

## Esophageal Brush Biopsy With Computer-Assisted Tissue Analysis Increases Detection Of Barrett's Esophagus And Dysplasia In A Multi-Site Community-Based Setting

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### BACKGROUND

Barrett's esophagus (BE) is a pre-cancerous condition characterized by esophageal goblet cell metaplasia which can progress to dysplasia and ultimately adenocarcinoma. The gold standard for diagnosis is the modified Seattle protocol, where 4 quadrant forceps biopsies (FB) are taken at least every 2 centimeters (cm) throughout the BE segment. This method leaves a large amount of unsampled tissue which could be harboring more advanced dysplasia or neoplasia than what was obtained on FB. Wide Area Transepithelial Sampling (WATS<sup>3D</sup>) has been shown to increase the detection of both BE and dysplasia. The aim of this study is to estimate the adjunctive yield of WATS<sup>3D</sup> to FB across multiple community-based gastroenterology practices.

### METHODS

Patients with GERD, possible BE or proven BE underwent upper endoscopy with 1 of 28 gastroenterologists. WATS<sup>3D</sup> biopsies were obtained using the standard 2-brush technique (EndoCDx<sup>®</sup>, CDx Diagnostics<sup>™</sup>, Suffern, NY). Additional FB also were obtained during the same endoscopy following brush biopsy. Brush and forceps samples were sent together to a central laboratory. WATS<sup>3D</sup> samples were analyzed using a neural network to identify goblet cell metaplasia and dysplasia. FB samples underwent standard histologic review. Both sample sets were evaluated by trained GI pathologists. De-identified data was aggregated for analysis.

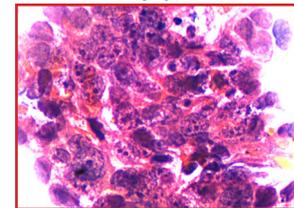
### RESULTS

- A total of 2559 patients underwent upper endoscopy with submission of WATS<sup>3D</sup> samples and FB, though 2498 specimen sets were included in the final analysis. Patients were 60% female, with an average age of 55 years (15-97). The most common indication for endoscopy was gastroesophageal reflux disease. In 80% of cases, the suspected Barrett's length was less than 3 cm.
- FB identified BE in 377 cases (15.1%), and dysplasia was seen in 17 of these cases (4.51% of BE, 0.68% of all FB).
- **Adjunctive use of WATS<sup>3D</sup> identified an additional 258 cases of BE, increasing the detection yield by 68.4%.**
- WATS<sup>3D</sup> also detected an additional 10 cases of dysplasia and 1 cancer which were missed by FB.
- **Adjunctive use of WATS<sup>3D</sup>, thus, increased dysplasia/neoplasia detection by 64.7%.**

### CONCLUSION

WATS<sup>3D</sup> with computer-assisted analysis complements standard FB methods to markedly increase detection of BE and dysplasia. This is the largest series reported to date. In light of recent studies and changes to Barrett's management guidelines, improved dysplasia detection is critical to appropriate management of these pre-cancerous lesions. This study shows that widespread use of WATS<sup>3D</sup> in community-based gastroenterology practices identifies dysplasia missed by FB, leading to improved care for these patients.

Positive for dysplasia



Non-dysplastic BE

