

# Guwahati-based IHR gives fresh hope to infertile couples with breakthrough test tube baby



Guwahati, Mar 01: In a remarkable development in the field of InVivo Fertilisation (IVF or test tube baby), and giving a hope to many couples suffering from childlessness, Guwahati-based Institute of Human Reproduction (IHR) has successfully undertaken a latest method in IVF to deliver a healthy baby. The Institute of Human Reproduction utilized the Next-Generation Sequencing (NGS) technology for the first time in Northeast India to successfully fertilize, impregnate and deliver a healthy baby on October 13, 2016. Now at 4 months after de-

livery, the baby boy is doing well and has achieved normal milestone. "We are happy and proud to inform about the successful milestone we achieved through the process. This is a remarkable achievement for the team of IHR. With the development of NGS, identification of implantable embryos continues to improve. This technology is useful for couples with repeated IVF failures, couples of advanced age, couples with repeated abortions or with inherited chromosomal rearrangements such as Robertsonian or reciprocal translocation," said Dr Deepak Goenka,

gynaecologist & infertility specialist and director, Institute of Human Reproduction. NGS is an emerging technology which provides an unprecedented data for genetic analysis. With the help of this technique, a highly accurate detection of chromosomally abnormal embryos can be achieved.

Institute of Human Reproduction (IHR) is one of the pioneer hospitals in the world that uses this technology which provides an outstanding accuracy. The newer technique - NGS - screens for all 23 pairs of chromosomes for aneuploidies. It provides a higher

accuracy and sensitivity compared to other platforms. Using NGS, more detailed genetic information can be obtained through the genome sequencing of embryos. The use of this technique is cost efficient. The sensitivity and specificity of this test is 99%. IHR has been doing Preimplantation Genetic Diagnosis (PGD) and Preimplantation Genetic Screening (PGS) since 2008. In 2009, the institute performed the first successful delivery of a baby with the help of PGD to a parent who had recurrent pregnancy loss. Most of the initial work at that time involved biopsies of single blastomeres from day 3 embryos and the use of the Fluorescence In Situ Hybridization (FISH) technique. But the limited diagnostic accuracy of the FISH technology compromised any potential benefit of screening. IHR is one of the few institutes in India, and the first in Eastern India, to have started using the new technology to give better pregnancy results.

"When Rakhi (name changed to protect identity) visited IHR in 2014, she had a history of infertility for more than 3 years. Her previous reports showed bilateral tubal block and polycystic ovaries. The patient was advised IVF. She underwent her first IVF cycle in August 2014, from which 6 blastocysts were obtained and three FETs were done but none of them resulted in successful pregnancy. Rakhi underwent second IVF cycle in October 2015. Six blastocysts of grade A were obtained and PGS with NGS was done. Out of the six blastocysts only one was normal. FET was done with the normal blastocyst. Pregnancy test done on February 22, 2016 was positive and she delivered a healthy baby on October 13, 2016," said Dr Deepak Goenka who accompanied a team of doctors including Mrs. Rashmi Goenka (Chief Embryologist), Dr. Kanchan Murarka (IVF Specialist), Dr. Rajib Saikia (O & G), Dr. Akbar Hussain (Anaesthetist) and Dr. Rahul

Verma (Paediatrician) in achieving the milestone.

A couple is said to be suffering from infertility if they fail to conceive after 12 months of unprotected trial. Worldwide around 10-15 per cent couples suffer from infertility and the incidence is on the rise due to lifestyle changes. In India, the absolute number of infertile couples is around 18 million. Age of women, age at marriage, place of residence, standard of living, working status of women etc. are some of the variables related to childlessness. Infertility rate is high among women in urban areas. One of the major reasons behind this is lifestyle and marriage at a later age. Infertility has been relatively neglected as both a health problem and as a subject for social science research in India.

Childlessness has serious demographic, social and health implications. The conflux of personal, interpersonal, social and religious expectations may bring a sense of failure, loss and exclusion to those who are infertile. With the development of in vitro fertilization technologies (test tube baby), the infertile couples have found a new hope and they are able to fulfill their dream of getting a baby. However, the implantation rate of embryos and IVF success rate remains low, being 40-50% worldwide. Chromosomally abnormal embryos are recognized as one of the major cause for low pregnancy rate after IVF and for repeated abortions. Worldwide, a million assisted reproductive treatment end in failure each year, emphasizing an urgent need for improvements to existing techniques. Evidence shows that increase in IVF success rate can be achieved if the embryo chosen the transfer to the uterus is healthy (euploid). The embryos can be tested before transfer, but the main obstacle in testing human embryos for aneuploidy is the extremely limited amount of tissue available for analysis. This is where the Next-Generation Sequencing (NGS) helps in attaining better results.