

Case Report

WATS-3D-Only Surveillance and Band Ligation in Cirrhosis with Barrett's Esophagus: A Case Report

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INTRODUCTION

Barrett's esophagus (BE) is a well-recognized complication of chronic gastroesophageal reflux disease (GERD) and an established precursor to esophageal adenocarcinoma. It arises when chronic acid exposure induces metaplastic transformation of the distal esophagus, replacing the normal squamous epithelium with specialized columnar epithelium containing goblet cells.¹

Traditionally, BE screening has relied on endoscopic examination with Seattle Protocol 4-quadrant cold forceps biopsies (CFB) of abnormal-appearing mucosa.² In recent years, wide-area transepithelial sampling with computer-assisted 3-dimensional analysis (WATS-3D) has emerged as a complementary technique for detecting intestinal metaplasia (IM) and dysplasia.¹ This method uses an abrasive cytology brush to collect deeper glandular tissue, which is prepared on a slide, reconstructed into a high-resolution 3D image of the Barrett's glands, and reviewed by a pathologist.¹

Multiple studies suggest that combining WATS-3D with CFB improves detection of IM and dysplasia compared with CFB alone.²⁻⁴ Current American Society for Gastrointestinal Endoscopy (ASGE) guidelines support its use as an adjunct to Seattle Protocol biopsies, albeit with a conditional recommendation and low-quality evidence.⁵ Conversely, the 2022 American College of Gastroenterology guidelines found insufficient evidence to recommend for or against WATS-3D.¹

An important gap in the literature exists for patients with decompensated cirrhosis and esophageal varices (EV). In these cases, CFB often is avoided due to bleeding risk, potentially leaving BE undiagnosed.⁶ Moreover, no guidelines address the role of WATS-3D-only surveillance in this high-risk population.

We present a case in which WATS-3D-only surveillance, combined with band ligation, facilitated the detection and management of BE that had progressed to high-grade dysplasia (HGD) in a patient with decompensated alcoholic cirrhosis and EV.

CASE REPORT

We report a 66-year-old man with nondysplastic (ND) BE, classified by the Prague criteria as CO-M1. His history included small Grade 1 esophageal varices (EV), alcoholic cirrhosis, alcohol use disorder, chronic pancreatitis, mild chronic obstructive pulmonary disease,

active tobacco use, osteopenia, and gastroesophageal reflux disease. He presented for routine BE surveillance. Because of EV and associated bleeding risk, cold forceps biopsies were deferred in favor of WATS-3D sampling only.

Initial surveillance esophagogastroduodenoscopy (EGD) with WATS-3D in 2015 showed ND BE with Grade 1 EV. Findings remained ND until early 2021, when WATS-3D detected low-grade dysplasia (LGD). Four months later, repeat EGD with WATS-3D brushing and band ligation revealed HGD. Another EGD four months later showed LGD with rare HGD. Three months after that, EGD demonstrated endoscopic clearance of BE post-banding, with pathology showing ND, non-goblet cell metaplasia. Final surveillance three months later confirmed complete eradication of BE with no intestinal metaplasia.

No post-banding bleeding or other adverse events occurred. Table 1 summarizes the eight-year surveillance timeline from diagnosis to complete resolution.

DISCUSSION

To our knowledge, this is the first reported case of WATS-3D-only surveillance combined with band ligation for the management and eradication of Barrett's esophagus that progressed to high-grade dysplasia in a patient with cirrhosis and esophageal varices.

WATS-3D is increasingly recognized as an effective Barrett's esophagus surveillance and screening tool when used alongside biopsies. Although not intended as a substitute for cold forceps biopsy in the presence of visible mucosal abnormalities, WATS-3D can sample areas that might otherwise go untested. Our case demonstrates its potential as a sole surveillance modality in patients considered too high risk for standard cold forceps biopsy-based protocols. In the absence of established guidelines for WATS-3D-only surveillance, we adopted shorter sampling intervals than typically recommended to ensure the absence of dysplasia.

We acknowledge that this is a single case, limiting generalizability. Without long-term follow-up, the effect of this approach on morbidity, mortality, or transplant eligibility in cirrhotic patients with Barrett's esophagus and dysplasia remains unknown. Further research is needed to develop standardized surveillance protocols and assess long-term outcomes in this subset of patients.

CONCLUSIONS

This case highlights the need to consider alternative BE surveillance strategies in patients with decompensated cirrhosis who require optimization for potential transplant. We describe a novel application of WATS-3D-only surveillance with band ligation for dysplasia in BE with underlying esophageal varices and document the progression of a short-segment nondysplastic BE to high-grade dysplasia using WATS-3D alone.

Table 1. Chronological description of patient's surveillance esophagogastroduodenoscopy findings.

Date	Variceal Grade	Prague Score	Number of BE Islands	Sampling Done by WATS ^{3D}	Pathology Findings	Banding Therapy (# of bands)
04/09/14	2	C0-M1	3	No	N/A	0
07/29/15	2	C0-M1	>3	No	N/A	0
12/23/15	1	C0-M1	>3	Yes	No dysplasia	0
06/15/16	1	C0-M1	>3	Yes	No dysplasia	0
02/08/17	2	C0-M1	>3	No	N/A	4
01/22/18	1	C0-M1	1	No	N/A	0
01/30/19	2	C0-M1	2	No	N/A	0
01/29/20	1	C0-M1	2	No	N/A	0
02/01/21	1	C0-M1	2	Yes	LGD	0
06/01/21	1	C0-M1	2	Yes	HGD	3
10/25/21	1	C0-M1	2	Yes	LGD with rare foci of HGD	2
01/25/22	1	N/A	3	Yes	Non-goblet cell metaplasia, no dysplasia	0
04/25/22	1	N/A	0	Yes	Squamocolumnar, no dysplasia or metaplasia	0

Abbreviations: Barrett's Esophagus (BE); Prague criteria Circumferential Barrett's segment (C); longest tongue of Barrett's (M); Low grade dysplasia (LGD); High grade dysplasia (HGD)

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