

Korea offers smarter medical treatment with novel sensor technology

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Flexible sensor-integrated RFA needle leads to smarter medical treatment?



Researchers at the Korea Advanced Institute of Science and Technology (KAIST) have designed a thin polymeric sensor platform on a radiofrequency ablation (RFA) needle to monitor temperature and pressure in real time.

The sensors integrated onto 1.5 mm diameter needle tip have proven their efficacy during clinical tests and expect to provide a new opportunity for safer and more effective medical practices.

RFA is a minimally invasive surgery technique for removing tumors and treating cardiovascular disease. During a procedure, an unintended audible explosion called 'steam pop' can occur due to the increased internal steam pressure in the ablation region. This phenomenon has been cited as a cause of various negative thermal and mechanical effects on neighboring tissue. Even more, the relationship between steam pop and cancer recurrence is still being investigated.

The research team's integrated sensors reliably detected the occurrence of steam pop. The sensors also monitor rapidly spreading hot steam in tissue. It is expected that the diverse properties of tissue undergoing RFA could be checked by utilizing the physical sensors integrated on the needle.

"We believe that the integrated sensors can provide useful information about a variety of medical procedures and accompanying environmental changes in the human body, and help develop more effective and safer surgical procedures," said the researchers.