

2015

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## Repository Citation

Bourgon, A., Hellan, M., & Tuttle, R. N. (2015). Management of Siewert's Type III Gastroesophageal Junction Adenocarcinoma in a 52 Year Old Female. *Journal of Gastrointestinal and Digestive System*, 5 (6).  
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## Management of Siewert's Type III Gastroesophageal Junction Adenocarcinoma in a 52 Year Old Female

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Rec date: Dec 14, 2015, Acc date: Dec 26, 2015, Pub date: Dec 31, 2015

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### Abstract

A 52 year old female presented with a Siewert's type III gastroesophageal junction (GEJ) adenocarcinoma treated with neoadjuvant chemotherapy, laparoscopic-robotic total gastrectomy, and adjuvant chemoradiation.

**Keywords:** Gastroesophageal junction; Laparoscopic gastrectomy

### Abbreviations:

GEJ: Gastroesophageal Junction; FISH: Fluorescence In Situ Hybridization; CT: Computed Tomography; PET: Positron Emission Tomography; EUS: Endoscopic Ultrasound

### Case Description

A 52 year old female presented with a Siewert's type III gastroesophageal junction (GEJ) adenocarcinoma treated with neoadjuvant chemotherapy, laparoscopic-robotic total gastrectomy, and adjuvant chemoradiation. Presenting symptoms were a 6 week history of worsening belching and abdominal bloating.

The patient was first evaluated by gastroenterology and underwent upper endoscopy with findings significant for a 1 cm nodule at the GEJ with thickening of the gastric cardia and associated erosions.

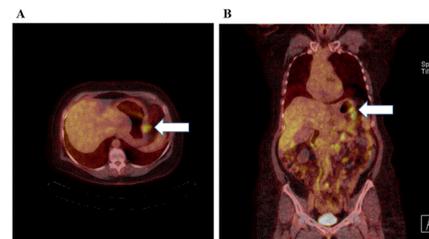
Biopsies were taken of the gastric body and antrum, and the nodule. Biopsies of the body and antrum returned as benign. Biopsy of the nodule returned as well-differentiated adenocarcinoma, HER2/neu was positive by fluorescence in situ hybridization (FISH). Computed tomography (CT) scans of the chest, abdomen, and pelvis revealed mild gastric wall thickening without evidence of metastatic disease.

Positron emission tomography (PET) scan identified two areas of hypermetabolic foci along the greater curvature of the stomach in addition to activity at the GEJ without evidence of metastatic disease (Figure 1A and B).

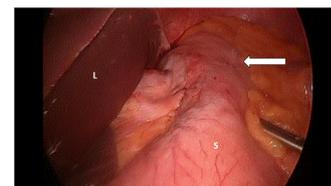
Endoscopic ultrasound (EUS) and diagnostic laparoscopy were performed. EUS revealed invasion into the adventitia of the cardia without evidence of surrounding adenopathy, staging T3N0. Diagnostic laparoscopy and port placement were completed concurrently.

At the time of surgery, the stomach was found to be edematous at the cardia and fundus including the area of the lesser curvature with concern for linitis plastica extending into the distal esophagus (Figure 2). There was no evidence of peritoneal disease at the time of laparoscopy.

Additionally, genetic testing was performed as part of her initial work up and evaluation secondary to her family history of breast and rectal cancer with no clinically significant mutations identified.



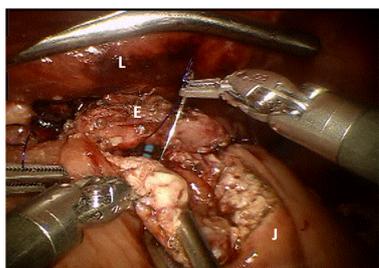
**Figure 1:** Preoperative PET scan. Preoperative PET scan with area of hypermetabolism along the greater curvature of the stomach as noted by the white arrow.



**Figure 2:** Diagnostic laparoscopy. Laparoscopic image taken at the time of diagnostic laparoscopy. L: Liver, S: Stomach, arrow denotes area along the lesser curvature which appeared thickened and injected with concern for linitis plastica-type change.

She received 6 cycles of neoadjuvant chemotherapy with mDCF and trastuzumab [1]. Four weeks after the completion of her neoadjuvant therapy, she underwent a laparoscopic, robotic-assisted total gastrectomy with roux-en-Y esophagojejunostomy, D2 lymphadenectomy and jejunostomy tube placement. The majority of the dissection was completed robotically and the anastomosis was

hand-sewn using the robot (Figure 3). Pathology revealed grade 3, poorly-differentiated adenocarcinoma centered at the cardia and extending to the GEJ and fundus, surgical margins were negative, 6/16 lymph nodes were positive, and HER2/neu was negative. Final staging was ypT3N2, Stage IIIB. Final pathology did not reveal any evidence of chemotherapy response with all viable tumor noted. The postoperative course was complicated by a slow return to oral intake. Tube feeds were continued for 8 weeks postoperatively following which the jejunostomy tube was removed. Secondary to the poor pathologic response to neoadjuvant chemotherapy, it was decided to treat postoperatively with 5-fluorouracil-based chemoradiation (4500 cGy over 5 weeks) as per McDonald protocol, which she completed without further delay [2].



**Figure 3:** Robotic hand-sewn esophagojejunal anastomosis. Hand-sewn robotic-assisted esophageal to jejunal anastomosis. L: Liver, E: Proximal esophageal margin, J: Jejunum.

Ten months postoperatively the patient developed difficulty with oral intake and was admitted to the hospital several times for presumed partial small bowel obstruction. Ultimately, parenteral nutrition was initiated. CT scanning of the abdomen and pelvis revealed dilated small bowel loops in the epigastrium, bilateral hydronephrosis and ascites. Diagnostic laparoscopy was performed and revealed diffuse peritoneal disease. Biopsy confirmed metastatic adenocarcinoma. Jejunostomy tube was replaced. After multidisciplinary discussion, the patient elected to enroll in Hospice and succumbed to her disease shortly thereafter.

## Discussion

The described case represented an unfortunate circumstance of locally advanced gastric cancer progressing to metastatic disease despite best medical therapy. It highlights the complex presentation of gastric cancer patients and the importance of multidisciplinary discussion in their management.

The classification of GEJ cancers was first described by Siewert in 2000 [3]. The classification system allows for uniform description of these tumors in addition to guiding recommended surgical therapies. Classically, type I tumors are recommended for esophagectomy and type III tumors are recommended for total gastrectomy [4]. Type II tumors can be treated with either surgical approach with the goal to obtain adequate lymphadenectomy and negative surgical margins. In their original series, postoperative mortality was higher for the esophagectomy group suggesting a preference for gastrectomy when technically feasible [3].

There remains some debate in the published literature regarding the management of Siewert's type III GEJ tumors. Type III tumors are known to be larger at presentation and more infiltrative when

compared to type II tumors [5,6]. The median 5 year survival for type III tumors is 51-63% [7-9]. In a 2007 series by Barbour et al. 52% of patients with type III tumors were treated with gastrectomy with limited esophagectomy while the remaining type III patients were treated with extended esophagectomy.[10] The median esophageal margin length was 2.5 cm for type III tumors compared to 3.5 cm for type I and 4.0 for type II. Margin length of >3.8 cm was found to be an independent predictor of overall survival, similar to the number of positive nodes, AJCC T classification, and poorly differentiated tumors. Margins were not predictive of survival in patients with greater than 6 positive lymph nodes.[10] Similar studies have supported wide margin resection [11]. However, in a 2015 series from the US Gastric Cancer Collaborative, the importance of gastric cancer resection margins was re-examined. Proximal margin length was not found to be predictive of increased local recurrence or overall survival. Further, while R1 resection was associated with increased nodal disease burden, it was not found to be associated with increased local recurrence or decreased overall survival. The recommendations of this series were to limit wide margin resection, particularly if it required extended esophageal resection [12].

Kneuert et al. evaluated the type of surgery for Siewert's type II and III tumors in relation to overall survival [7]. The majority of patients in this study presented with locally advanced disease and were treated neoadjuvantly with chemoradiation. Seventy-five percent of patients with type II tumors were treated with esophagectomy, while 88% of patients with type III tumors were treated with gastrectomy. The type of surgery was not found to be predictive of R0 resection rates or overall survival. The only factor found to be associated with improved overall survival was extended lymphadenectomy. Similar results were previously reported by Barbour et al. in 2007 with adequate staging, as defined by  $\geq 15$  lymph nodes, in T2 or greater tumors to be an independent prognostic factor of improved survival [13].

Siewert's type II/III tumors have been shown to have a better response to neoadjuvant chemoradiation with increased rates of complete pathologic response. However, while there was no individual differences between the classifications, when Siewert's type I tumors are compared to II/III tumors, type II/III tumors are found to have an overall increased rate of local recurrence [14]. Patterns of recurrence have been shown to differ between the groups with disseminated recurrence being the most common for Siewert's type III lesions [15].

In this case we utilized a minimally invasive approach with both laparoscopic and robotic resection. Several studies have demonstrated the safety and oncologic efficacy of minimally invasive resection for advanced gastric cancer [16-18]. In a recent meta-analysis comparing open versus minimally invasive laparoscopic total gastrectomy, minimally invasive total gastrectomy was found to have equivalent lymph node yield and mortality with shorter time to first flatus, decreased hospital stay, and fewer complications [16]. The data for robotic gastric cancer resections is still evolving. However, it has been shown to be equivalent to laparoscopic resections with increased operative time but lower intraoperative blood loss and improved lymph node retrieval [19].

## Conclusion

In conclusion, the current literature would support that the type of surgery selected is not an independent predictor of outcome. But rather, the adequacy of oncologic resection focusing on R0 resection and, more importantly, adequate lymphadenectomy appear to improve

patient outcome. As this case demonstrates, despite best surgical management including negative-margin resection and extended lymphadenectomy, gastroesophageal junction adenocarcinoma remains an aggressive disease with increased rates of local and distant recurrence.

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