

## News

# Robotic surgeon does a neat job on first patients

Oliver Moody Science Correspondent

Four Yorkshire piglets have made history by becoming the first patients to be stitched up after an operation by a fully automated surgeon.

Star — short for “smart tissue autonomous robot” — a self-guided arm, sewed up the four pigs’ small intestines with more precision than an experienced human surgeon, although it took more than five times as long.

The animals survived with no complications. Peter Kim, the paediatric surgeon at the Children’s National Medical Center in Washington DC who led the work, said that it was only a

matter of time before the device was ready to be used on people.

He predicted that it would soon allow doctors anywhere in the world to download programs and use robots to carry out operations more quickly, cheaply and less erratically than even the most skilful human surgeon.

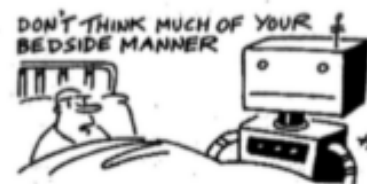
“Imagine that you need surgery or your loved one needs surgery,” Dr Kim said. “Wouldn’t it be critical to have the best surgeon’s techniques available? And if it is the best technique that would ensure safety, and if you’re able to program something like that into a machine, it could potentially be available for anybody, anywhere in the

world, and hence it will reduce complications associated with it.”

Star uses fluorescent stickers to orientate itself and builds up a three-dimensional picture of the body to within an accuracy of a millimetre.

In a series of experiments, described in the journal *Science Translational Medicine*, the robot competed against the da Vinci — a joystick-guided surgical machine widely used in the NHS — and a human surgeon with seven years’ experience.

It outperformed the da Vinci in some measures. On live pigs’ intestines it turned out to be neater and more effective than the surgeon but it took an



average of 50 minutes, compared with eight minutes for the human.

Dr Kim said Star would improve with practice. “Fundamentally, it’s really an intelligent sewing machine, so you can make it as fast as you want,” he said.

British experts were more circumspect. Christopher Ogden, one of the country’s most experienced robotic

surgeons, who has carried out more than 2000 prostate operations at the Royal Marsden hospital in London, said that it was unlikely the machine would be able to cope with anything more than the most routine procedures.

He was concerned that the robot would struggle with the variability from one human body to another.

Shafi Ahmed, a consultant surgeon at the Royal London Hospital who last month conducted the first operation in the world to be live-streamed on video, said that the robot surgeon was a small but important step forward, adding: “Surgeons will probably never be replaced entirely by robots.”