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Original article

Incidental gastric mesenchymal tumors identified during laparoscopic sleeve gastrectomy[1]

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Abstract

Background: Laparoscopic sleeve gastrectomy (SG) is a well-tolerated and effective procedure for sustained weight loss and amelioration of weight-related co-morbidities. Rarely, unexpected pathology may be identified intraoperatively, which may alter the surgical plan. Gastrointestinal stromal tumors (GISTs) are among the more frequently encountered tumors and pose a particular concern because of their malignant potential. We review our findings of incidental tumors encountered during 1415 consecutive SGs.

Methods: Abnormal pathology records from all patients who underwent SG at our institution between 2009 and 2014 were reviewed. Patient demographic characteristics and clinical characteristics, tumor characteristics, including immunohistochemistry, operative course, and patient follow-up were reviewed.

Results: There were 17 incidental gastric mesenchymal tumors identified (1.2%) in 1415 SG procedures. This included 12 GISTs (.8%), 2 schwannomas (.1%), and 3 leiomyomas (.3%). In the majority of cases (1210/1415), the gastric specimens were not reviewed by a pathologist because there were no gross abnormalities appreciated by the surgeon. The GISTs were between .3 and 2.9 cm, and all were low grade with negative margins. Patients with GISTs tended to be older (mean age 55 ± 9.3 y) than the rest of the patients. There was no evidence of recurrence on follow-up.

Conclusion: Incidental gastric mesenchymal tumors are rarely encountered during SG. The vast majority were GISTs with an incidence of .8% in this population. Concomitant SG and tumor resection were feasible, without compromising the objectives of each. Complete tumor excision is necessary for tumors >2 cm. (Surg Obes Relat Dis 2015;11:1025–1028.)

Keywords: Bariatric surgery; Sleeve gastrectomy; Gastrointestinal stromal tumors; GIST; Gastric leiomyoma; Gastric schwannoma; Mesenchymal tumor

Laparoscopic sleeve gastrectomy (SG) has become an increasingly popular and successful treatment for the disease of obesity [1]. Even with a thorough preoperative examination, unexpected pathology, such as tumors in the liver, small bowel, and stomach, are encountered in 2–8% of bariatric operations [2,3]. These findings create a dilemma that may result in misdiagnosis, prolonged operative course, tumor spillage, incomplete oncologic resection, or other complications. For the bariatric surgeon, familiarity with the rare but possible intraoperative pathology can help guide decision making.

Gastrointestinal stromal tumors (GISTs) are among the most frequently encountered incidental gastric neoplasms

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found during laparoscopic surgery. These rare spindle-cell tumors have an annual incidence of 6.8 cases per million and are most frequently encountered in the stomach [4,5]. All GISTs larger than 2 cm have malignant potential and require complete surgical excision. They must be distinguished from the histologically similar leiomyomas and schwannomas, which typically have an indolent course. [6]. In this study, we present 17 incidental gastric tumors identified during 1415 consecutive SGs.

Methods

We reviewed the records of all patients who underwent SG at our institution between 2009 and 2014, and pathology reports were reviewed for evidence of neoplasm within the resected stomach. This case review had institutional review board approval through Copernicus Group PSS1-14-439. Patient characteristics gathered were age, body mass index (BMI), gender, preoperative endoscopy findings, and diabetes status. Tumor characteristics recorded included type of tumor, size, tumor site, margin status, mitotic rate, and immunohistochemistry. Postoperative follow-up and surveillance status were also noted.

Surgical procedures were performed by 4 different bariatric surgeons. The majority of cases (1210/1415) were performed at a free-standing ambulatory surgery center where all of the surgeons routinely examine the gastric specimens and discard grossly normal tissue. The remaining 205 cases were performed at a hospital where pathologic examination is routine. Preoperative workup and operative technique were similar among the 4 surgeons and are described elsewhere [7]. In all cases, the presence of the tumor did not require a deviation from technique to obtain negative margins.

Patients with tumors were compared with the remaining 1398 patients who underwent SG during this period. Statistical significance was estimated with an unpaired Student t test for continuous variables and a Fisher's exact test for categorical variables.

Results

Out of 1415 SG procedures performed between 2009 and 2014, 17 submucosal tumors were identified (1.2%), including 12 GISTs (.8%), 2 schwannomas (.1%), and 3 leiomyomas (.3%). (Table 1, Fig. 1). Of the 205 procedures done at a facility where routine pathologic review was done, 3 tumors were identified (1.5%), and 2 of these were also identified intraoperatively by the surgeon; only 1 of these tumors was detected preoperatively on upper endoscopy. The tumor that was not identified by the surgeon was a .2 cm leiomyoma. Of these 205 procedures, 145 patients had no specific pathologic findings (71%), 21 had gastritis (10%), 15 had chronic inflammation (7%), 15 had fundic gland polyps (7%), 6 had *H. pylori* (3%) infection, 4 had focal intestinal metaplasia (2%), 4 had mucosal erosion (2%), 2 had a tubular adenoma (1%), and 1 case each of leiomyoma, schwannoma, GIST, submucosal lipomatosis with hemorrhage, and serosal foreign body reaction (.5%) were found.

All GISTs were spindle subtype, low grade (<5 mitoses per high-power field), without necrosis, and free of the surgical margins. All GISTs were positive for CD117 (*cKit* gene product), DOG1, and CD34 when measured and negative for S100 and smooth muscle actin (SMA) when measured. One of the GISTs was focally positive for desmin, which is seen in some CD117 positive tumors [8].

Gastric schwannomas were positive for S100 and CD34 and negative for CD117, DOG1, desmin, and SMA. Gastric leiomyomas were positive for desmin and SMA when measured and negative for CD117, DOG1, S100, and

Table 1
Clinicopathologic data on 17 neoplasms found during laparoscopic sleeve gastrectomy

Patient	Tumor type	Age (y)	BMI (kg/m^2)	M/F	Size (cm)	CD117/ KIT	DOG1	S100	CD34	Desmin	SMA	Tumor site
1	GIST	49	38	F	0.4	+	+	-	+	-	-	Anterior fundus
2	GIST	46	39	F	0.5	+	+		+	-	-	Posterior fundus
3	GIST	67	38	F	0.6	+					-	Posterior fundus
4	GIST	59	39	F	0.7	+		-	+		-	Posterior fundus
5	GIST	37	36	F	2.9	+	+	-		-	-	Posterior fundus
6	GIST	65	43	M	0.9	+	+	-				Anterior antrum
7	GIST	56	57	F	0.5	+			+	f+		Anterior antrum
8	GIST	56	42	F	0.5	+	+					Anterior body
9	GIST	53	38	F	0.3	+	+	-		-	-	Anterior fundus
10	GIST	57	46	F	0.5	+	+	-	+	-	-	Posterior body
11	GIST	47	56	M	1.1	+						Anterior antrum
12	GIST	68	38	M	0.6	+	+					Posterior body
13	Schwannoma	29	66	F	2.5	-	-	+	+	-	-	Posterior antrum
14	Schwannoma	55	43	F	1.2	-	-	+	+	-		Anterior body
15	Leiomyoma	62	41	F	0.5	-	-	-		+	+	Anterior body
16	Leiomyoma	49	31	F	3.7	-	-	-	-	+	+	Anterior fundus
17	Leiomyoma	57	44	M	0.2	-				+		Unknown

BMI = body mass index; GIST = gastrointestinal stromal tumor; SMA = smooth muscle actin.