

Story published at magicvalley.com on Monday, June 20, 2005

Fantastic voyage PillCam gives doctors a chance to look inside their patients

By Patti Murphy
Times-News correspondent

BOISE -- Tiny cameras inside a vitamin-sized pill are enabling local doctors to take a "fantastic voyage" through their patients' digestive system.

It also allows them go where no scope has gone before -- the small intestine.

"This is one of the most rewarding of all diagnostic procedures," said Dr. Ted Rae, a gastroenterologist with Blue Lakes Gastroenterology in Twin Falls. "In the past we'd have to open you up and do surgery. Now, you swallow a pill, eight hours later we download the images, and I review them to find the problem."

Rae is talking about the PillCam, a fairly new technology that was "once an oddity but is now the standard of care," he said.

Introduced in the U.S. in 2001 by Israeli-based Given Imaging, the PillCam helps physicians diagnose and treat illness that hide in the small intestine, a 21-foot-long organ that has been called a "black box" due to its inaccessibility.

The tiny camera inside the pill generates about 57,000 high speed color images -- about two frames per second -- during the pill's eight-hour voyage through the gastrointestinal tract. Camera sensors transmit the photos to a data recorder that is worn by the patient. At the end of the day, the data is downloaded into a computer, resulting in a full-color video of the images captured by the pill as it passed through the body.

Rae noted his practice has used the PillCam since 2002, and was one of the first in the area to do so. His practice sees adult patients from Twin Falls and surrounding areas including Sun Valley, Burley and northern Nevada.

"Just the other day I saw a patient who had been sick for two years and had been to a zillion doctors," Rae said. "He had lost about 50 pounds, but his problem was never diagnosed. We used the PillCam and found that he had some small bowel tumors, a stricture and some ulceration. Once we found out what was going on, we could treat him."



ASHLEY SMITH/The Times-News

Dr. Ted Rae, a gastroenterologist with Blue Lakes Gastroenterology in Twin Falls, holds a PillCam that is swallowed by patients to give doctors the ability to peer inside the small intestine. The pill is not reusable.

The cost to provide the high-tech procedure does not come cheap. Each PillCam costs about \$600, which physicians must purchase 10 at a time. The computer and hard drive used to read the data costs between \$35,000 and \$40,000, Rae said. The procedure is covered by insurance.

Dr. Sally Schindele, a physician with Boise-based Idaho Pediatric Gastroenterology, said that she and her medical partner, Dr. Henry Thompson, were the first pediatric gastroenterologists in the country to use the camera pill technology and are still among only a handful nationwide. They perform the procedure an average of two times a week on children ages 10 and older.

Sitting at her computer, Schindele watches a video of a PillCam passing through the bowels of a young hockey player who was in the habit of taking ibuprofen before and after his games to ease his muscle pain.

"Ibuprofen can cause ulcers anywhere in the GI (gastrointestinal) tract," she said. "It destroys the protective mechanisms of the tissue."

In the video, the pill moves swiftly through the patient's esophagus and then into the stomach, where it spends approximately an hour and a half. It finally zips into the small bowel, capturing photos of angry looking ulcers and bleeding areas.

The PillCam is used to diagnose a variety of causes of gastrointestinal diseases including inflammatory bowel disease, irritable bowel syndrome, celiac disease, small bowel cancers and Crohn's disease, Schindele said.

Both Schindele and Rae stress that the PillCam is used only to diagnose diseases of the small bowel and does not replace colonoscopy, which examines the large bowel.

The image sensors for the PillCam system were developed and are manufactured at Micron Technology's Boise facility. Company spokeswoman Trudy Sullivan said Micron is the exclusive provider of the image sensors inside of the PillCam.

"The Wall Street Journal voted the PillCam the most innovative technology of the year in 2004," she said. "It's just one application in an emerging market that we've identified."

Rae calls the PillCam technology "neat," and said that even after 25 years in practice he is "still awed at the genius of the human species."

"This is the merging of the computer world and the medical world," he said. "We are limited only by our imagination. Who knows where this will go next."

Times-News correspondent Patti Murphy lives in Boise. She can be reached by e-mail at pmurphy4@msn.com.

PillCam FAQ

Q. What is the size of the capsule?

A. The capsule is 11-by-26 millimeters and weighs less than 4 grams

Q. What is the field of view of the capsule?

A. 140 degrees

Q. What is the resolution of the images?

A. The PillCam can detect objects at a minimum size of less than 0.1 millimeters

Q. How long does it take to download the images from the data recorder to the computer?

A. From 1.5 to 2 hours. Image processing is instantaneous.

Q. Is there any special preparation required to use the PillCam?

A. The patient should not have solids beginning 12 hours before the procedure. Patients may drink clear fluids until two hours before.

Q. What would happen if the pill cover dissolved like other pills? Would it affect your body? Can it get stuck?

A. The capsule is composed of bio-compatible material that is immune to the natural fluids in the digestive system.

Q. Is the pill reusable?

A. No. It is excreted naturally and flushed down the toilet.

Q. How do I find a physician who uses the PillCam system?

A. The Given Imaging Web site has a physician locator service. Go to www.givenimaging.com.

Source: Given Imaging