Focal endoscopic mucosal resection before radiofrequency ablation is equally effective and safe compared with radiofrequency ablation alone for the eradication of Barrett's esophagus with advanced neoplasia

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Background: EMR is commonly performed before radiofrequency ablation (RFA) for nodular dysplastic Barrett's esophagus (BE).

Objective: To determine the efficacy and safety of EMR before RFA for nodular BE with advanced neoplasia (high-grade dysplasia [HGD] or intramucosal carcinoma [IMC]).

Design: Retrospective study.

Setting: University of North Carolina Hospitals, from 2006 to 2011.

Patients: 169 patients with BE with advanced neoplasia: 65 patients treated with EMR and RFA for nodular disease and 104 patients treated with RFA alone for nonnodular disease.

Interventions: EMR, RFA.

Main Outcome Measurements: Efficacy (complete eradication of dysplasia, complete eradication of intestinal metaplasia, total treatment sessions, RFA treatment sessions), safety (stricture formation, bleeding, and hospitalization).

Results: EMR followed by RFA achieved complete eradication of dysplasia and complete eradication of intestinal metaplasia in 94.0% and 88.0% of patients, respectively, compared with 82.7% and 77.6% of patients, respectively, in the RFA-only group ($P = .06$ and $P = .13$, respectively). The complication rates between the 2 groups were similar (7.7% vs 9.6%, $P = .79$). Strictures occurred in 4.6% of patients in the EMR-before-RFA group. compared with 7.7% of patients in the RFA-only group ($P = .53$).

Limitations: Retrospective study at a tertiary-care referral center.

Conclusion: In patients treated with EMR before RFA for nodular BE with HGD or IMC, no differences in efficacy and safety outcomes were observed compared with RFA alone for nonnodular BE with HGD or IMC. EMR followed by RFA is safe and effective for patients with nodular BE and advanced neoplasia. (Gastrointest Endosc 2012;76:733-9.)

Abbreviations: BE, Barrett's esophagus; CED, complete eradication of dysplasia; CEIM, complete eradication of intestinal metaplasia; HGD, high-grade dysplasia; IMC, intramucosal carcinoma; ITT, intention-to-treat; PP, per protocol; RFA, radiofrequency ablation. .

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Barrett's esophagus (BE) is a precancerous condition associated with adenocarcinoma of the esophagus,[1,2] a condition with a marked increase in incidence over the past 4 decades.[3,4] BE with high-grade dysplasia (HGD) may progress to adenocarcinoma in as many as 20% of patients per year.[5] Similarly, BE with intramucosal carcinoma (IMC) is a high-risk lesion in the absence of disease-altering therapy. Radiofrequency ablation (RFA) is a safe and effective therapy for the eradication of nonnodular dysplastic BE.[5-7] However, many patients with HGD or IMC have nodularity in their BE segment. EMR is commonly performed to remove these nodular areas before treatment with RFA.[8,9] Although RFA and EMR are frequently performed, their safety and efficacy are poorly understood.

The aims of this study were to compare the safety and efficacy of combined EMR/RFA treatment for nodular BE with that of treatment with RFA alone for nonnodular BE. We assessed whether preceding EMR leads to either a higher complication rate or decreased efficacy in comparison with patients requiring RFA alone.

Take-home Message

- Contrary to previous studies, the performance of EMR before radiofrequency ablation (RFA) was not associated with either an increased risk of esophageal stricture or a decreased likelihood of successful eradication of intestinal metaplasia.
- Combined therapy with EMR followed by RFA may be a suitable primary treatment option for patients with nodular Barrett's esophagus with high-grade dysplasia or intramucosal carcinoma.

METHODS

Patient eligibility and data collection

We performed a retrospective study of adult patients treated with RFA for BE with HGD or IMC at University of North Carolina Hospitals between 2006 and 2011. The patients were identified by review of our electronic endoscopic database (Provation MD, Wolters Kluwer, Minneapolis, MN) from January 1, 2006, through November 1, 2011, by using the following terms: Barrett, esophageal adenocarcinoma, cancer, carcinoma in situ, dysplasia, ablation, radiofrequency. We also performed a search by using a procedure code for esophagoscopy with ablation (CPT 43228).

Each patient's record was then reviewed by 1 of 2 investigators (H.P.K., W.J.B.) using the electronic medical record (WebCIS, University of North Carolina Health Care System) to determine eligibility for inclusion. Patients were excluded if they never received treatment with RFA, were treated with RFA for a non–BE-related disease, did not have preablation histologically confirmed HGD or IMC, or underwent EMR after RFA initiation. All eligible patients were included in the safety analysis, whereas the efficacy analysis excluded individuals receiving ongoing RFA therapy as of November 1, 2011.

Pertinent data were extracted from clinical, endoscopy, and pathology reports for each patient and included demographic information (age, sex, race, body mass index), pertinent medical history (erosive esophagitis, peptic stricture), substance use (alcohol, tobacco), medication use (antisecretory therapy, nonsteroidal antiinflammatory drugs), EGD findings (length of BE, Prague C and M classification, hiatus hernia, erosions, ulcers, nodules), preablation histologic features, treatment provided, ablation outcomes, and complications. At all treatment sessions, patients had provided interim histories regarding any complications of therapy or visits to other institutions for treatment-related issues. To standardize the methodology, the records of the first 10 patients were reviewed by both investigators jointly, and discrepancies in data collection were resolved by consensus. For additional quality control, every 20th patient in the study was reviewed independently by both investigators to assess interrater agreement of abstracted data.

Pretreatment evaluation and procedural protocol

All patients had an initial consultation visit to discuss BE and dysplasia, its risk of progression to cancer, and the risks and benefits of different treatment options, including continued endoscopic surveillance, ablative therapy, and esophagectomy. The worst histologic grade of BE was determined by review of the original pathology records. All cases were reviewed by an expert GI pathologist as part of routine care, and if findings between the initial pathology report and the secondary review were discordant, an additional expert GI pathologist reviewed the case with histologic classification by consensus.

Patients who opted for RFA had pretreatment staging by EGD and EUS to exclude invasive or metastatic disease that would preclude curative endoscopic treatment. If the BE segment had no visible mucosal abnormalities, RFA was performed as outlined below. If the BE segment contained any mucosal abnormality with the exclusion of deep ulceration, EMR was performed before the beginning of RFA therapy. Nodules were defined endoscopically as any contoured irregularity and elevation of the mucosa without breaks, including Paris classification 0-I and 0-IIa lesions.[10] All visible lesions were resected endoscopically by using either the Olympus 18-mm oblique cap kit (Olympus America, Center Valley, PA) or the Duette device (Cook Medical, Winston-Salem, NC). EMR performed with the Olympus device was preceded by submucosal injection of saline solution, whereas EMR with the Duette device was performed without prior injection. RFA therapy was initiated 2 months after all visible lesions were re-