

Adenocarcinoma in the columnar epithelial lined lower (Barrett) oesophagus

At the Mayo Clinic, five patients with Barrett oesophagus developed adenocarcinoma of the oesophagus at sites cephalad from the anatomic cardia but separated from it by a definite segment of columnar lined oesophagus. Since its description in 1950 by Barrett, the columnar epithelial lined lower oesophagus has been encountered with increasing frequency. The full clinical implications of this unusual condition are only partially appreciated at this time, and the present report, as well as previous ones, suggest that the condition may be premalignant.

Barrett oesophagus is an unusual condition, and carcinoma of the oesophagus arising within its columnar epithelium is distinctly rare.

Material and Methods

Case histories of 360 patients who had undergone resection for carcinoma of the oesophagus (exclusive of the cardia) at the Mayo Clinic in the 12-year period 1960-71 were reviewed. Five of these patients had an adenocarcinoma arising in a Barrett oesophagus. In each instance, the tumour was distinctly separated from the anatomic cardia by a segment of columnar-lined oesophagus (carcinomas that arose at the cardia with columnar-lined oesophagus above it were considered gastric carcinomas and were excluded from the study). In all five patients, the specimen of oesophagus was re-examined, and the characteristic features were reconfirmed both grossly and microscopically.

Findings

All but one of the patients had histories of longstanding oesophageal difficulty (5 to 40 years) antedating the more recent progressive obstructive symptoms of oesophageal cancer. The chronic symptoms were due to gastro-oesophageal incompetence and consisted of recurrent postural regurgitation, postprandial and nocturnal pyrosis, and epigastric pain with interscapular radiation. Three patients had previously been suspected of

having Barrett oesophagus with stricture and had gained relief 1, 4, and 7 years previously by oesophageal dilatation. Symptoms of progressive oesophageal obstruction varied from six months to one year prior to diagnosis. All patients experienced loss of weight (6 to 180 kg). One patient had haematemesis.

Radiographic examination of the oesophagus revealed a stricture in the mid oesophagus in three patients and at the junction of the middle and lower thirds in two patients. In four patients, the stricture was suggestive of a malignancy. On fluoroscopic study all patients had typical oesophageal motility below the stricture. A co-existing sliding hiatal hernia was apparent in all five patients.

All patients underwent oesophagoscopy examination. Adenocarcinoma was confirmed by biopsy. The degree of obstruction precluded examination of the distal oesophagus or study of oesophageal motility and mucosal electric potentials.

All patients had resectable lesions, and all survived operation without complications. Two patients died of recurrent carcinoma two and five years after operation. The others were alive at follow-up 3, 8, and 18 months after resection.

Pathological features

The resected specimens contained ulcerated adenocarcinoma that varied from 1 cm to 7 cm in greatest dimension. Each of the tumors arose above the cardia with intervening gastric mucosa (fig 1). In three patients, the tumour was located below the upper limit of the columnar-lined oesophagus, and in two, the tumour involved the squamocolumnar junction.

Microscopically (fig. 2), all five adenocarcinomas had moderate to poor differentiation. By Broder's classification, two lesions were grade 2, two were grade 3, and one was grade 4. All were infiltrative and had various amounts of desmoplastic reaction. In these respects they were similar to

gastric carcinomas. Regional lymph nodes were metastatically involved in four of the five patients.

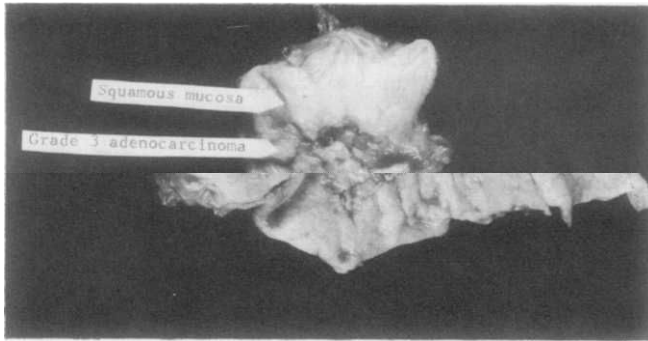


fig. 1. Gross specimen showing relatively small ulcerated carcinoma situated 5 cm above the anatomic cardia. Mucous membrane above tumour is squamous tissue and that below is glandular tissue.

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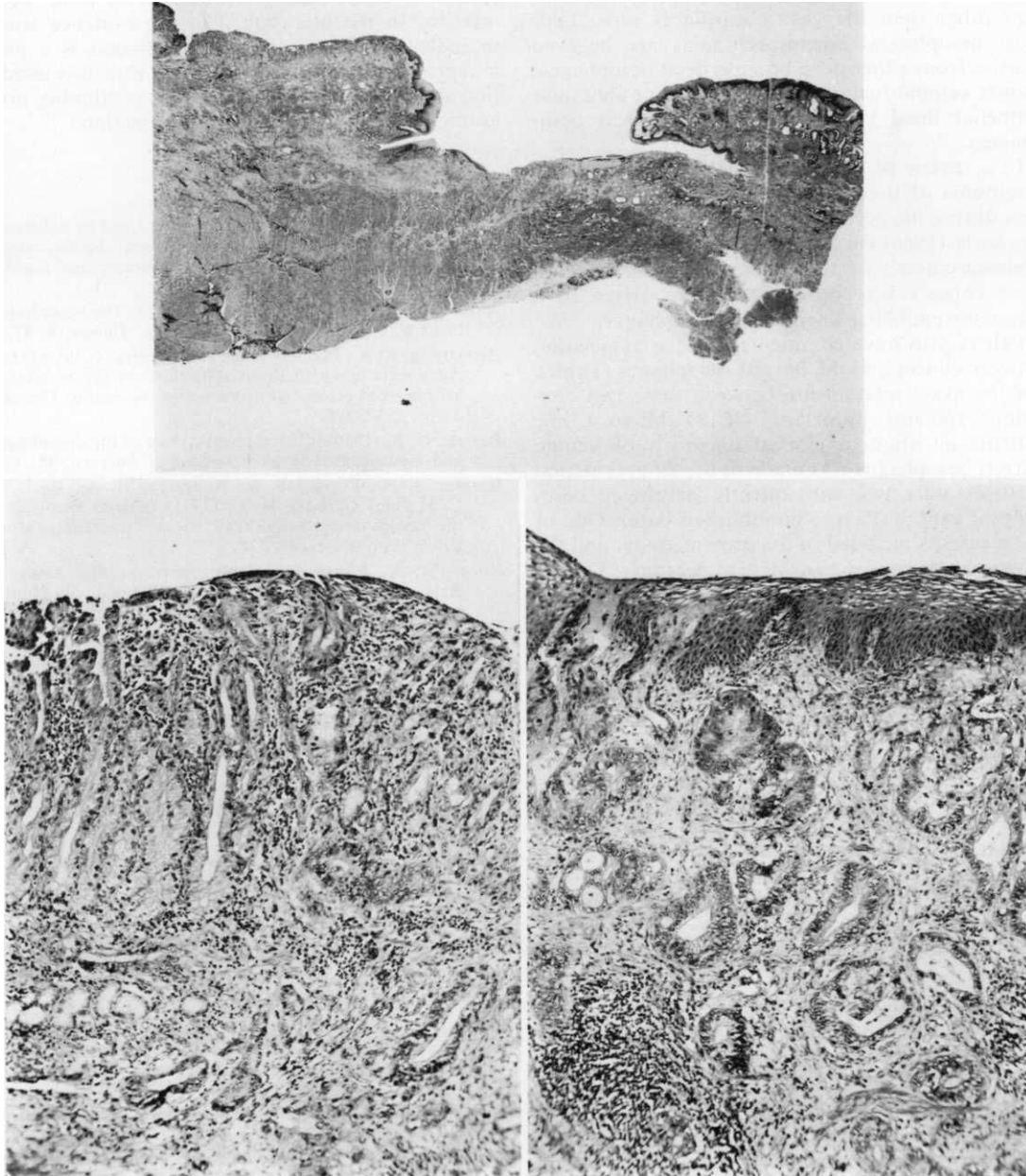


Fig. 2 (Top) Ulcerated, undermining adenocarcinoma infiltrating into oesophageal muscle. Both edges of ulcer show partial squamous lining but surface epithelium on left is columnar. (Lower left) Infiltrating adenocarcinoma in depth of benign gastric type mucosa (taken from left edge of ulcer shown above). (Lower right) Infiltrating adenocarcinoma with overlying benign squamous epithelium (taken from right edge of ulcer shown above).

Discussion

Primary adenocarcinoma in the oesophagus at sites other than the gastric cardia is rare. Thus most oesophageal adenocarcinomas are believed to

arise from either deep or superficial oesophageal glands, ectopic foci of gastric mucosa, or columnar epithelial lined lower oesophagus (Barrett oesophagus). In a review of 1,312 Mayo Clinic patients with carcinoma of the oesophagus or cardia that were seen during the period 1946-63, Raphael, Ellis, and Docherty (1966) encountered only 10 patients with adenocarcinoma of the oesophagus. Only one of these cancers was believed to have arisen in a columnar epithelial lined lower oesophagus. Others also have commented on the association between cancer and the Barrett oesophagus, but the exact relationship between these two conditions remains uncertain. Of 85 Mayo Clinic patients in whom a clinical diagnosis of benign Barrett oesophagus was made in the 20-year period 1950-69, only two subsequently developed oesophageal cancer (Payne, unpublished data). One of these cases is included in the present study, and the other was diagnosed elsewhere at necropsy. During this same period five additional patients have been seen at the Mayo Clinic in whom both conditions were diagnosed simultaneously (Raphael et al, 1966; this study). The association of carcinoma of the oesophagus and cardia with chronic oesophageal disease has been recognized for many years. Unfortunately, the Barrett oesophagus is not as clearly definable a clinical entity as achalasia, diverticulum, web, lye stricture of the oesophagus, tylosis palmaris et plantaris, or Plummer-Vinson (Paterson-Kelly) syndrome, all of which have been implicated as having an increased incidence of cancer of the oesophagus. Although Burgess et al. (1971) have recently outlined the essential features of the Barrett oesophagus, subclinical stages of the condition undoubtedly exist which would be difficult to delineate by available methods. Moreover, the association of Barrett oesophagus with diaphragmatic hernia, gastro-oesophageal incompetence, and reflux oesophagitis has led to speculation that the association between diaphragmatic hernia and cancer of the oesophagus and cardia may be more frequently related to the development of a columnar epithelial lined lower oesophagus than is generally appreciated (Michel, Olsen, and Dockerty, 1967; Grimes and Zboralske, 1968). The development of carcinoma might destroy the evidence of a pre-existing Barrett oesophagus, yet with the possible exception of Adler's case transitions have not been seen and only clearly defined cases have been reported in the literature. Current evidence tends to indicate that the Barrett oesophagus is a pre-malignant condition, and

patients with this condition should be advised to pursue a continuing programme of oesophageal cancer detection.