

How Durable Is the Reversion to Neosquamous Epithelium in Subjects Undergoing Radiofrequency Ablation for Dysplastic Barrett's Esophagus? Two Year Follow-Up of the AIM-Dysplasia Randomized Sham-Controlled Trial

Nicholas J. Shaheen¹, Prateek Sharma², Bergein F. Overholt³, Herbert C. Wolfsen⁴, Richard E. Sampliner⁵, Kenneth K. Wang⁶, Mary P. Bronner⁷, John R. Goldblum⁷, Ana E. Bennet⁷, Glenn M. Eisen⁸, M. Brian Fennerty⁸, David E. Fleischer⁹, Virender K. Sharma⁹, Robert H. Hawes¹⁰, Brenda J. Hoffman¹⁰, Richard I. Rothstein¹¹, Hiroshi Mashimo¹², Kenneth J. Chang¹³, Raman Muthusamy¹³, Steven A. Edmundowicz¹⁴, Stuart J. Spechler¹⁵, Anthony Infantolino¹⁶, Gary W. Falk⁷, Michael B. Kimmey¹⁷, Charles J. Lightdale¹⁸

1. University of North Carolina School of Medicine, Chapel Hill, NC, USA, 2. Kansas City V.A., Kansas City, MO, USA, 3. Gastrointestinal Associates, Knoxville, TN, USA, 4. Mayo Clinic Florida, Jacksonville, FL, USA, 5. South Arizona V.A. Medical Center, Tucson, AZ, USA, 6. Mayo Clinic Rochester, Rochester, MN, USA, 7. Cleveland Clinic, Cleveland, OH, USA, 8. Oregon Health & Sciences U., Portland, OR, USA, 9. Mayo Arizona, Scottsdale, AZ, USA, 10. Medical University of South Carolina, Charleston, SC, USA, 11. Dartmouth University, Hanover, NH, USA, 12. Boston V.A., Boston, MA, USA, 13. UC Irvine, Irvine, CA, USA, 14. Washington University, St. Louis, MO, USA, 15. UT Southwestern, Dallas, TX, USA, 16. Jefferson University, Philadelphia, PA, USA, 17. Tacoma Digestive Diseases Research Center, Tacoma, WA, USA, 18. Columbia University, New York, NY, USA

Background: Radiofrequency ablation (RFA) of dysplastic Barrett's esophagus (BE) results in high rates of eradication of both dysplasia and intestinal metaplasia (IM). The durability of this reversion of dysplastic BE is not known.

Aim: Assess the 2-year biopsy results from subjects who were treated for baseline dysplastic BE with RFA, and achieved a histological complete response at 1-year follow-up (complete remission of IM, CR-IM).

Methods: The AIM-Dysplasia trial is a randomized, sham - controlled multi-center trial of RFA plus surveillance vs. surveillance alone for dysplastic BE. Subjects were stratified by degree of dysplasia (high-grade (HGD) vs. low-grade dysplasia (LGD)) and BE length (4-8 vs. <4 cm), and then randomized 2:1 to receive RFA or sham, respectively. In the RFA group, stepwise circumferential and focal RFA were performed using the HALO system. Both groups then underwent surveillance with biopsy every 3 (HGD) or 6 (LGD) mos, 4-quadrant every 1 cm based on baseline BE length. The primary endpoints at 12 mos were histology based: CR-IM and CR-dysplasia (all biopsies negative for IM and dysplasia, respectively). Cleveland Clinic was the central lab and read all slides in a blinded manner. After 12 months, RFA subjects continued surveillance while sham subjects were offered cross-over. All patients have a final biopsy session at 2 yrs. To assess the durability of the reversion to neosquamous epithelium, we analyzed the 2-year biopsy results in those subjects with CR-IM at 1 yr.

Results: Histology data from 2-year follow-up are available for 30 subjects who were CR-IM at 1 yr (19 LGD/11 HGD, mean age 63.1 yrs, 83% male, mean BE length 4.2 cm). Of these, 28 (93.3%) continued to be free of IM at 2 yrs. For the 2 subjects not sustaining CR-IM at 2 yrs, both had 6 cm of BE with HGD at baseline. At 2 yrs, both showed no visible BE in the esophageal body, with biopsy confirmation. However, both were graded as 99% eradication due to a small (<5 mm) irregularity of the squamocolumnar junction near the gastric folds. Biopsy of these irregular z-lines revealed LGD. One of 30 subjects developed a stricture (3%) requiring one dilation for resolution, and there was one overnight hospitalization for chest pain to rule out MI.

Conclusion: Reversion to a histologically normal neosquamous epithelium after RFA treatment for dysplastic BE is durable at 2-year follow-up. Further systematic assessment of this cohort will allow determination of longer-term durability and assessment of the safety and efficacy of additional RFA intervention should IM recur.