Artificial Intelligence used to enhance decision making during colorectal cancer surgery for first time
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Prof Ronan Cahill, professor of surgery at University College Dublin (UCD) and the Mater Misericordiae University Hospital (MMUH), said "Surgery has the substantial role to play in the therapy of over two-thirds of all cancers and key surgical decisions are traditionally made by human visual judgements, which assume a static biological FOV (Field of View) during the time frame of the observation (which in surgery is moments)."

"The process for uptake and release of an external substance, such as drugs and contrast agents, are unique in cancerous tissues. As such, we envisaged that an approach combining biophysics-inspired modeling and AI could analyze intraoperative changes in NIR intensities over time in varied tissue, enabling clinically useful lesion classification with high specificity. To translate this knowledge for the first time into an intraoperative surgical decision support tool, a computer vision-AI real time tissue-tracking and categorizing prototype has been developed. As the prototype relies only on the NIR fluorescence data stream, it is usable with commercially available imaging systems."

Also speaking about the publication of this study in the British Journal of Surgery, Professor Donal O'Shea, Department of Chemistry at RCSI University of Medicine and Health Sciences said "Targeted agents for cancer imaging currently under trial adhere rigidly to conventional paradigms of fluorescence guided surgery mechanisms, and in the main are administered systemically before surgery, with the operation scheduled for when maximum stable contrast between the tumor and other tissues exist. However this timing is often unpredictable, it can take some days and false positives can occur. Clinical usefulness is further limited by dosing practicalities, scheduling challenges and patient-to-patient and cancer-to-cancer differences. This work instead indicates a
novel pathway and process for immediate, perfect realization of agent information during surgery which would greatly improve efficiency and effectiveness of cancer care."


Provided by University College Dublin

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