

INITIAL EXPERIENCE WITH THE USE OF A TETHER WITH THE NAVICAM VIDEO CAPSULE SYSTEM

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Abstract Body

The NaviCam (AnX Robotica. Pleasanton. CA) magnetically controlled capsule is an FDA cleared device that permits examination of the stomach non-invasively. However, to have clinical utility for fore gut symptoms examination of the esophagus is essential. As previously reported, it is difficult to get good imaging of the esophagus because of capsule's rapid transit. Recently, a detachable tether, designed to enhance visualization of the esophagus has become available for the NaviCam capsule. We report initial experience with this device in comparison with conventional endoscopy.

Methods

A prospective study was designed to compare conventional endoscopy with the tethered capsule. The study was approved by the UMass Chan Medical School institutional review board. Eight health volunteers and 13 symptomatic patients were examined with the NaviCam system. After an overnight fast the patients were given 250 ml of water containing 40 mg of simethicone in the sitting position. They then ingested the capsule attached to the tether which was progressively lowered down the esophagus into the stomach in 5-10 cm increments. Still images and video recordings were obtained. During the ingestion and after entry into the stomach an additional 500 ml of water was ingested. The patient was placed in the left lateral position and 10-20 ml of air was injected into the tether by syringe to release the capsule. Examination of the stomach was then conducted under magnetic control. 2 hours after the last ingested water an EGD was performed on 10 patients under conscious sedation. Landmarks and abnormalities were imaged. Biopsies were taken as indicated. Capsule excretion was confirmed by visualization or plain film and scanning.

Results

21 patients and volunteers ingested the NaviCam capsule without difficulty. Table 1. Images were obtained at 20 cm, 30 cm and the Z-line. The Z-line was seen in 6 of 8 volunteers and 12 /13 patients. Esophagitis (1) and carditis (1) was detected by the tethered capsule and were confirmed by subsequent EGD. No additional pathology was seen on EGD. Mean time of examination with the tether was 106 seconds. The capsule was successfully released in 19 patients and the tether withdrawn. One tether released the capsule prematurely. If the Z-line was not seen on the first pass, the capsule could be withdrawn through the lower esophageal sphincter, without discomfort for further esophageal examination. Table 1. No complications resulted from the tether which was well tolerated.

Conclusion

The use of a removable tether attached to a video capsule permits thorough controlled examination of the esophagus.

Demographics	Mean	SD
Age, years	49.6	10.6
Gender	43% female	
Weight lbs.	189.0	33.0

Table 1 : Demographics

Ingested water (ml)	750	
Time of VCE in esophagus (secs)	106	SD 54.0
Z-line visualized by CE: EGD	18/20	14/14
Esophageal pathology	Esophagitis (1)	Carditis (1)
Gastric pathology	Polyps (5)	Gastritis (4)

Table 2. Results of tethered capsule: