

# ADVANCES IN GERD

Current Developments in the Management of Acid-Related GI Disorders

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## Acetic Acid Chromoendoscopy in the Setting of Neoplastic Barrett Esophagus



Pradeep Bhandari, MD, MBBS, FRCP  
 Consultant Gastroenterologist  
 Professor of Gastrointestinal Endoscopy  
 Department of Gastroenterology  
 Queen Alexandra Hospital  
 Portsmouth, United Kingdom

### G&H What are the established surveillance protocols for Barrett esophagus?

**PB** The surveillance protocols for Barrett esophagus vary between countries. In general, the American Gastroenterological Association position statement and the British Society of Gastroenterology guidelines are the 2 main protocols that are used. Both protocols recommend gastroscopy and 4-quadrant random biopsy taken every 2 cm. Until recently, patients with Barrett esophagus underwent surveillance every 2 years. However, this led to unnecessary endoscopies and biopsies, and the medical societies prolonged the intervals between gastroscopies. Currently, the main difference between the 2 guidelines is that the British Society of Gastroenterology recommends surveillance every 3 to 5 years for low-risk patients and every 2 to 3 years for intermediate-risk patients, whereas the American Gastroenterological Association suggests surveillance every 3 to 5 years for all patients.

### G&H What is the role of acetic acid chromoendoscopy in the management of Barrett esophagus?

**PB** Acetic acid, when sprayed on the Barrett mucosa, highlights neoplasia from the rest of the Barrett segment. Thus, acetic acid chromoendoscopy allows for a targeted biopsy of the area of concern as opposed to multiple untargeted biopsies, which is what the current

surveillance protocols suggest with 4-quadrant biopsy. Acetic acid can be used either on its own or in conjunction with quadrantic biopsy protocol. After the acetic acid is sprayed onto the segment, the endoscopist evaluates any area of concern, biopsies the neoplasia, and then performs more biopsies as needed per the standard guideline or protocol. Acetic acid chromoendoscopy can also be used in conjunction with optical imaging technologies to identify early cancer.

### G&H How does acetic acid chromoendoscopy compare to standard chromoendoscopy?

**PB** Acetic acid is a reactive dye that is sprayed onto the Barrett esophagus, causing a chemical reaction with the proteins in the cytoplasm. A reversible reaction leads to acetylation of the cytoplasmic proteins, resulting in acetowhitening of the Barrett mucosa. The neoplastic areas have reduced cytoplasmic proteins causing an early loss of acetowhitening; the neoplastic areas appear as red spots, whereas the nonneoplastic segments remain white for a longer duration of time before returning to their normal color. Standard chromoendoscopy utilizes indigo carmine or methylene blue, which are blue contrast agents and are not as specific or as sensitive as acetic acid.

### G&H What are the advantages and disadvantages associated with acetic acid chromoendoscopy?

**PB** Acetic acid chromoendoscopy has a high sensitivity for identifying neoplasia. It is a very simple, quick, and easy-to-learn technique. Acetic acid is also inexpensive, with 100 mL costing approximately £5 (\$6.53 USD), and only 5 mL is needed per patient. Additionally, acetic

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acid has universal application, as it is not dependent on a commercial or patented technology or endoscope being used. However, because acetic acid chromoendoscopy itself is not a commercially patented technique, it lacks a commercial sponsor and promotion. The main disadvantage is a slightly increased oozing from the biopsy site after exposure to acetic acid, although bleeding has not been a clinical issue in any of the thousands of patients I have studied.

#### **G&H** How effective is acetic acid chromoendoscopy in diagnosing neoplastic Barrett esophagus?

**PB** My colleagues and I, as well as a group from Germany led by Dr Christian Ell, published data around the same time showing similar rates of sensitivity, specificity, and negative predictive value of acetic acid chromoendoscopy. My group found that the procedure has a sensitivity of 95.6%, a specificity of 83.0%, and a negative predictive value of 98.6% for identifying neoplastic areas in Barrett esophagus. Data from Dr Ell's group showed a sensitivity of 96.7%, a specificity of 66.5%, and a negative predictive value of 99.3%. The neoplasia pick-up rate of acetic acid chromoendoscopy vs 4-quadrant biopsy was significant. One out of every 5 biopsies performed with acetic acid found neoplasia vs 1 out of 1828 biopsies following the 4-quadrant technique.

#### **G&H** How does acetic acid chromoendoscopy compare to alternative methods of surveillance and detection?

**PB** My group compared acetic acid chromoendoscopy with conventional surveillance, and our study,

published in *Gastrointestinal Endoscopy*, found that acetic acid leads to almost a 3-fold increase in pick-up rates for neoplasia in a surveillance population. In terms of cost-effectiveness, there is a significant difference between acetic acid chromoendoscopy and the standard protocol of 4-quadrant biopsy taken every 2 cm. In another study, reported in *Diseases of the Esophagus*, we looked at a cohort of 263 patients and found that when only acetic acid was used, the histopathology-related cost was approximately £9,541.80 (\$12,442.41 USD) for the whole cohort. The cost of performing 4-quadrant biopsy was £139,416.30 (\$181,797.46 USD), a nearly 15-fold difference. This is an important finding because it points to the amount of unnecessary biopsies performed when following standard protocol. However, these studies are limited in that most of the data came from an enriched population and not from a surveillance population. In small district hospitals and nonacademic centers, the prevalence of neoplasia and biopsy is very low, and more data are needed to determine whether acetic acid chromoendoscopy would work well in these settings.

#### **G&H** Does acetic acid chromoendoscopy have a role in the setting of nonneoplastic Barrett esophagus?

**PB** Acetic acid chromoendoscopy may be beneficial in identifying short segments of Barrett esophagus in eastern countries such as China and Japan, where the prevalence of Barrett esophagus is low and clinicians are not as familiar with its presentation. However, the main purpose of this method is to identify neoplastic Barrett esophagus.

#### **G&H** Are there certain populations in which acetic acid chromoendoscopy is best used or avoided?

**PB** This method is best indicated in patients who are at high risk of getting neoplasia and in patients who have long segments of Barrett esophagus that are difficult to evaluate. Its use is contraindicated in patients who are allergic to acetic acid.

#### **G&H** What is the priority of research in this field?

**PB** The main priority is to conduct large, multicenter studies comparing conventional surveillance protocols with acetic acid protocols for surveillance of Barrett esophagus.

*Dr Bhandari has no relevant conflicts of interest to disclose.*

## Suggested Reading

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