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NUH DELIVERS ASIA'S FIRST BABY CONCEIVED NATURALLY FROM IMPLANTED OVARIAN TISSUE

A team at the National University Hospital Women's Centre, led by Dr Anupriya Agarwal (Consultant, Department of Obstetrics & Gynaecology) has helped restore a cancer patient's natural ability to conceive by preserving part of her ovarian tissue through ovarian tissue cryopreservation before she received chemotherapy, then implanting it four years later when she had recovered from the cancer. She conceived naturally and delivered a healthy baby in May 2015.

Ovarian tissue cryopreservation is a process whereby part of a woman's ovaries are removed then preserved via a slow-freeze method for future re-implantation into the body. This is done to help preserve the woman's fertility, as invasive treatment for diseases such as cancer can typically affect her reproductive system and ability to conceive.

In October 2009, Mdm Siti Nurjannah, then 26 years old, was diagnosed with Stage 2b synovial sarcoma of the thigh, a rare cancer of the soft tissues that typically occurs near the large joints of the arms or legs.

"Siti had plans to get married and have children. As there was a 30%-40% chance that she would become menopausal as a result of the chemotherapy, we referred her to Dr Agarwal to discuss how best to preserve her fertility before starting treatment," said Dr Andrea Wong, Consultant at the National University Cancer Institute, Singapore (NCIS), who had treated Mdm Siti's cancer.

Dr Agarwal offered for Mdm Siti to undergo ovarian tissue cryopreservation. Subsequently, Dr Agarwal and Associate Professor Fong Yoke Fai (Senior Consultant, Department of Obstetrics & Gynaecology) carried out a laparoscopy to harvest tissue from both of her ovaries. This involved cutting half of her two ovaries and sewing them. Then, with the help of NUH's Chief Embryologist, Ms Joyce Matthew, and her team, the cortex – the portion of the ovaries where the eggs are stored was preserved via a special freezing technique.

"While this procedure was not the usual method of treatment, I decided to try it after weighing the pros and cons. Also, given my medical condition at the time, it was my best possible chance to save my fertility as I wanted to have children in the future," said Mdm Siti.

Following the completion of her cancer treatment, Mdm Siti became menopausal and stopped having her periods. Hence, she was started on Hormone Replacement Therapy (HRT) to alleviate the effect of premature menopause on her body and gynaecological organs.

By March 2013, she had recovered from cancer, was married and was ready to have children. At this juncture, Dr Agarwal and Associate Professor Fong carried out a mini laparotomy to implant Mdm Siti's preserved ovarian tissue, using extremely fine sutures.

"The surgery was critical as we had to be quick, in order to avoid damaging the eggs in the thawed ovarian tissue pieces, and careful, so as not to damage any surrounding organs and prevent scarring, which could have reduced her chances of conception," said Associate Professor Fong.

The laboratory technique of preserving the ovarian tissue and thawing it just before it was implanted back into Mdm Siti's body was important as well. For Ms Matthew, the most crucial part of the freezing procedure in the laboratory was to ensure that there would be no freeze damage to the egg cells in the cortical tissue. The frozen tissue was later thawed and rinsed with a special thawing solution, which was prepared in the laboratory, before it was re-implanted back into Mdm Siti.

Three months after the procedure, Mdm Siti's first menstrual cycle returned and she continued to have regular menstrual cycles subsequently. She returned to NUH in October 2014, this time nine weeks pregnant with her first child.

Under close and careful supervision by Dr Agarwal, the pregnancy proceeded smoothly and baby Hannah was delivered on 21 May 2015. Both mother and daughter are currently doing well.

"We are extremely heartened by the outcome of Siti's progress and feel very honoured to have been able to journey with her the past six years. We hope that her story encourages women not to give up on their future fertility in the face of illness and believe that every cloud has a silver lining," said Dr Agarwal.

Baby Hannah is one of the 1,879 SG50 babies born at NUH this year and reportedly one of only 21 babies conceived naturally and born worldwide following ovarian tissue cryopreservation.

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About the National University Hospital
The NUH is a tertiary hospital and major referral centre for a comprehensive range of medical, surgical and dental specialties. The Hospital also provides organ transplant programmes for adults (in kidney, liver and pancreas) and is the only public hospital in Singapore to offer a paediatric kidney and liver transplant programme.

Staffed by a team of healthcare professionals who rank among the best in the field, the NUH offers quality patient care by embracing innovations and advances in medical treatment.

In 2004, the NUH became the first Singapore hospital to receive the Joint Commission International (JCI) accreditation, an international stamp for excellent clinical practices in patient care and safety. Today, patient safety and good clinical outcomes remain the focus of the hospital as it continues to play a key role in the training of doctors, nurses and allied health professionals, and in translational research which paves the way for new cures and treatment, offering patients hope and a new lease of life.

A member of the National University Health System, it is the principal teaching hospital of the NUS Yong Loo Lin School of Medicine and the NUS Faculty of Dentistry.

For more information, please visit www.nuh.com.sg

About the National University Health System (NUHS)
The National University Health System (NUHS) groups the National University Hospital, the NUS Yong Loo Lin School of Medicine, the NUS Faculty of Dentistry and the NUS Saw Swee Hock School of Public Health under a common governance structure to create synergies for the advancement of health by integrating clinical care, research and education.

The enhanced capabilities and capacity enable the NUHS to deliver better patient care, train future generations of doctors more effectively and bring innovative treatments to patients through groundbreaking research.

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