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Case 1

A 55-year-old female patient presented with dysphagia. Upper endoscopy revealed an exophytic mass at mid esophagus as shown in Figure 1. Endoscopic mucosal biopsy was performed and confirmed as squamous cell carcinoma. Endoscopically, the lesion was diagnosed as esophageal cancer. EUS was scheduled for staging of this esophageal cancer. It demonstrated a circumferential hypoechoic lesion invading through serosa as shown in Figure 2. This was consistent with esophageal cancer.

Diagnosis:

Esophageal cancer

Discussion:

Accurate pre-treatment staging of esophageal cancer is crucial as it helps to avoid an unnecessary surgery. EUS is the investigation of choice for this staging.

A recent large retrospective study reported an overall accuracy rate of EUS in T staging at 74% with a sensitivity rate for T1, T2, and T3 at 82%, 43% and 83%, respectively[1]. This demonstrated that EUS is still an unsatisfactory tool for staging of esophageal cancer particularly in T2. Smith BR, *et al.* retrospectively compared accuracy of EUS based on surgical pathology in patients undergone minimally invasive esophagectomy; from 71 patients, an overall accuracy rate of EUS for pretreatment T staging was 72% with an accuracy rate of T0, T1, T2 and T3 at 80%, 75%,

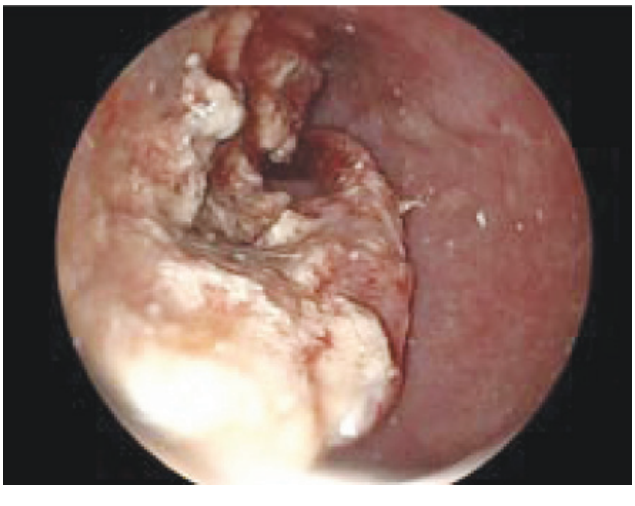

Figure 1. Demonstrated an exophytic mass in the esophagus. This was consistent with esophageal cancer.

Figure 2. Demonstrated an hypoechoic lesion surrounding esophagus. The lesion invaded through serosa and was endosonographically staged as T4. The procedure was performed by a radial probe (Fuji, SU-8000, Japan).

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39% and 88% respectively[2]. Based on results from these studies, advanced staged esophageal cancer by EUS was likely to be accurate and precluded surgery from the only curative treatment.

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CASE 2

A 46-year-old male patient presented with an incidental MRI finding of a 3-cm lobulated mass with central necrosis in 2nd to 3rd part duodenum. He has no significant past medical and surgical history. A sideviewed duodenoscopy showed a sub-epithelial ampulla mass as shown in Figure 3. EUS was scheduled for an evaluation of the mass. EUS was performed with a Convex Scan Ultrasonic Video Endoscope EG-530UT2 (FUJIFILM Corporation, Tokyo, Japan) and Ultrasound Processor SU-8000 (FUJIFILM Corporation, Tokyo, Japan). It revealed a hypoechoic mass measuring about 22 × 22 mm in diameter as shown in Figure 4. The mass originated from a 4th layer of intestinal wall and was suggestive as a stromal tumor. EUS-FNA was performed with a 22 G needle and pathology with c-KIT (CD117) confirmed as gastrointestinal stromal tumor (GIST).

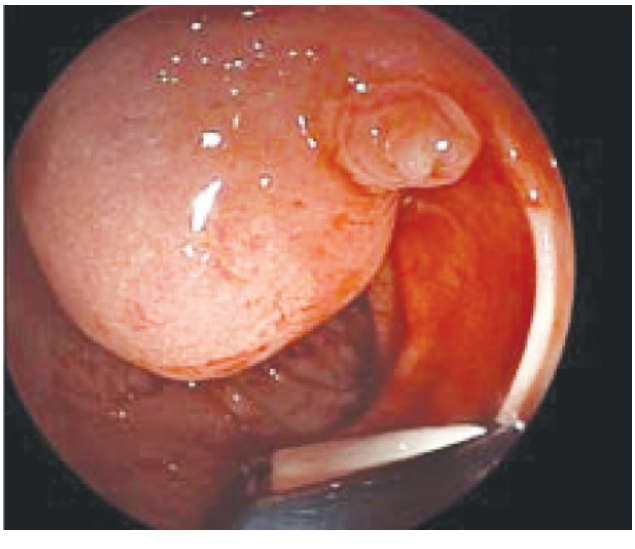

Figure 3. Demonstrated a peri-ampultary sub-epithetial tumor.

Diagnosis:

Periampullary GIST

Discussion:

Periampullary tumor is an uncommon tumor[1]. Majority of tumors are either adenoma or adenocarcinoma[2]. GIST has been rarely reported as a cause of peri-ampullary tumor[3]. It can present as a sporadic case or part of neurofibromatosis syndrome[4]. The definite treatment is a surgical resection. Preoperative diagnosis and staging is crucial as this can determine type

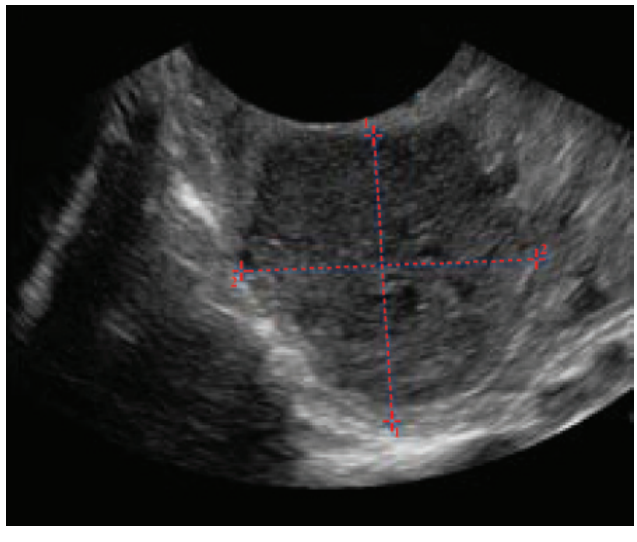

Figure 4. Demonstrated a hypoechoic mass originating from 4th layer of duodenal wall. This was suggestive for gastrointestinal tumor (GIST). This picture was obtained by a Convex Scan Ultrasonic Video Endoscope EG-530UT2 (FUJIFILM Corporation, Tokyo, Japan) and Ultrasound Processor SU-8000 (FUJIFILM Corporation, Tokyo, Japan).

and invasiveness of surgery. EUS is a proven critical diagnostic test that can provide the preoperative diagnosis as shown in this case. It can endosonographically delineate origin of the lesion and then suggest the most likely diagnosis. Surgical removal methods for such tumors included Whipple's operation, duodenectomy[5,6]. In some advanced case, preoperative use of Imatnib changed an unresectable tumor to be a resectable one[7]. However, in this case, the tumor was considered resectable, therefore the patient was proceeded directly to surgery without need of neoadjuvant chemotherapy.

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CASE 3

A 55-year-old female patient presented with abdominal distension. CT scan revealed a pelvic mass with ascites. Exploratory laparotomy revealed a pelvic mass which was later removed. Pathology was consistent with neuroendocrine tumor. Subsequently, a colonoscopy was scheduled for an evaluation of possible invasion of the disease. A rectal sub-epithelial mass was identified as shown in Figure 5. Biopsy showed neuroendocrine tumor. EUS was then scheduled for an evaluation of the lesion in the rectum. The

Figure 5. Demonstrated a rectal sub-epithelial mass with a post-biopsy ulcer on the surface of lesion.

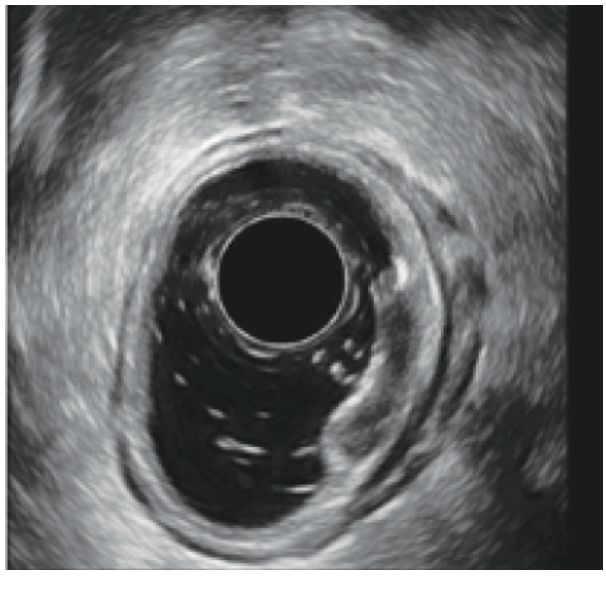

Figure 6. Demonstrated a homogeneous hypoechoic mass originating from the 2nd wall layer of rectum. The procedure was performed by a radial scan Ultrasonic Video Endoscope EG-530UR2 (FUJIFILM Corporation, Tokyo, Japan) and Ultrasound Processor SU-8000 (FUJIFILM Corporation, Tokyo, Japan).

procedure was performed with a radial Scan Ultrasonic Video Endoscope EG-530UR2 (FUJIFILM Corporation, Tokyo, Japan) and Ultrasound Processor SU-8000 (FUJIFILM Corporation, Tokyo, Japan). It revealed a homogeneous hypoechoic mass measuring about 20 × 6 mm in diameter in rectum as shown in Figure 6. The mass originated from 2nd layer of rectal wall. This was consistent with neuroendocrine tumor which was proven from the previous biopsy.

Diagnosis:

Rectal neuroendocrine tumor

Discussion:

Sub-epithelial lesions in the rectum can develop from various diseases. Neuroendocrine tumor is one of those. Preoperative non-invasive diagnosis is crucial as it can determine for the specific treatment. Mucosal biopsy with jumbo forceps can occasionally provide the definite diagnosis. A recent retrospective studies from 6 referral centers recruited 129 patients with sub-epithelial lesions, all underwent EUS with jumbo biopsy forceps, a definite diagnosis was made by jumbo biopsy forceps use in 76 from 129 patients (58.9%). Forty-five of 129 patients (34.9%) had significant bleeding requiring some form of endoscopic hemostasis[1]. EUS is considered an investigation of choice to delineate rectal wall layers and it can guide the most likely diagnosis of sub-epithelial lesions with low complication rate[2]. In this case, the patient already had a mucosal biopsy which showed neuroendocrine tumor. Therefore, EUS was then only a confirmatory test to confirm the presence of neuroendocrine tumor.

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