Capsule Endoscopy Yield in Pediatric Patients

Video capsule endoscopy (VCE) uses a small, wireless, capsule camera that is swallowed or placed endoscopically to evaluate the entirety of the gastrointestinal (GI) tract often beyond the reach of standard endoscopy. This study evaluated the efficacy of VCE in making a diagnosis as well as assisting in potentially changing therapy in children with GI conditions.

Data from this retrospective study consisted of all VCE studies performed at one tertiary children's hospital in the United States from 2004 to 2022. The VCE equipment utilized consisted of the Rapid™ PillCam Reader (Medtronic). VCE studies were considered incomplete if the small bowel could not be visualized. VCE studies performed in patients greater than 18 years of age were excluded. Patient data associated with each study was compiled including past medical history, VCE indication, type of VCE deployment, and study results. VCE studies were split into study indications which included inflammatory bowel disease (IBD), GI bleeding, anemia, polyposis syndromes, protein-losing enteropathy, abdominal pain, and "other" (diarrhea, nausea, emesis, weight loss, constipation). VCE results were classified as positive or negative based on findings although normal findings were not considered positive.

In total, 478 VCE studies were completed successfully in 427 patients. The mean age of the patient study group was 12 years (range 10 months to 18 years) with 58% of the study patients being male. 256 patients (54%) swallowed the capsule while 222 patients (46%) had endoscopic placement of the capsule. Positive findings were present in 245 studies (51.3%), and 169 studies (35.4%) led to changes in therapy or diagnostic planning.

When VCE was performed for IBD (153 studies), 81 studies (52.9%) had positive findings with 62 studies (40.5%) leading to a change in therapy or diagnostic planning. When VCE was performed for GI bleeding (114 studies), 54 studies (46.9%) had positive findings with 43 studies (36.8%) leading to a change in therapy or diagnostic planning. When VCE was performed for anemia (84 studies), 51 studies (62.2%) had positive findings with 32 studies (36.8%) leading to a change in therapy or diagnostic planning. When VCE was performed for polyposis syndromes (48 studies), 29 studies (60.4%) had positive findings with 13 studies (27.1%) leading to a change in therapy or diagnostic planning. When VCE was performed for abdominal pain (41 studies), 10 studies (24.4%) had positive findings with 6 studies (14.6%) leading to a change in therapy or diagnostic planning. When VCE was performed for protein-losing enteropathy (14 studies), 8 studies (57.1%) had positive findings with 7 studies (50%) leading to a change in therapy or diagnostic planning. When VCE was performed for other reasons (24 studies), 12 studies (50%) had positive findings with 6 studies (25%) leading to a change in therapy or diagnostic planning. It should be noted that 61 studies (12.8%) found possible disease states outside of the small intestine, including findings present in the esophagus, stomach, and colon.

Statistical analysis demonstrated that all indications for VCE were significantly associated with positive findings or subsequent changes in therapy and diagnostic planning except for the indication of abdominal pain without other features. All the indications for VCE except for abdominal pain had no significant difference between them regarding their rate of positive findings or the subsequent changes in therapy and diagnostic planning.

This study suggests that VCE is an excellent diagnostic tool for finding small bowel disease possibly leading to therapy changes in children except for the indication of abdominal pain without other symptoms. This study should persuade clinicians to not perform VCE in most cases of abdominal pain children who do not have other symptoms or diseases such as GI bleeding or inflammatory bowel disease.

Kaihlanen K, Zhang S, Phen C, Rojas I. Clinical impact and diagnostic yield of small bowel capsule endoscopy in children. Journal of Pediatric Gastroenterology and Nutrition 2026; 82: 389-397.

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Comparing pH-Impedance Monitoring with Barium Esophagram Results for Children with Reflux

Gastroesophageal reflux (GER) is often visualized when children undergo a barium esophagram or upper gastrointestinal (UGI) barium study. GER in this setting is typically considered a false positive finding, and the authors of this study evaluated the association of true reflux with such findings on barium studies.

All pediatric patients who underwent pH-impedance monitoring over a 4-year retrospective period at a tertiary children's hospital in the United States were included in the study if they had undergone a barium study of the esophagus which included barium esophagrams or UGI barium studies. The barium studies and pH-impedance study had to occur within 1 year of each other. Information including patient demographics, medical history, medications, potential biopsies obtained during upper endoscopy, and potential findings on esophageal manometry were collected. The Lyon Consensus 2.0 criteria (see https://gut.bmj.com/content/gutjnl/73/2/361.full.pdf) were used to diagnose GER or gastroesophageal reflux disease (GERD) by pH-impedance monitoring for patients off acid suppression medication.

A total of 90 children (median age 10 years, 56.7% female) with potential GER qualified for the study. The most common indications for testing were emesis / regurgitation (75.6%), chronic cough (37.8%), and heartburn (35.6%). No difference in upper endoscopy and esophageal manometry findings were present in patients with or without reflux noted by barium or by pH-impedance monitoring.

Patients with pH-impedance studies completed both on and off acid suppression medication and who also had diagnostic criteria positive for GERD based on acid exposure had no significant correlation with the presence or absence of reflux noted on barium studies. No significant correlation was seen between reflux determined by esophageal pH from pH-impedance monitoring or by reflux seen by barium studies in patients both on and off acid suppression medication regardless of age, median body mass index, clinical symptoms, and time off acid suppression medication for patients. The overall sensitivity and specificity for diagnosing GERD by barium study compared to pH-impedance monitoring was 33.3% and 44.9%, respectively. When considering only those patients off acid suppression medication, the sensitivity and specificity were 31.3% and 54.3%, respectively. The positive predictive value and the negative predictive value of diagnosing GERD by barium in the setting of a positive GERD seen by pH-impedance monitoring was 23.8% and 63.3%, respectively. Ten of the study patients had hiatal hernias, and no significant correlation was found between the presence and absence of reflux noted on barium studies and esophageal acid exposure identified by pH-impedance monitoring in this specific patient group.

This study confirms again UGI barium studies and barium esophagrams should not be used to diagnose true GERD. Barium studies are very helpful in diagnosing UGI anatomic abnormalities, but the diagnosis of GERD in children should be based on pH-impedance monitoring.

Davis T, Rogers B, Bhardwaj R, Gyawali C. Diagnostic value of barium oesophagram compared to pH-impedance monitoring in the detection of paediatric gastro-oesophageal reflux. Archives of Diseases in Childhood. 2026; 111: 334-338.