CAPSULE ENDOSCOPY

Capsule endoscopy is when a patient swallows a camera which is only a little larger than a pill. There are two different types of capsule cameras (or pill cameras as they are also called), one for investigating the small intestine and one for investigating the large intestine.

Image 1: Capsule camera for investigation of the small intestine with a camera only. The camera takes two pictures per second during its passage through the intestines.

Image 2: Capsule camera for investigation of the large intestine. This has two cameras in order to take more pictures. Each camera takes 7 pictures per second, which means a total of 14 pictures per second.

The patient has to go around with a portable computer fastened to a belt and has a few electrodes attached to the body. These electrodes contain sensors which capture the images taken by the capsule camera during its passage through the intestines.

The electrodes send the images to the portable computer and the images can then be transferred to a larger computer to be analysed by the physician. The patient does not need to worry about the camera, which will exit the body naturally and can be flushed into the drainage system, as it does not contain any hazardous substances.

Investigating the intestines in this way makes things a great deal easier for the patient. Having swallowed the capsule camera, the patient can go home and live a normal life. After about 10 hours, the patient returns to the hospital and hands in the computer so that the physician can check through the images. This is a great deal less unpleasant than having to swallow a tube with a camera, known as an endoscope, or having an endoscope inserted into the large intestine from the the rectum. These two investigation methods, small intestine endoscopy and coloscopy respectively, are both painful and time-consuming.

Image 3: An example of the images that the physician reviews. At the bottom left, the route through the intestines followed by the capsule.

A disadvantage of the pill camera is that it can get stuck in a constriction and, in the worst case scenario, will need to be surgically removed. In order to avoid this, the patient is given a test capsule to swallow, containing an RFID tag, a few days before the pill camera is to be swallowed. A hand scanner is used to check whether the test capsule is still in the body or whether it has been expelled. If the hand scanner does not indicate that the capsule is still in the body, the patient can swallow the real pill camera. Otherwise, a different method must be used to investigate the intestines.

Consultant physician Ervin Toth, head of the Endoscopy unit at Skåne University Hospital in Malmö, started conducting these investigations in the early 2000s. Now around 2500 such

examinations have been carried out. To begin with, they were limited to examination of the small intestine, but since 2006, examinations of the large intestine have also been done this way and, within a foreseeable future, treatment could be administered to the intestines with the help of the pill camera.

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