

**Smith MS, Ikonomi E, Bhuta R, et al. and the US Collaborative WATS Study Group. Wide-area transepithelial sampling with computer-assisted 3-dimensional analysis (WATS) markedly improves detection of esophageal dysplasia and Barrett's esophagus: analysis from a prospective multicenter community-based study. Dis Esophagus. 2018 Dec 12. doi: 10.1093/dote/doy099.**

**ABSTRACT:** The 4-quadrant forceps biopsy (FB) protocol for identifying Barrett's esophagus (BE) and esophageal dysplasia (ED) suffers from poor sensitivity due to significant sampling error. We investigated the benefit of wide-area transepithelial sampling with 3-dimensional computer-assisted analysis (WATS) used adjunctively to the combination of random and targeted FB in the detection of ED, and as a secondary outcome, BE. In this multicenter prospective trial, community endoscopists at 21 sites utilized WATS as an adjunct to both targeted and random FB in patients undergoing BE screening and surveillance. Investigators alternated taking FB and WATS samples first. WATS specimens were analyzed at CDx Diagnostics (Suffern, NY) while FB samples were analyzed by each site's regular pathologists. Data were de-identified and then aggregated for analysis. Of 12,899 patients enrolled, FB identified 88 cases of ED, and WATS detected an additional 213 cases missed by FB. These 213 cases represented an absolute increase of 1.65%, raising the yield from 0.68% to 2.33%. Adding WATS to FB increased the overall detection of ED by 242% (95% CI: 191%-315%). Fewer than 61 patients needed to be tested with WATS to identify an additional case of ED. The combination of random and targeted FB identified 1,684 cases of BE, and WATS detected an additional 2,570 BE cases. The absolute incremental yield of adding WATS to FB is 19.9%, increasing the rate of detection from 13.1% to 33%. Adding WATS to FB increased the overall detection of BE by 153% (95% CI: 144-162%). The number needed to test with WATS in order to detect an additional case of BE was 5. Whether FB or WATS was done first did not impact the results. In this study, comprised of the largest series of patients evaluated with WATS, adjunctive use of the technique with targeted and random FB markedly improved the detection of both ED and BE. These results underscore the shortcomings of FB in detecting BE-associated neoplasia, which can potentially impact the management and clinical outcomes of these patients.

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