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Sound of kidney stones trumpets op-success

01 November 2004

Researchers have created a stethoscope capable of detecting whether treatment to shatter kidney stones has been successful.

Using the device to listen to the echoes that reverberate around the body after shock waves from lithotripsy, doctors will be able to tell whether the kidney stones have been destroyed, without the need for further X-rays.

Trials of the equipment at Guys and St Thomas' Hospital in London have shown promising results.

Professor Tim Leighton, from the University of Southampton, led the study. He explained: "Consider a railwayman walking along the length of a train, hitting the metal wheels with a hammer.

"If the wheel rings nicely, he knows that it's not cracked. If the wheel is cracked, it gives a duller sound."

He added: "We are looking for a stone from being intact at the start of treatment – when it will give a nice ring 'tick' sound – to being fragmented at the end of the treatment, when it will give a duller 'tock' sound."

Currently, doctors need to compare x-rays carried out before and after lithotripsy to see if the appearance of the stone has changed, but it is often difficult to tell. This means that the doctors may only discover that the procedure was a failure when the patient suffers from symptoms again.

So far, the 'smart stethoscope' has been used to monitor treatment in 50 patients with kidney stones.

It consists of a small probe that is taped to the flank of the patient, where it picks up sound. The sound waves are then transmitted to a device that amplifies and changes the frequency of sounds so that they are audible to the doctor.

Professor Leighton said the stethoscope had been "superbly successful" in clinical tests.

"I have been astounded by how effective it is as a monitor. Plus it is completely non-invasive. It does not expose you to any radiation."

X-rays would still be required to detect the kidney stones in the first place.

He suggested that the stethoscope could be connected to a computer that

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could interpret the data and display the results as a traffic light system, where red would mean no success, amber some success and green complete success.

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