

MEDIA RELEASE

19 March 2021

NUH INTRODUCES MINIMALLY INVASIVE APPROACH FOR LIVER TRANSPLANT TO IMPROVE RECOVERY OF LIVING DONORS

Minimally invasive donor liver surgery allows liver donor to have smaller scar, lesser pain and shorter recovery time

Singapore — Smaller scar, lesser pain and shorter recovery time. These are the benefits observed in living liver donors, after the National University Hospital (NUH) introduced a minimally invasive approach to donor hepatectomy to improve their recovery, and with the hope that this may also encourage more donors to step forward to provide patients in need with a gift of life.

NUH performed its first case of Minimally Invasive Surgery (MIS) donor hepatectomy in November 2017. The paediatric living donor liver transplantation (LDLT) where an adult donor donated the left lateral section of her liver to a child, was performed by Associate Professor Alfred Kow, Senior Consultant, Liver Transplantation, National University Centre for Organ Transplantation (NUCOT), NUH. Since then, Associate Professor Kow and the team at NUH have performed a total of 15 cases of MIS donor hepatectomy, of which eight cases were for paediatric LDLT and seven for adult LDLT.

On average, NUH has been seeing 30 to 50 patients a year with either liver failure or liver cancer for the past three years. Among them, around 80% would require liver transplantation.

Associate Professor Kow, who is also a Senior Consultant with NUH's Division of Hepatobiliary & Pancreatic Surgery, said, "The indications for liver transplantation have evolved progressively over the years. While we see many cases of patients with chronic liver disease due to hepatitis B, C and alcoholic liver disease, there is a significant increase in patients with non-alcoholic fatty liver disease who progress to liver failure needing transplantation. This is partly due to the high incidence of metabolic diseases such as hypertension, hyperlipidaemia and diabetes in our population."

In a typical open surgery, the transplant surgeon makes a 20 to 25 centimetre J-shaped incision (for adult LDLT) across the donor's abdomen to access the liver. This method is usually easier for the surgeon as he will have a larger operating field. However, what is easy for the surgeon can be hard on the patient as recovery from an open surgery may take up to a month.

Using the minimally invasive approach, also known as a laparoscopic procedure, the surgeon will perform the division of the liver through small upper abdominal incisions ranging from five to ten millimetres. The surgical team will split the liver into two portions¹ and the donor liver will

¹ The intervening liver tissues at the junction of the left and right are divided but the crucial structures such as the hepatic artery, portal vein, hepatic vein and bile duct are preserved, so as to ensure continuous blood supply to the liver graft (the part of liver to be removed for donation) and the remnant donor liver. Only when the graft is ready to be taken out for transplantation, these structures are clipped and divided to ensure the donor part of these structures are preserved and that the donor liver will be able to function normally after the operation as well.

be delivered via a five to seven centimetre cut (similar to caesarean scar) above the pubic region, leaving the donor with a much smaller scar compared to the open surgery approach.

On average, donors who have undergone surgery via the minimally invasive procedure will be hospitalised for three days and can return to normal activities in a week. In comparison, the average length of stay for donors who have undergone open surgery would be five days and they may require at least two weeks to a month before carrying out activities as per normal.

Associate Professor Kow said, “The advantages of the minimally invasive surgery for donor hepatectomy include smaller surgical incisions, less post-operative pain and faster recovery in the post-operative period. In addition, the scar in the abdomen is also smaller. The site where the liver graft is delivered can also be hidden under clothing and will not be visible. With advancement in minimally invasive living donor surgery, our goal is also to improve the recovery of living donors and hopefully this will encourage more individuals to come forward, so that we can save more patients’ lives.”

The team estimates that around 10% to 20% of donors may be suitable to undergo this method of hepatectomy. Donor with complicated liver anatomy or whose liver graft is too large will not be suitable for MIS. Donors who are overweight and have limited space in the upper abdomen to allow execution of the MIS procedure, will also not be suitable.

Ms Sophia Chua (31, housewife) is a living donor who donated a part of her liver to her son, Xavier, via the MIS approach. 4-year-old Xavier was born with a liver condition called biliary atresia. When an infant has biliary atresia, the bile is trapped inside the liver, causing damage and scarring to the liver. Xavier underwent Kaisai procedure at 42 days old. Despite the surgery, his liver condition continued to deteriorate and he needed to undergo liver transplantation. Fortunately, after all the tests and checks, Ms Chua was found suitable to donate a portion of her liver to her son and the transplantation eventually took place on 26 August 2020.

“Dr Kow explained to me both surgical approaches and I feel more comfortable with the minimally invasive approach as it would leave me with a smaller scar and allow me to recover much faster. True enough, I left the Operating Theatre with only a five centimetres cut and was fast recovering back to normal, allowing me to visit and take care of my son who was hospitalised for three weeks after the transplant surgery,” shared Ms Chua.

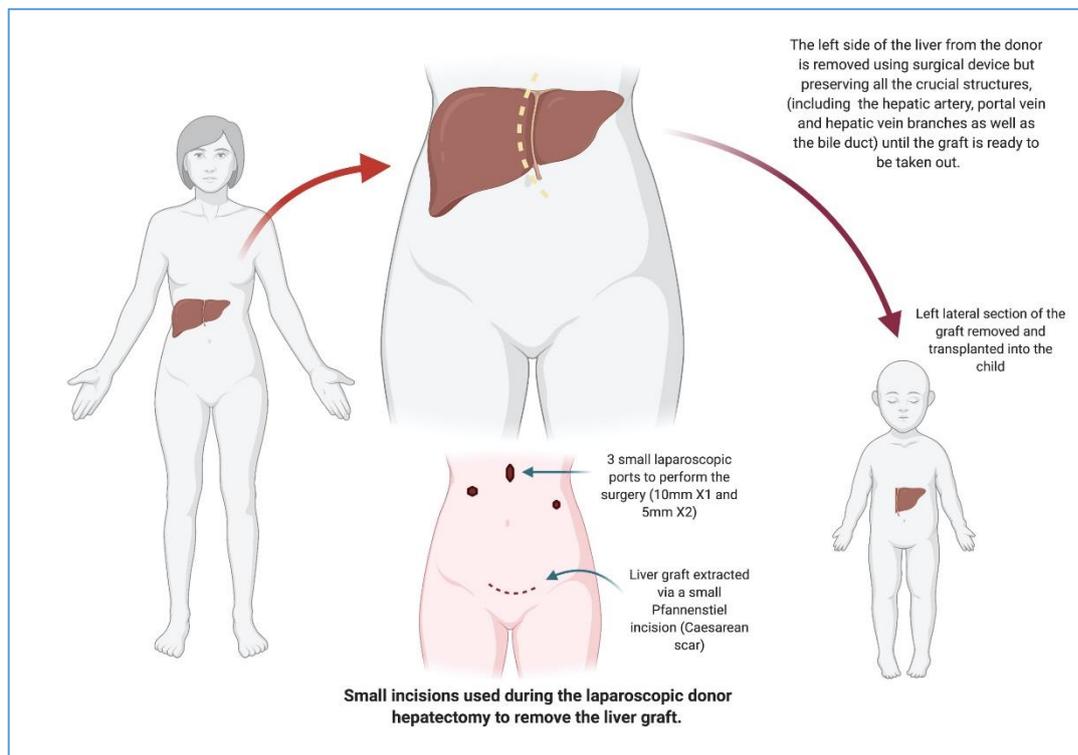


Figure 1: Minimally invasive donor liver surgery

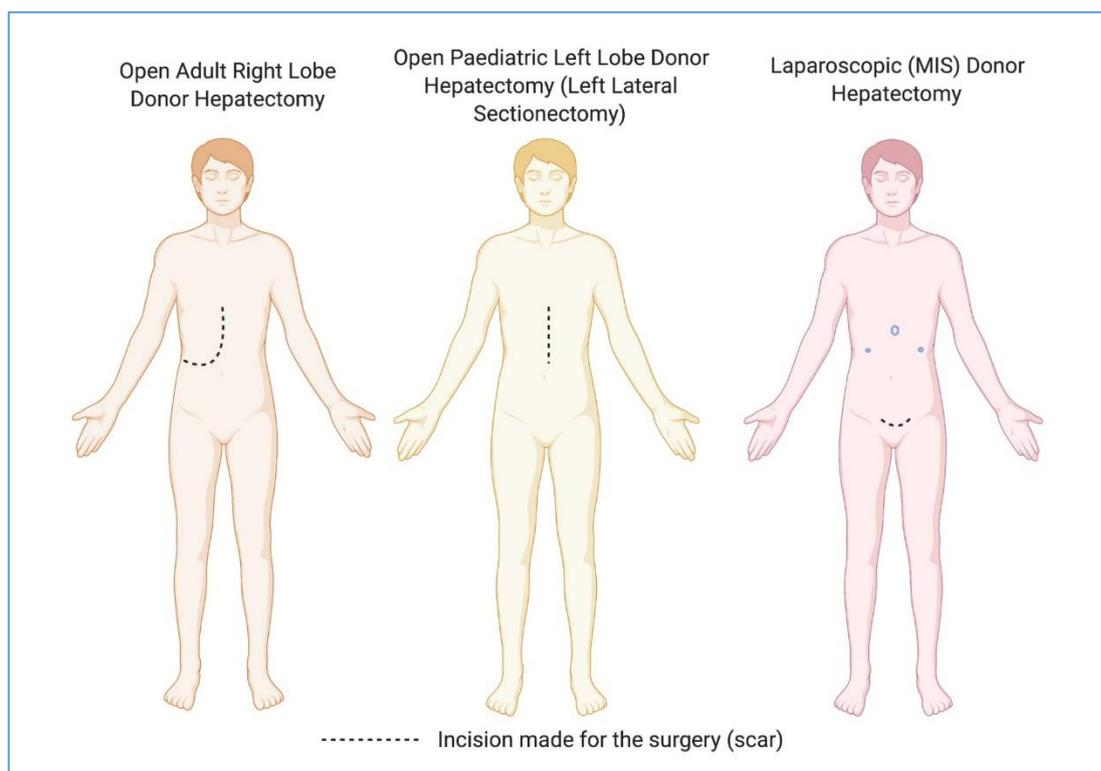


Figure 2: Open surgery versus minimally invasive surgery approach for liver transplantation

Chinese Glossary

Associate Professor Alfred Kow Senior Consultant Liver Transplantation National University Centre for Organ Transplantation National University Hospital	勾伟杰副教授 高级顾问医生 肝脏移植 国大医院器官移植中心 国立大学医院
Division of Hepatobiliary & Pancreatic Surgery National University Hospital	肝胆胰外科 国立大学医院
Division of Surgical Oncology National University Cancer Institute, Singapore	肿瘤外科 新加坡国立大学癌症中心
Hepatectomy	肝切除术
Living donor liver transplantation	活体肝脏移植
Laparoscopically	腹腔镜手术
Caesarean scar	剖腹产疤痕
Pubic region	耻骨部位

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About the National University Hospital

The National University Hospital is a tertiary hospital and major referral centre with over 50 medical, surgical and dental specialties, offering a comprehensive suite of specialist care for adults, women and children. It is the only public hospital in Singapore to offer a paediatric kidney and liver transplant programme, in addition to kidney, liver and pancreas transplantation for adults.

The hospital was opened on 24 June 1985 as Singapore's first restructured hospital. Each year, the Hospital attends to more than one million patients.

As an academic health institution, patient safety and good clinical outcomes are the focus of the Hospital. It plays a key role in the training of doctors, nurses, allied health and other healthcare professionals. Translational research is pivotal in the Hospital's three-pronged focus, and paves the way for new cures and treatment.

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.