to the genetic profiling of embryos. It is used to screen embryos for genetic diseases or chromosomal abnormalities.
 - From each embryo, PGT **takes a biopsy of only a few cells** and conducts a **genetic analysis.**
 - This analysis can search to **exclude embryos** carrying a genetic variant that causes a **hereditary disease**, and it can search to find **embryos that are an Human Leukocyte Antigen (HLA) match to a sibling.**
 - **HLA** is a type of molecule found on the surface of most cells in the body. These **play an important part in the body's immune response to foreign substances.**
 - These **make up a person's tissue type**, which varies from person to person.
 - **HLA typing is important in organ transplantation protocols**, as they determine the likelihood of rejection.
- The **world's first saviour sibling, Adam Nash**, was born in **2000** in the **USA.**
- **Need:**
 - For those families with a child that requires a stem cell transplant, often there is a **hurdle of finding a donor for the transplant.**
 - A successful transplant requires an **HLA match** between donor and recipient. However, the **probability of finding a suitable match among family members is about 30% overall.**
- **Ethical Considerations and Implications:** In a **2004 paper** published in the Journal of Medical Ethics, UK researchers debated **whether selecting saviour siblings should be banned.**

- They studied the arguments to ban it:
 - That saviour siblings **would be wrongfully treated as means rather than ends.**
 - They would cause or **constitute a slide towards [designer babies](#),**
 - They **would suffer physically and/or emotionally.**
- **But the paper found these arguments to be flawed.** It concluded that the **selection of saviour siblings should be permitted,** especially given that prohibiting it would result in the preventable deaths of a number of existing children.

In vitro Fertilisation

- IVF is one of the more widely known types of **Assisted Reproductive Technology (ART).**
- In vitro comes from the latin word '**in glass**', i.e. studies are done in a test tube rather than in a human or animal.
 - The **opposite** to 'In-vitro' is '**In-vivo**', which comes from the latin word '**within the living**'. In vivo refers to experimentation being done in a living organism.
- In vitro means outside the body. Fertilization means the sperm has attached to and entered the egg.
- During IVF, mature eggs are collected (retrieved) from the ovaries and fertilized by sperm in a lab. Then the fertilized egg (embryo) or eggs (embryos) are transferred to a uterus.

Way Forward

- Currently there is a significant gap between the biotechnology advancements in prenatal testing versus the necessary legal and ethical framework. It is imperative that legal and ethical standards be set for the benefit of both the families and professionals involved in the creation of savior children.

[Source: TH](#)

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