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**Submucosal esophageal abscess evolving into intramural submucosal dissection: a case report and literature review**

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**Abstract**

**BACKGROUND**

Here we report a rare case of submucosal esophageal abscess evolving into intramural submucosal dissection.

**CASE SUMMARY**

An 80-year old woman was admitted to our emergency department with a chief complaint of dysphagia and fever. Laboratory tests showed mild leukocytosis and elevated C-reactive protein level. Computed tomography showed thickening of the esophageal wall. Upper endoscopy showed a laceration of the esophageal mucosa and a submucosal mass. Spontaneous drainage occurred, we could see purulent exudate from the crevasse. We closed the laceration with endoscopic clips. The patient did not remember swallowing a foreign body, however, she ate crabs before the symptoms occurred. We prescribed the patient with antibiotic and the symptoms were relieved gradually. 2 mo later, upper endoscopy showed that the laceration was healed and the submucosal abscess disappeared, however, intramural esophageal dissection (IED) was formed. We performed endoscopic incision of the septum using Dual-knife effectively.

**CONCLUSION**

In conclusion, we are the first to report the case of esophageal submucosal abscess evolving into IED, the significance of this case lies in clear presentation of the evolution process between two disorders. Besides, we recommend that endoscopic incision considered as one of the routine therapeutic modalities of IED.

## **INTRODUCTION**

Esophageal submucosal abscess is an extremely rare disease caused by mucosal injury to the esophagus but without transmural perforation, which has been reported in very few cases so far.<sup>[1-5]</sup> Intramural esophageal dissection (IED) is also a rare disorder characterized by extensive laceration between the mucosal and submucosal layers of the esophageal wall. Herein, we report a rare case of submucosal esophageal abscess evolving into intramural submucosal dissection.

## **CASE PRESENTATION**

### ***Chief complaints***

An 80-year old woman was admitted to our emergency department with a chief complaint of dysphagia and fever for 14 days.

### ***History of present illness***

She also had sore throat.

### ***History of past illness***

She had hypertension and type 2 diabetes.

### ***Personal and family history***

None

### ***Physical examination***

On examination, the patient was febrile and tachycardiac.

#### *Laboratory examinations*

Laboratory tests<sup>3</sup> showed mild leukocytosis and elevated C-reactive protein level.

#### *Imaging examinations*

Chest computed tomography showed eccentric thickening of the esophageal wall.

### **FINAL DIAGNOSIS**

Esophageal carcinoma was our first consideration. To confirm this diagnosis, we performed upper endoscopy, which showed a laceration of the esophageal mucosa 30 cm distal to the incisors and a submucosal mass right above the esophagogastric junction. Spontaneous drainage of the submucosal mass occurred, and we could see purulent exudate from the crevasse, so the diagnosis of “esophageal submucosal abscess” was made.

### **TREATMENT**

Then we closed the laceration above the mass with metal endoscopic clips (Figure 1). The patient did not remember swallowing any foreign bodies, but she had eaten crabs before the symptoms occurred, so we presumed that she might have unintentionally swallowed some crab shell, which caused the laceration of the esophagus. We performed contrast-enhanced chest computed tomography after the endoscopy and found that the thickening of the esophageal wall was worse than before. We prescribed the patient a broad-spectrum antibiotic (sulperazone) and the dysphagia and fever were relieved gradually.

### **OUTCOME AND FOLLOW-UP**

Two months later, we reexamined chest computed tomography and upper endoscopy. Computed tomography showed a double-barreled esophagus without thickening of the

esophageal wall (Figure 2). Upper endoscopy showed that the laceration had healed and the submucosal abscess had disappeared. However, an intramural esophageal dissection (IED) formed. Endoscopic incision of the septum between 2 Lumens was performed using a dual-knife process (Olympus, Tokyo, KD650L) with diathermy (Figure 3). An esophagogram taken 3 days after endoscopic incision showed that the barium could pass smoothly through the esophagus and the dissection had disappeared (Figure 4).

## **DISCUSSION**

Esophageal submucosal abscess is an extremely rare disease caused by mucosal injury to the esophagus but without transmural perforation, which has been reported in very few cases so far.<sup>[1-5]</sup> They are often caused by tuberculosis, fish bones, piriform sinus fistulae, and peritonsillar abscesses. In our case, the patient had unintentionally swallowed a foreign body that injured the esophageal mucosa and caused subsequent submucosal abscess.

In the present patient, the diagnoses of esophageal submucosal abscess and IED were both made by endoscopy and computed tomography. This case is quite unique in that spontaneous rupture of the abscess occurred, which allowed sufficient drainage. Although the submucosal abscess was cured with broad-spectrum antibiotics, an intramural dissection formed after 2 mo. This case is the first to allow any research team to witness the entire development of the condition as it transitioned from esophageal submucosal abscess to IED. This rare type of IED was here confirmed to be the result of a submucosal abscess, establishing that esophageal submucosal abscess is one of the etiologies of IED.

<sup>2</sup> Intramural esophageal dissection (IED) is a rare disorder characterized by extensive laceration between the mucosal and submucosal layers of the esophageal wall. It was first reported by Marks and Keet in 1968.<sup>[6]</sup> The pathogenesis of IED remains unclear,

however[Accdon1] . Two theories <sup>1</sup> have been proposed. The first theory postulates that intramural dissection from submucosal bleeding secondarily tears the mucosa, decompressing the hematoma into the esophageal lumen.<sup>[7]</sup> The second presumes that the mucosa tears first, with secondary dissection of the submucosa.<sup>[8]</sup> In rare cases,<sup>[9]</sup> <sup>6</sup> IED is considered to be the result of an intramural abscess caused by foreign body, as in our patient.

Most teams choose to treat IED with conservative management because of its good prognosis. It is recommended that the patient's regimen should include parenteral nutrition and fasting,<sup>[10]</sup> and reports state that symptoms usually resolve after several days. Surgical treatment is rarely necessary.<sup>[9]</sup> In our case, the patient was senile and had diabetes mellitus, which rendered her susceptible to various infections. Thus, to avoid food retention and secondary infection, we performed endoscopic incision of the septum with a needle-knife. This endoscopic procedure has been proven simple and effective in several cases<sup>[11-13]</sup> . In rare cases, IED has been treated with self-expandable metal stents and endoscopic dilation.<sup>[14-15]</sup> Given its safety and effectiveness, we highly recommend endoscopic incision as a routine therapeutic modality for IED.

## **CONCLUSION**

In conclusion, we are the first to report a case of esophageal submucosal abscess developing into intramural dissection. The significance of this case lies in clear presentation of the evolutionary transition between two disorders. We found endoscopic incision of the septum to be a viable therapeutic option for IED.

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SIMILARITY INDEX

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