

Lucence, TTSH to reduce risks of liver cancer surgery

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The next generation Decision Support Tool to develop machine learning models based on radiology images of liver cancer patients for clinical decision support

Tan Tock Seng Hospital (TTSH) and Lucence Diagnostics are developing a next-generation decision support tool for liver cancer patients, which aims to reduce the risks associated with liver cancer surgery. The tool, which TTSH and Lucence have been collaborating on since April this year, seeks to develop machine learning models based on radiology images of liver cancer patients for clinical decision support. Among major cancers in Singapore, liver cancer has the highest mortality rate when compared to the incidence rate. Surgery is the primary therapeutic option for liver cancer.

This innovation is the first project to result from a Research Collaboration Agreement between TTSH and Lucence, a collaboration facilitated by the Centre for Healthcare Innovation and her partner NHG Centre for Medical Technologies and Innovations. The project, a visualisation tool called Liver3D™ for liver cancer surgery planning, combines TTSH's disciplines in liver surgery and radiology with Lucence's expertise in AI models and precision medicine. The tool creates a 3D image of the tumour relative to the rest of the liver with vascular and biliary structures that can be used to plan the plane of surgical resection.

The Liver3D™ prototype debuted at the Singapore Health & Biomedical Congress from 10 – 11 October 2019, held at the Max Atria, Singapore Expo. Full completion of the project is expected in 2021.

Adjunct Associate Professor Tan Cher Heng, Senior Consultant, Diagnostic Radiology, Tan Tock Seng Hospital, said: "Liver surgery carries a significant risk of complications due to blood vessels and the bile ducts often sitting very close to liver cancer tumours. The proposed visualisation tool holds promise to enable surgeons to appreciate the patient's anatomy better than from routine cross-sectional CT or MRI."

Dr Tan Min-Han, CEO and founder of Lucence, said: "We are glad to work with Tan Tock Seng Hospital on developing software tools that will make a difference for liver cancer patients. By combining the genomic information from our liquid biopsy tests with information derived from Liver3D™ to better advise on surgical decision making, Lucence is delivering on the promise of personalised medicine to offer every cancer patient the best treatment options for their unique situation."