

BARRETT'S ESOPHAGUS AND RADIO FREQUENCY ABLATION THERAPY

Barrett's esophagus (BE) is a specialized mucosa called Intestinal metaplasia which replaces normal squamous mucosa of the esophagus. Chronic gastro esophageal acid reflux disease over time is a predisposing factor in the evolution of the Barrett's esophagus and adeno carcinoma of the esophagus.

Barrett's esophagus is discovered during endoscopy and confirmed by histology. Pathologist on biopsies read it as a columnar intestinal metaplastic epithelium with or without dysplasia. BE can affect young and old but most of the time is a result of long standing chronic acid reflux. This condition is most common in Caucasian males and uncommon in blacks and Asians. Male to female ratio is 2:1. Family history and genetics do play a role. Incidence of chronic GERD is increasing rapidly due to poor life style choices, chronic smoking and drinking as well as obesity.

Screening upper endoscopy for Barrett's esophagus is advised in patients with symptoms of heartburns over 3 times a week for over 3 years, though number of patients can have silent acid reflux and Barrett's changes are seen on endoscopy done for other reasons.

Barrett's metaplastic epithelium can change over time to low grade dysplasia (LGD), then to high grade dysplasia (HGD), to invasive adeno carcinoma. Barrett's esophageal segment can be short 3 cm or less from gastro esophageal squamo-columnar junction (SSBE), medium or long segment over 6 cm in length (LSBE).

Prevalence rate of Barrett's esophagus in general US population is 4-6% (8-11 Million). It is 6.8% in persons over the age 40 (8-9 Million) and 25 % of persons over the age 50 without symptoms of GERD (20 Million). Cumulative risk of cancer in Barrett's esophagus is 7-8% at 10 years.

Incidence of esophageal cancer is rising rapidly and survival rate in all races and stages of the disease is only 17%. Esophageal cancer ranked 24th as leading cause of death in 2004 and will rise to 15th in 2030 just a notch below colorectal cancer.

Comparing esophageal cancer in Barrett's esophagus with colonic polyp cancer sequence of colorectal cancer reveals astonishing following facts. High grade dysplasia cohort cancer incidence is 6600 per 100,000 (6.6%), low grade dysplasia cohort cancer incidence is 1700 per 100,000 (1.7%), non dysplastic Barrett's cohort cancer incidence is 600 per 100,000 (0.6%) while polyp cohort cancer incidence is 580 per 100,000 (1.7%).

Dysplastic Barrett's epithelium can be treated with conventional therapies like photo dynamic, cryo, YAG or argon plasma coagulation therapy with risk of poor response, strictures,

perforations or buried Barrett's glands. Esophagectomy is definitive but carries morbidity and mortality particularly in older patients. Simple annual surveillance does not stop progression to adenocarcinoma.

Radiofrequency bipolar balloons and electrodes are used during endoscopy. Multiple sham controlled clinical trials have shown this form of ablation therapy as highly effective and safe. Endoscopic radiofrequency bipolar ablation does change the natural history of the disease. Cancer incidence drops from 0.6% to 0.16% in non dysplastic Barrett's, from 1.7% to 0.16% in low grade dysplasia and 6.6% to 1.7% in high grade dysplasia Barrett's esophagus. Compare that to colorectal cancer prevention after colonoscopic polypectomy, colorectal cancer incidence drops from 0.58% to 0.06%.

During the last 7 years 120000 RF ablation procedures show very favorable cumulative event rate of 0.24%. 1 stricture per 556 procedures and 1 perforation per 10000 endoscopic ablation procedures were observed. Compare that to colonoscopy where 1 perforation is recorded per 1000-1400 procedures.

I have done over 75 endoscopic ablation procedures in Barrett's esophagus patients over the last 2 plus years at Unity Hospital Rochester, NY without any complications with high degree of success and resultant patient satisfaction due to reduced cancer anxiety. My indications for this form of treatment are elderly non surgical patients with cancer in situ, HGD, LGD and long segment Barrett's esophagus who have family history of esophageal cancer or Caucasian male over the age 50 or smokers who are obese as well. Average 3 endoscopic sessions are needed for complete ablation of the dysplastic or metaplastic Barrett's epithelium spaced out every 6-8 weeks.

In conclusion RF endoscopic ablation treatment for Barrett's esophagus is safe, highly successful, cost effective preferred strategy in patients with or without dysplasia. Durability of the eradication is established up to 7 years, and results are reproducible in the community practice. This treatment strategy has been endorsed in 2011 by the American Gastro. Association (AGA) and American society of Gastrointestinal Endoscopy (ASGE).

Tarun Kothari MD,FACG, FACP

Chief of Gastroenterology/Endoscopy

Unity Hospital

Rochester, NY