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News Release

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£1.1m imaging study seeks to boost care for liver cancer patients

Patients facing surgery to remove liver cancers could benefit from a £1.1million initiative that uses advanced imaging technology to improve care.

Researchers will test whether novel MRI scanning techniques can help doctors assess possible risks to patients before liver surgery.

The non-invasive technology can provide a detailed picture of liver health to help the multidisciplinary surgical team assess the risks of major liver surgery. It can also help track the effect of chemotherapy and gauge the health of a regenerated liver after surgery.

Surgery is the most effective treatment for liver tumours. Doctors typically remove the section of the liver that is affected by cancer and leave the remainder of the organ intact.

The remaining part of the liver needs to function well enough for the patient to survive after surgery until the liver can regenerate back to full health.

Some 1600 operations are performed in the UK each year and rates worldwide are rising faster than for any other cancer.

Previous research into surgical complications has identified poor liver health – caused by pre-existing chronic liver disease – as a key contributor to post-op liver failure.

The project – called HepaT1ca – involves the University of Edinburgh and Hampshire Hospitals NHS Foundation Trust. They work with University of Oxford spin-out company Perspectum Diagnostics, which has developed the technology called Liver*MultiScan*™.

The system can safely and accurately identify poor liver health caused by excessive fat, inflammation, scar tissue or high iron content.

Funding to investigate how the technology can be integrated into patient care has been awarded by Innovate UK, a Government-backed initiative that reports to the Department for Business, Energy and Industrial Strategy (BEIS).

Lead researcher Damian Mole, who is based at the University of Edinburgh, said the advanced imaging techniques were being refined to carry out a range of functions.

“We believe that these techniques can measure liver health prior to surgery and therefore contribute to a more accurate assessment of surgical risk. Ultimately, we hope this enabling technology will significantly improve the safety of patients who undergo surgery,” said Mr Mole, an MRC Senior Clinical Fellow and Honorary Consultant Liver and Pancreas Surgeon.

Fellow lead researcher Jonathan Fallowfield, also based at Edinburgh, said the project will involve clinical teams and research nurses; imaging specialists and medical physicists from Perspectum Diagnostics; and specialists from Basingstoke and North Hampshire Hospital.

“By teaming up with Perspectum Diagnostics, we can test whether this novel technology can be applied in real life clinical practice. The aim is to advance the MRI technology behind Liver*MultiScan*™ to support surgical planning in clinical practice,” said Dr Fallowfield, an NRS Senior Clinical Fellow and Honorary Consultant Hepatologist.

Dr Matt Kelly, Head of Innovation at Perspectum Diagnostics, said the company was set up to address unmet clinical needs with advanced MRI technology: “We believe this partnership with leading clinical experts in Edinburgh and Hampshire will lead to improved outcomes for patients while reducing the cost of care.”

Mr Myrddin Rees, of Hampshire Hospitals NHS Foundation Trust, who is leading the Hampshire arm of the project, said: “The opportunity to extend surgery to more patients with primary and secondary tumours is thwarted by our inability to accurately quantify the function of the remaining liver. This is an exciting opportunity to fill this gap in our knowledge.”

The initiative is backed by Sunergos Innovations – formerly the BioQuarter Commercialisation Team – which supports the University of Edinburgh to translate medical innovation into better health outcomes for patients.

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