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### Intramucosal esophageal dissection after esophagogastroduodenoscopy: two case reports

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#### ABSTRACT

**Introduction:** Intramucosal esophageal dissection (IED) is an uncommon disorder, described as the separation of the mucosa and/or submucosa from deeper muscular layers due to abrupt increase in intraesophageal pressure.

**Case presentation:** The first case is that of a 52 – years old female patient who underwent an esophagogastroduodenoscopy for control. After the procedure an extensive subcutaneous emphysema of the neck and a massive pneumomediastinum occurred. The patient was successfully treated with a conservative approach.

The second case is that of a 43-years old male patient affected by Down's Syndrome, who underwent an esophagogastroduodenoscopy because of persisting dysphagia. The endoscopic showed the presence of a serrated stricture at 20 centimeters from dental arcade. After the procedure he fell dysphagia. A neck-chest TC-SCAN showed superior and posterior pneumomediastinum and subcutaneous emphysema, without signs of mediastinitis. The patient was successfully treated with conservative approach. After a few days, a new chest CT-SCAN showed the presence of an anomalous right subclavian artery arising from the descending part of the aortic arch, causing dysphagia lusoria.

**Discussion:** The causes of IED include iatrogenic instrumentation, hemostatic applications, mucosal injuries from ingestion of sharp foreign body, or spontaneous. A fluoroscopic upper gastrointestinal series or upper gastrointestinal endoscopy has been widely used to diagnose IED. CT and magnetic resonance are useful for differential diagnosis. In the absence of signs of mediastinitis management is conservative.

**Conclusion:** CT SCAN should be the first exam to perform in the suspicion of IED. The first line treatment should be conservative. In case of the onset of complications and in patients who are refractory to conservative management, endoscopic or surgical treatment are indicated.

**Keywords:** intramucosal esophageal dissection; pneumomediastinum; subcutaneous emphysema; mediastinitis; esophagogastroduodenoscopy

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## Introduction

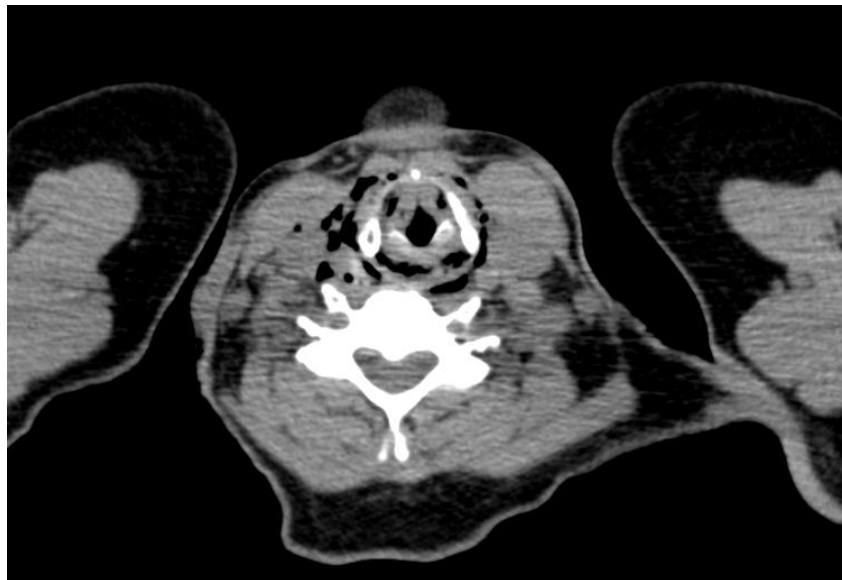
This work has been reported in line with the SCARE criteria.<sup>[1]</sup>

Intramucosal esophageal dissection [IED] is an uncommon disorder, pathophysiologically described as the separation of the mucosa and/or submucosa from deeper muscular layers due to abrupt increase in intraesophageal pressure.<sup>[2]</sup> The most common causes of IED are iatrogenic, which include esophageal instrumentation and hemostatic applications, as well as noniatrogenic causes [foreign body ingestion or impaction].<sup>[3,4]</sup> The etiology of spontaneous IED remains uncertain and

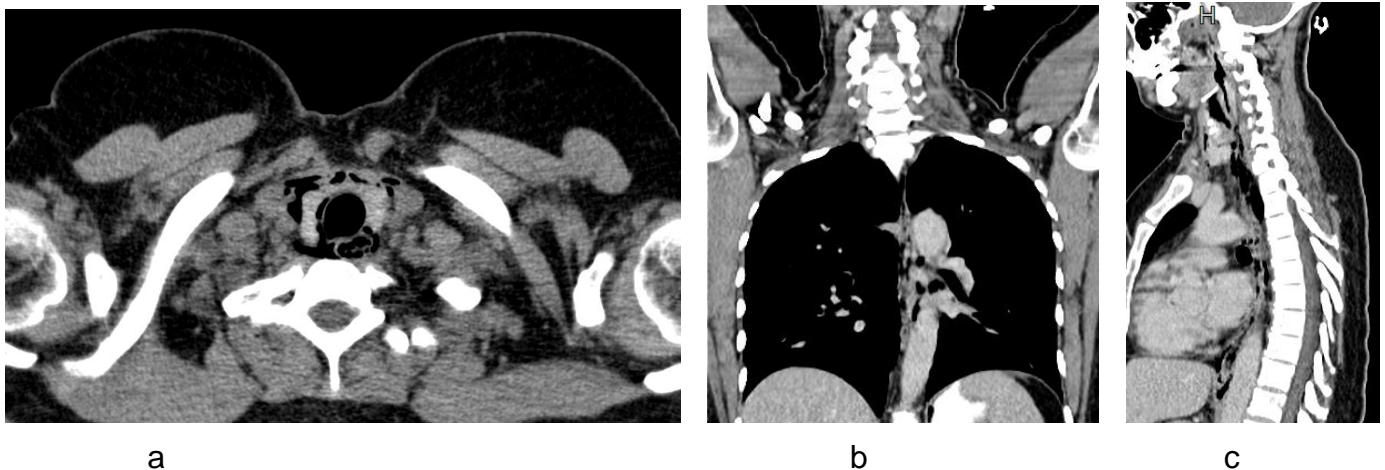
conservative management is typically thought to be adequate in uncomplicated cases.<sup>[5]</sup>

The symptoms of IED are dominated by dysphagia and/or odynophagia, chest or back pain, and nausea.<sup>[6]</sup> The review of the literature showed that it is rare to find circumferential intramural dissection that involves all the esophagus on radiology. Moreover, the patients that have developed an esophageal perforation are minimal.

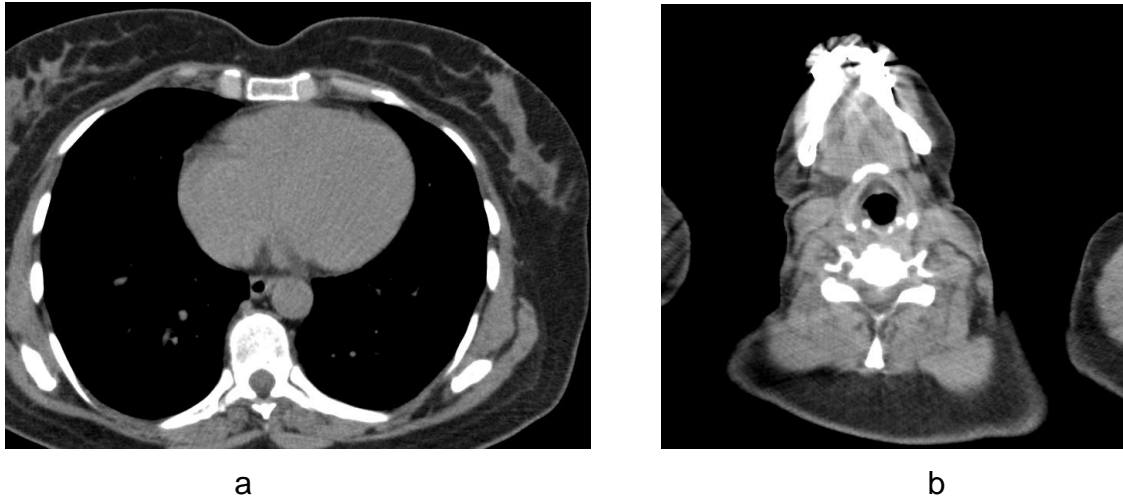
We report the case of two patients with an iatrogenic IED occurred after an esophagogastroscopy and treated with a conservative approach.



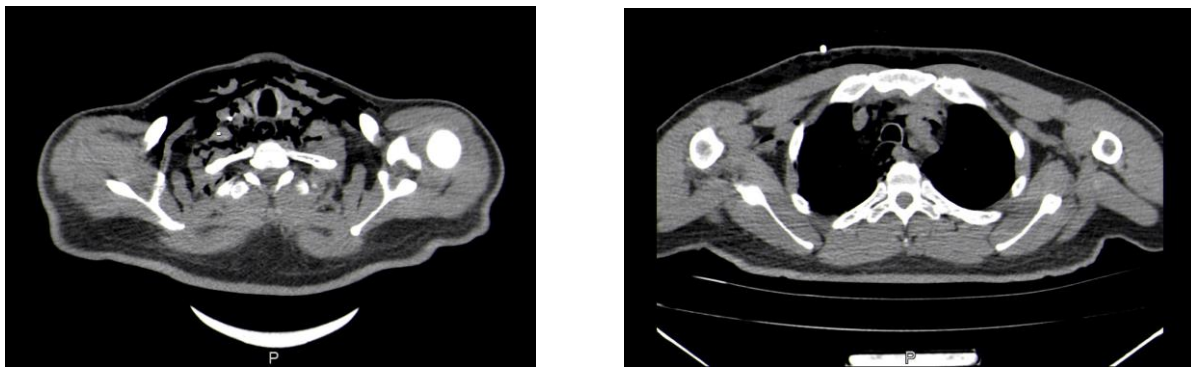
**Figure 1: The cross section of the CT SCAN showed the subcutaneous emphysema of the neck.**



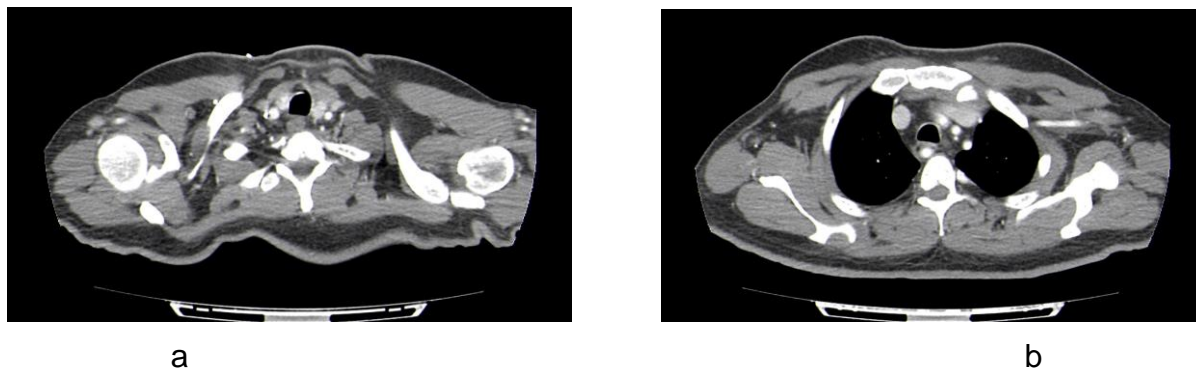
**Figure 2: The CT SCAN demonstrated a massive pneumomediastinum. 2a: cross section; 2b coronal section, 2c sagittal section.**



**Figure 3:** The CT-SCAN after a week demonstrated a complete resolution of pneumomediastinum (3a) and subcutaneous emphysema of the neck (3b).



**Figure 4:** The first CT-Scan showed subcutaneous emphysema (4°) and pneumomediastinum



**Figure 5:** The CT\_SCAN with i.v. contrast medium showed the complete resolution of the subcutaneous emphysema and of the pneumomediastinum (5a, 5b) and the presence of an anomalous right subclavian artery causing *dysphagia lusoria* (5a).

### Presentation of case

The first case is that of a 52 – years old female patient born in India acceded at our endoscopic unit and underwent an esophagogastro-duodenoscopy for control. After the procedure the patient fell sore throat and subcutaneous emphysema of the neck. So a CT-SCAN with

intravenous and oral contrast medium was performed and it demonstrated extensive subcutaneous emphysema of the neck, a massive pneumomediastinum with air bubbles in the anterior mediastinum and mostly in periesophageal site along the whole length of the esophagus. Many abdominal air bubbles

were in the esophago-gastric region. Esophageal and gastric walls were thickened, with some air bubbles within them. No spillage of contrast medium was found.

The patient was admitted in our hospital department and treated with conservative management, with nutritional intravenous support and broad-spectrum antibiotics.

After nine days a new CT-SCAN with oral water-soluble contrast medium was performed and it showed a complete resolution of the pneumomediastinum and of the subcutaneous emphysema of the neck, without any extraluminal spillage of the contrast medium.

We started refeeding the patient successfully and after a few days she was discharged.

The second case is that of a 43-years old male patient affected by Down's Syndrome, who underwent an esopagogastroduodenoscopy in our peripheral hospital because of persisting dysphagia. The endoscopic examination was limited to the cervical oesophagus because of the presence of a serrated stricture, without features of neoplasia, at 20 centimeters from dental arcade. There was a wide erosion of the mucosa cranial to the stricture, while the mucosa through the stricture appeared soft and edematous at touch with endoscopic grasp. After the procedure he fell dysphagia, so he was transferred to our main hospital and underwent a neck-chest TC-SCAN without contrast medium, that showed superior and posterior pneumomediastinum extended to the right diaphragmatic pillar and subcutaneous emphysema. There were no signs of mediastinitis, so the patient was treated with conservative approach, total parenteral nutrition and antibiotic therapy. After two weeks an X-ray of the esophagus with oral contrast medium was performed and it demonstrated a regular transit without any extraluminal spillage of the contrast medium. After a few days a chest CT-SCAN with i.v. contrast medium showed the presence of an anomalous right subclavian artery arising from the descending part of the aortic arch and running between the vertebral body and the

esophagus, thus causing extrinsic compression of the esophagus [dysphagia lusoria], while the pneumomediastinum and the subcutaneous emphysema were completely solved. We started refeeding the patient with semi-liquid diet and he remained asymptomatic, so after a few days he was discharged.

## Discussion

IED was first described in 1968 by Marks and Keet. [7] The causes of IED include iatrogenic instrumentation [routine endoscopy and transesophageal echocardiography], hemostatic applications [visceral sclerotherapy and argon-plasma coagulation], mucosal injuries from ingestion of sharp foreign body, or spontaneous. [6,14]

Dissection is initiated by a traumatic break in the mucosa; a subsequent increase in intraesophageal pressure then potentiates a full separation of mucosa and/or submucosa from the deeper muscular layers. In spontaneous IED, a primary bleed within the submucosa may be responsible for the separation of the layers, which explains why anticoagulation remains a risk factor. [2] Spontaneous IED usually occurs in elderly women [8], in those who have bleeding tendency due to underlying liver cirrhosis [9] and in patients on anticoagulant agent or who have an inherent coagulopathy. [10,13]

Traditionally, a fluoroscopic upper gastrointestinal series or upper gastrointestinal endoscopy has been widely used to diagnose IED [11]. CT and magnetic resonance are useful for differential diagnosis of IED compared with other causes of chest pain. [10,12] The CT-SCAN is, in our opinion, the first investigation to be performed in the event of a clinical suspicion of this condition. It has to answer to the following points: presence of circumferential intramural esophageal dissection, extension of the IED along the longitudinal axis of the esophagus, presence of micro-perforations or relatively smaller holes in the esophageal wall, presence of signs of mediastinitis, differential diagnosis with esophageal rupture or aortic dissection. IED can be considered to be a mild esophageal

perforation, and in the absence of signs of mediastinitis [fever, leukocytosis and sepsis] management is conservative, including nothing by mouth, fluid resuscitation, nutritional support or administration of broad-spectrum antibiotics.<sup>[6,12]</sup> Endoscopic intervention including incision of the mucosal septum, balloon dilatation and metal stent insertion<sup>[9]</sup> have been considered as alternative therapies. Surgery may be performed on patients who are refractory to conservative management, or on those complications that include esophageal perforation, hemorrhage, or abscess formation.<sup>[12]</sup> In our first case the CT didn't show any spillage of the oral contrast medium, so we excluded an esophageal rupture and we chose a conservative management with a good outcome for the patient. In our second case the esophageal rupture was excluded by the X-ray of the esophagus and the CT-SCAN didn't show signs of mediastinitis, so we opted for conservative treatment successfully.

## Conclusion

IED is a rare pathologic condition that can clinically and radiologically mimic other worse conditions like esophageal rupture and aortic dissection. CT SCAN with oral and intravenous contrast medium should be the first exam to perform in the suspicion of this condition. The first line treatment should be conservative. In case of the onset of complications and in patients who are refractory to conservative management, endoscopic or surgical treatment are indicated.

**Consent:** Author obtained the consent for publication from the patient.

**Conflict of Interest:** None

## References

- [1]. Agha R.A., Borrelli M.R., Farwana R., Koshy K., Fowler A., Orgill D.P., SCARE Group The PROCESS 2018 statement: updating consensus preferred reporting of case series in surgery [PROCESS] guidelines. *Int. J. Surg.* 2018;60:279–282.
- [2]. Phan GQ, Heitmiller RF. Intramural esophageal dissection. *Ann Thorac Surg.* 1997;63:1785-1786.

- [3]. Shay S, Berendson RA, Johnson LF. Esophageal hematoma. Four new cases, a review, and a proposed etiology. *Dig Sci.* 1981;26:1019-1024.
- [4]. El-Chami MF, Martin RP, Lerakis S. Esophageal dissection complicating transesophageal echocardiogram – the lesson to be learned: do not force the issue. *J Am Soc Echocardiogr.* 2006;19:597e5-e7.
- [5]. Eun Kyung Khil, Heon Lee, Keun Her. Spontaneous intramural full-length dissection of esophagus treated with surgical intervention: multidetector CT diagnosis with multiplanar reformations and virtual endoscopic display. *Korean J Radiol* 2014;15[1]:173-177.
- [6]. Soulellis CA, Hilzenrat N, Levental M. Intramucosal Esophageal Dissection Leading to Esophageal Perforation: Case Report and Review of the Literature. *Gastroenterology & Hepatology* 2008;4[5]:362-365.
- [7]. Marks IJ, Keet AD. Intraluminal rupture of the esophagus. *Br Med J.* 1968; 3:536-537.
- [8]. Krishnama MS, Ramadan MF, Curtisa J. Intramural Esophageal dissection: CT imaging features. *Eur J Radiol [extra]* 2005;56:17-19.
- [9]. Kim SH, Lee SO. Circumferential intramural esophageal dissection successfully treated by endoscopic procedure and metal stent insertion. *J Gastroenterol* 2005; 40:1065-1069.
- [10]. Young CA, Menias CO, Bhalla S, Prasad SR. CT features of esophageal emergencies. *Radiographics* 2008;28:1541-1553.
- [11]. Hsu CC, Changchien CS. Endoscopic and radiological features of intramural esophageal dissection. *Endoscopy* 2001;33:379-381.
- [12]. Chiu HH, Lee SY. Intramural dissection of the esophagus endoscopic findings. *J Intern Med Taiwan* 2006;17:302-305.
- [13]. Kamphuis A, Baur C, Freling N. Intramural hematoma of esophagus: appearance on magnetic resonance imaging. *Magn Reson Imaging.* 1995;13:1037-1042
- [14]. Salomez D, Ponette E, Van-Steenberden W. Intramural hematoma of the esophagus after variceal sclerotherapy. *Endoscopy.* 1991;23:299-301.

