

Tubular Adenomatous Polyp in a Colon Interposition: A Case Report and Review of Literature

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Abstract

Esophagectomy with colon interposition is a technique used for the replacement of a diseased esophagus. Since segments of the colon are used in this procedure, clinicians must be aware that a variety of pathologies can arise from colonic interposition. Therefore, patients who undergo this procedure and are due for a screening or surveillance colonoscopy must also get a screening or surveillance upper endoscopy to examine the interposed colon. We report a case of a 59-year-old male who had a history of Barrett's esophagus with high grade dysplasia successfully treated with colon interposition. Upper endoscopy showed a tubular adenomatous polyp of the colonic segment.

Keywords: Colon interposition; Left colon; Colorectal cancer; Colon polyps

Introduction

Colon interposition surgery has been utilized post esophagectomy with success [1]. The colon has a number of characteristics that make it an excellent option for esophageal replacement. Advantages include long length, acid resistance, and typically excellent blood supply [1]. Adenoma and adenocarcinoma can appear as a late complication in colonic tissue grafts used to substitute the esophagus [2]. Early detection and treatment

can decrease morbidity and mortality [3]. At our institution, we present a case of an adenomatous polyp found in a patient with colonic interposition 6 years after surgery for Barrett's esophagus with high grade dysplasia.

Case Report

A 59-year-old white male with a history of Barrett's esophagus diagnosed 24 years ago, underwent esophagectomy with colonic transposition (6 years ago) for high grade dysplasia. He came into our clinic complaining of a "stricture like sensation" in his throat, difficulty eating, and weight loss. His symptoms started a few months back and were getting progressively worse. There were no alleviating or aggravating factors. The patient also complained of fatigue, anorexia, a sense of early satiety, and diarrhea.

His past medical history includes diverticulitis, hypoglycemia, and Barrett's esophagus. His surgical history includes esophagectomy with colonic transposition using the sigmoid colon, a previous tonsillectomy, and a colonoscopy in 2010. The patient smokes half a pack of cigarettes a day, and consumes 12 bottles of beer every week. He consumes one pot of regular coffee every day. He denies any illicit drug use. There is no family history of Barrett's esophagus or colon cancer.

An esophagogastroduodenoscopy (EGD) procedure was

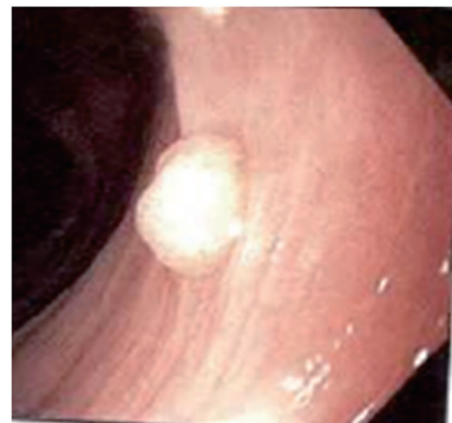


Figure 1. Olympus video gastroscope shows a 0.8 cm polyp in the mid portion of the interposed colon.

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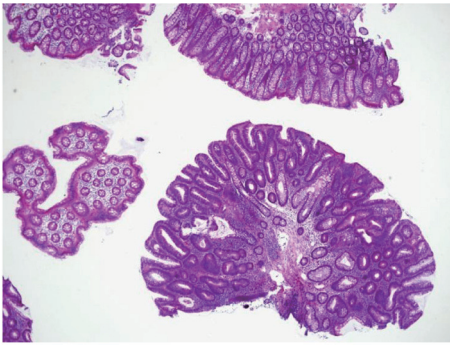


Figure 2. Hematoxylin and eosin (H&E) of tubular adenomatous polyp at $\times 40$ magnification. Right lower piece of colonic mucosa shows a polyp containing tubular structures. The tubules are composed of columnar cells with hyperchromatic and basally located nuclei.

performed using an Olympus video gastroscope. This showed a 0.8 cm polyp (Fig. 1) arising from the mid portion of the interposed colon. The polyp was completely removed with multiple bites of a jumbo biopsy forceps.

The pathology report of the polyp revealed a tubular adenoma (Fig. 2, Fig. 3). The gastroesophageal junction biopsy showed benign colonic mucosal segments, squamocolumnar anastomosis with intense chronic inflammation and reactive epithelial change. No Barrett's metaplasia was seen.

Discussion

The use of long segments of the colon, either for replacement or bypass of all or part of the thoracic esophagus, was introduced independently by Kelling and Vulliet in 1911 [4]. Since then, the colon has emerged as a well-functioning and durable esophageal substitute when the stomach cannot be used [4-6].

To date, gastric pull-up is the most frequent reconstruction after esophagectomy. Yildirim et al demonstrated that the overall satisfaction was superior in patients undergoing colonic interposition [7]. However, other studies done by Hashesh et al suggested that gastric pull-up was more preferable and easier to perform [8]. Colonic interposition had increased morbidity, compared with gastric transposition. However the overall mortality and survival were similar to those for gastric transposition [9].

Esophagectomy with colon interposition has been used in benign and malignant diseases of the esophagus such as strictures [10] and cancer [11]. This procedure may cause surgical complications such as anastomotic leakage and sepsis due to colon necrosis [5], delayed fibrosis [12], esophagocolonic anastomotic stricture [13], dysphagia [14], Claude Bernard-Horner syndrome [15], and aorto-colonic fistula [16].

Advantages include long length, acid resistance, typically excellent blood supply, and the potential for a wide gastric resection margin in patients with cancers of the gastroesophageal junction [17]. Peters et al showed that replacement of the esophagus with the colon can be successful in over 80% of patients screened by angiographic criteria [18]. The left colon is the most common segment used in colon interposition due

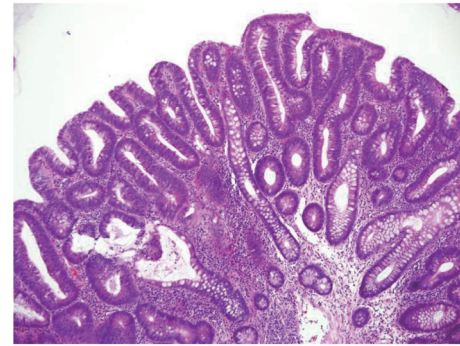


Figure 3. Hematoxylin and eosin (H&E) of tubular adenomatous polyp at $\times 100$ magnification which shows tubules that are composed of columnar cells with hyperchromatic and basally located nuclei.

to its good blood supply [19]. Absolute contraindications to colon interposition are the presence of intrinsic colon disease such as inflammatory bowel disease, malignancy, or inadequate arterial blood supply from peripheral vascular disease [20].

Screening or surveillance for colorectal cancer is a crucial preventative measure. In addition to a screening colonoscopy, clinicians should perform a screening upper endoscopy in patients with a history of colon interposition as pathology may arise from the colonic segment. The patient in our case should have had a screening EGD in addition to screening colonoscopy in 2010. This case serves as a reminder of the importance of colon interposition screening. Furthermore, in the review of literature (Table 1) [14, 21-38], 15 out of 22 patients have developed adenocarcinoma in the grafted interposed colon. This could have been prevented if the patients had regular EGD screening or surveillance follow-up. Our patient was fortunate enough to be diagnosed with tubular adenoma prior to the development of advanced cancer. According to the European Society of Gastrointestinal Endoscopy (ESGE) guidelines, our patient is considered a "low risk group" based on the histology and the size of the polyp removed from the interposed colon [39]. The current recommendation for surveillance and screening after polypectomy is between 5 and 10 years [40]. It is also suggested that patients who have polyps in the interposed colon should undergo colonoscopy to rule out synchronous lesions [21]. Since there are no guidelines available for screening and surveillance of the grafted colon interposition, we recommended that our patient should have a repeat EGD and colonoscopy surveillance in 3 years.

Conclusion

Esophagectomy with colon interposition is a successful treatment for the diseased esophagus. The emphasis of our case is to continue screening and surveillance for colon cancer where ever colonic tissue is found. Since there are no current guidelines for the management of screening or surveillance of colon interposition, we suggest that clinicians who encounter these patients must always screen the interposed colonic graft at the same time that the patient has a colon cancer screening.

Table 1. Review of Literature of Tumors Arising from the Grafted Colon Interposition

References	Age	Gender	Comorbidities	Indication for esophagectomy	Histology	Time from esophagectomy (years)	Treatment	Recommendations post-treatment
[2]	80	M	-	esophageal squamous cell carcinoma	Adenocarcinoma in a tubular adenoma	14	Endoscopic submucosal dissection	Upper endoscopic screening within 1 year
[3]	59	F	Gastric ulcer perforation	Anastomotic stricture	Adenocarcinoma	56	Surgical resection	-
[21]	65	M	Hiatal hernia, ulcerated esophagus	Recurrent esophageal stricture	Tubular adenoma	15	Polypectomy	Repeat EGD and colonoscopy
[22]	64	M	-	Benign esophageal stricture	Adenocarcinoma from a villous adenoma	20	Surgery	-
[23]	60	M	GERD, Gastric ulcer	Benign esophageal stricture	Adenocarcinoma	40	Surgical resection	-
[24]	60	M	Colorectal cancer, Inflammatory bowel disease	Esophageal stricture	Invasive adenocarcinoma	30	Chemotherapy with 5-fluorouracil	Upper endoscopic screening every 5 years
[25]	78	M	Carcinoma of the gastric cardia, prostate cancer, diverticulosis	Necrosis and gangrene of the esophagogastric anastomosis	Adenocarcinoma	10	Surgical resection	-
[26]	11	M	-	Esophageal stricture	Juvenile polyp	8	Polypectomy	-
[27]	68	M	-	-	Adenocarcinoma	12	Surgical resection	-
[28]	63	F	-	Esophageal perforation	Tubular adenoma with low grade dysplasia	8	Polypectomy	Repeat EGD screening at 5 years
[28]	65	F	-	Persistent fistula following esophagectomy for carcinoma	Tubulovillous adenoma with low grade dysplasia	3	Polypectomy	Repeat EGD at earlier stage due to high risk of malignancy
[29]	64	M	Htn, DMII, GERD	Persistent reflux symptoms post Roux-en-Y surgery	Tubular adenoma	7	Polypectomy	-
[30]	72	M	GERD	Epidermoid carcinoma of the esophagus	Adenocarcinoma	9	Chemotherapy with 5-flourouracil	Patient deceased due to progression of tumor
[31]	65	M	Perforated duodenal ulcer	Esophageal cancer	Sessile polyp/adenomatoid polypus	6	Polypectomy	Repeat EGD 5 years later revealed malignant lesion
[32]	48	F	-	Epidermoid carcinoma	Adenocarcinoma in a villous adenoma	2	Surgical resection and a new cologastronomy	Esophagram every 6 months

Table 1. Review of Literature of Tumors Arising from the Grafted Colon Interposition - (Continued)

References	Age	Gender	Comorbidities	Indication for esophagectomy	Histology	Time from esophagectomy (years)	Treatment	Recommendations post-treatment
[33]	75	F	-	Posterior SCC s/p pharyngolaryngectomy	Adenocarcinoma	20	Surgical resection of the colon graft	-
[14]	66	M	Barrett's esophagus	Recurrent esophageal adenocarcinoma s/p proximal gastrectomy and distal esophagectomy	Adenocarcinoma	2	Surgical resection	Regular follow up
[34]	51	M	-	Benign esophageal stricture	Adenocarcinoma	11	-	-
[35]	79	M	-	Esophageal cancer	Adenocarcinoma	30	Chemotherapy	-
[36]	57	M	-	Alkaline corrosive injury of the esophagus	Adenocarcinoma	37	Surgical resection	-
[37]	79	M	-	Esophageal adenocarcinoma	Adenocarcinoma	7	Surgical resection	-
[38]	65	M	-	-	Tubular adenoma	1	Polypectomy	Routine follow-up
Our case	59	M	Diverticulitis, hypoglycemia, Barrett's esophagus	Barrett's esophagus with high grade dysplasia	Tubular adenoma	6	Polypectomy	EGD surveillance in 3 yrs

GERD: gastroesophageal reflux disease; Htn: hypertension; DMII: diabetes mellitus type 2; SCC: small cell cancer; s/p: status post; EGD: esophagogastrroduodenoscopy.

Disclosure

The authors have no funding or conflicts of interest to disclose.

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