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Singapore develops â??5-in-1â?? seed-sized surgical robot

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Mini robot can move, cut tissue, release drugs, grip and store samples, and generate heat wirelessly

Scientists from Nanyang Technological University (NTU) have developed a tiny seed-sized robot that can navigate across soft and uneven surfaces to perform five surgical functions wirelessly, paving the way for developing robots to make surgeries and medical treatments more precise.

The miniature robot, measuring just 4.4 mm in length and controlled by weak magnetic fields, can move, cut biological tissues, release drugs, grip and store tissue samples, or generate heat remotely at any one time. It takes under a second to switch between these functions.

Using magnetic coils in the laboratory to remotely control the robot, the team was able to make the robot deploy different tools and perform different functions, such as activating a tiny blade to cut through tissue, or emitting heat to a targeted area, which could be relevant for approaches being studied that use heat for cancer treatment.

Mini robots are being studied worldwide as a possible way to make minimally invasive surgical and medical procedures safer, less painful and more precise.

Such devices could one day allow doctors to carry out targeted surgeries deep inside the body without large cuts or bulky surgical instruments.

Researchers are working with surgeons to understand how mini robotic systems could eventually fit into real clinical workflows.

A technology disclosure on this innovation has been filed through *NTUitive*, the University's innovation and enterprise company.