5.6. Importance of verifying complete eradication of endoscopically evident Barrett mucosa in the neosquamous epithelium prior to surveillance endoscopy and biopsy, in order to avoid false positive interpretation of buried Barrett

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Background: Radiofrequency ablation (RFA) for Barrett esophagus (BE) achieves complete reversion to a normal neosquamous epithelium (NSE) in the majority of cases. After RFA, buried Barrett (BB) glands beneath the NSE are a rare finding. If, however, a residual island of BE is not recognized endoscopically (small size, inadequate imaging) after RFA, and is then inadvertently biopsied and reported to the pathologist as normal NSE, we questioned whether or not this could lead to a false positive histological finding of BB.

Aim: Using high-resolution endoscopy and NBI to detect small residual islands of BE (<5 mm) after RFA, we sought to determine how often targeted biopsies of these islands would lead to a false positive histological diagnosis of BB as compared to the rate of BB found when sampling endoscopically normal NSE.

Method: Patients from several IRB-approved protocols at our center were included. All had BE (LGD, HGD, IMC) treated with endoscopic resection for visible lesions, followed by RFA every 2 months until all BE mucosa was eradicated. Interim biopsies of the NSE and visible BE were obtained prior to achieving complete eradication. Final biopsies of the entire NSE (4Q/2cm) were taken after achieving endoscopic eradication. For this evaluation, any "qualifying" BE island (<5 mm) detected at an interim biopsy session was biopsied and placed in a separate container. A single expert GI pathologist reviewed all biopsies and diagnosed BB if glandular mucosa was present beneath an intact layer of squamous epithelium without surface communication.

Results: 2,515 biopsies were obtained from NSE in 69 patients, while 52 biopsies of 52 qualifying islands (median 1mm (IQR 1-2)) were obtained from 18 patients. NBI facilitated the detection of qualifying islands. Of the NSE biopsies, 2/2,515 (0.08%) were interpreted as having BB. Of the qualifying island biopsies, 11/52 (21%) were interpreted as having BB.

Conclusion: In our evaluation, the prevalence of BB in post-RFA NSE was extremely rare (0.08%), which comports with results of published studies. A finding of BB in biopsies from qualifying islands (<5 mm), however, was common (21%), despite that these islands were endoscopically visible. This false positive finding may be explained by undermining of BE island mucosa beneath surrounding NSE, the steep angle of attack of the biopsy forceps in the esophagus, and possible artifact of embedding or sectioning. In order to avoid a false positive diagnosis of BB post-RFA, the NSE should be sampled only after careful examination with high-resolution endoscopy, NBI, or other comparable techniques have completely ruled out small islands of residual BE.