Endoscopic Mucosal Resection and Radiofrequency Ablation for Intramucosal Adenocarcinoma in the Background of Barrett's Esophagus: A Case Series

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Endoscopic Mucosal Resection and Radiofrequency Ablation for Intramucosal Adenocarcinoma in the Background of Barrett's Esophagus: A Case Series

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Background

- Barrett's esophagus (BE) is a precancerous lesion characterized by intestinal metaplasia (IM) as squamous epithelium is replaced by columnar mucosa resulting from continuous exposure to gastric acid.[1-2]
- Accumulation of genetic changes can lead to esophageal adenocarcinoma (EAC), which is likely to occur in multifocal high grade dysplasia (HGD) and mucosal nodularity.[2]
- Treatment options were observation and esophagectomy, but endoscopic modalities are now the therapy of choice with minimal complications.[1]
- Safety profiles for combinations and timing of endoscopic mucosal resection (EMR) and radiofrequency ablation (RFA), appropriate use in dysplastic settings and long term survival/ recurrence rates are under investigation.

Table 1: General Information of Endoscopic Treatment of IMA/BE[2,3]

	EMR	RFA
Uses	Use of electrocautery Nodular/island lesions Tissue extraction Multiple extraction during 1 session	Use of bipolar energy Non-nodular lesions Ablation without tissue extraction Circumferential vs focal systems
Advantages	More accurate staging Treatment of buried glands	Monotherapy Reduced risk of stenosis Controlled injury depth
Limitations	Piecemeal resection Difficult resection of long segment BE Limit to 50-60% circumference	No tissue sampling Islands formed from adherent coagulum
Complications	Strictures/dysphagia Hemorrhaging Perforation	Chest pain post-procedure Stricture formation Mucosal laceration Perforation (rare)

Case Series Presentation

We present three male patients who underwent EMR and RFA for IMA in the setting of background BE (Table 2, Image 1-2).

CASE 1:

- A 53 year-old male evaluated for bariatric surgery had esophagogastroduodenoscopy (EGD) with biopsies showing IMA in background of HGD. Repeat EGD showed BE with nodularity and endoscopic ultrasound (EUS) showed no submucosal involvement.

CASE 2:

- A 56 year-old undergoing EGD to rule out posterior penetrating ulcer in acute pancreatitis had distal esophagitis with nodularity. EGD showed BE with nodularity and biopsies showing IMA in background of HGD and IMA. EUS showed two lymph nodes that were negative for malignancy.

CASE 3:

- A 74 year-old male underwent routine surveillance EGD showing nodularity with biopsies showing IMA in HGD. EUS showed no submucosal invasion or regional adenopathy. Patient underwent EMR followed by RFA and during follow up EGD was found with nodularity having to repeat EMR and RFA cycle.

Table 2. Case Comparison

	Case 1	Case 2	Case 3
Initial Diagnosis	IMA with HGD and IM	IMA with HGD and IM	IMA with HGD
Length of BE	Short (1 cm)	Long (4 cm)	Long (10 cm)
Number of EMR Sessions	1	2	3*
Avg Time Between Sessions	---	1.75 months	4 months
Time Between EMR-RFA	2 months	7 months	3 months
Number of RFA Sessions	1	1	2
Surveillance	3 months	6, 2, 6 months	N/A
Complications	None	None	None

IMA, Intramucosal adenocarcinoma; HGD, high grade dysplasia; IM, Intestinal metaplasia
*Recurrence of nodular disease

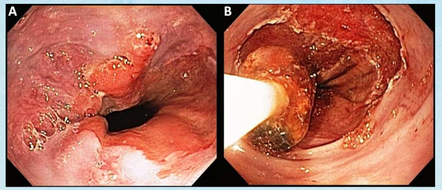

Image 1. Tubular nodular area (A) measuring 15mm at 38cm undergoes EMR using a 7 French Banding Kit with 4 bands that are placed around the entire area and serial resection (B) occurs not exceeding 50-60% of the total circumference.

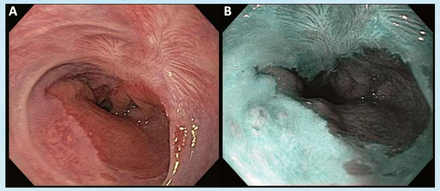

Image 2. Repeat EGD two months later reveals no evidence of nodularity (A). Narrow banding imaging (B) indicates the area of underlying BE which was treated with RFA using Halo 360 22mm balloon to ablate this previously resected area in the absence of nodular disease.

Discussion:

- Recent studies have shown the benefit of EMR/RFA for treatment of low grade dysplasia (LGD), HGD and IMA in the background of BE with esophagectomy reserved for submucosal involvement, lymph node metastasis, poorly differentiated IMA, or failed EMR/RFA.[3]
- EMR treats the nodularity and provides tissue sample for adequate staging, adequate surface area for RFA eradication and decrease sessions of RFA.[3-4] Complication rates increase if prior erosive esophagitis, NSAID use, prevention of healing or greater than 50% circumference is removed.[5]
- Independent predictors of incomplete remission are increase length of BE, incomplete healing of mucosa and nodularity.[5]
  - Case 2 &3 had long segment BE requiring multiple EMR sessions prior to RFA.
- Literature supports complete eradication of intestinal metaplasia (CEIM)>70% with RFA with/ without EMR regardless of initial degree of dysplasia.[1,4-5]
- Our series had 66% CEIM and no complications.
- Surveillance: Three months until no BE observed then six months for 1 year and if no abnormalities, yearly.[3]

Conclusion:

- Our case series focused on EMR prior to RFA with at least 2 months in between for adequate healing time and the need for individualized protocols with number of sessions. No complications were encountered.

References:

1. Perry, Kyle et al. "Endoscopic Management of High-grade Dysplasia and Intramucosal Carcinoma: Experience in a Large Academic Medical Center." *Surgical Endoscopy* 28 (2014): 777-82.
2. Ganz, Robert A et al."Circumferential Ablation of Barrett's Esophagus That Contains High-grade Dysplasia: A U.S. Multicenter Registry." *Gastrointestinal Endoscopy* 68.1 (2008): 35-40.
3. Aranda-Hernandez, Javier, Maria Cirocco, and Norman Marcon. "Treatment of Dysplasia in Barret Esophagus." *Clinical Endoscopy* 47 (2014): 55-64.
4. Kim, Hannah P et al. "Focal Endoscopic Mucosal Resection before Radiofrequency Ablation Is Equally Effective and Safe Compared with Readiofrequency Ablation Alone for the Eradication of Barrett's Esophagus with Advanced Neoplasia." *Gastrointestinal Endoscopy* 76.4 (2012): 733-39.
5. Bulsiewicz, William J et al. "Safety and Efficacy of Endoscopic Mucosal Therapy With Radiofrequency Ablation for Patients With Neoplastic Barrett's Esophagus." *Clinical Gastroenterology and Hepatology* 11.6 (2013): 636-42.