New Stem Cell Therapy for the Treatment of Osteogenesis Imperfecta

Osteogenesis Imperfecta (OI) is a genetic disease in which the patient has weak, brittle bones which fracture easily resulting in multiple fractures and deformities throughout their childhood. The children affected severely by this become wheelchair-bound. Under the Indo-Swedish collaboration funded by the Department of Biotechnology, Government of India, VINNOVA Sweden, CMC Vellore and Karolinska Institute, Sweden, a clinical trial named Boost to Brittle Bones (BOOST2B) has been initiated.

The first intraosseous and intravenous transplantation of fetal liver-derived allogenic mesenchymal stem cells (MSCs) treatment for a severely affected three-year-old child was carried out. The injection was well tolerated, and the patient was discharged.

The fluroscopic images showing the needle placement in the metaphyses of the lower limb long bones of the child for the stem cell transplantation.

While there have been seven prenatal procedures carried out through the umbilical vein in Karolinska and elsewhere, this is the first time that the intraosseous route for therapeutic implantation of MSCs has been used in the world for Osteogenesis Imperfecta. The intraosseous injection has a better chance of allogenic engraftment in older children because it avoids entrapping of the cells in the lung tissues, and the cells are directed straight to the bone marrow. The trial is now open for 14 other severely affected OI children aged under 4 years.

The BOOST2B team is led by Dr. Vrisha Madhuri from CMC and Dr. Cecilia Gotherstrom from Karolinska. The other senior partners include Dr. Shyam Kumar N.K, Radiology; Dr. Dolly Daniel, Immunohaematology; Dr. Thomas Paul, Endocrinology; Dr. Nihal Thomas, Endocrinology; Dr. Vikram Mathews, Haematology and Dr. Alok Srivastava, CSCR.

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