

Intramural Esophageal Dissection Associated with Esophageal Perforation

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ABSTRACT

Intramural esophageal dissection (IED) is a rare clinical entity involving a mucosal injury and creation of a true and false lumen within the esophagus. We report on a case of IED caused by repeated vomiting due to a small bowel obstruction associated with a small amount of pneumomediastinum on CT. IED has traditionally been believed not to be associated with esophageal perforation. Our case adds to the few reported instances where IED has been associated with extraluminal air leakage, the mildest form of esophageal perforation and demonstrates imaging not previously published in the radiology literature. Our case was successfully managed conservatively.

CASE

A 76-year-old male presented to the Emergency Room with a one-day history of abdominal pain, distention and multiple episodes of vomiting. His past medical history was significant for a small bowel obstruction that was managed non-conservatively prior to episodes of small bowel obstruction. On physical examination there was abdominal distention and tenderness to palpation. The patient denied chest pain. A CT scan of the abdomen and pelvis confirmed the diagnosis of a small bowel obstruction. Also noted was submucosal air in the distal esophagus on the initial images of the study (Fig. 1). A CT scan of the chest was obtained both to assess the full extent of involvement and to exclude pneumomediastinum due to esophageal perforation. The CT scan of the chest revealed extensive submucosal air dissecting circumferentially around the lumen of the esophagus extending along the length of the esophagus but not extending past the gastroesophageal junction (Fig. 2, 3). The appearances were

Figure 1. Axial CT with IV contrast showing circumferential submucosal air in the esophagus.



Figure 2 A. Circumferential submucosal air in the mid esophagus creating a true and false lumen diagnostic of an IED. Trace extraluminal air adjacent to the esophagus and around the aorta (arrows).

2 B. IED terminating at the gastroesophageal junction.

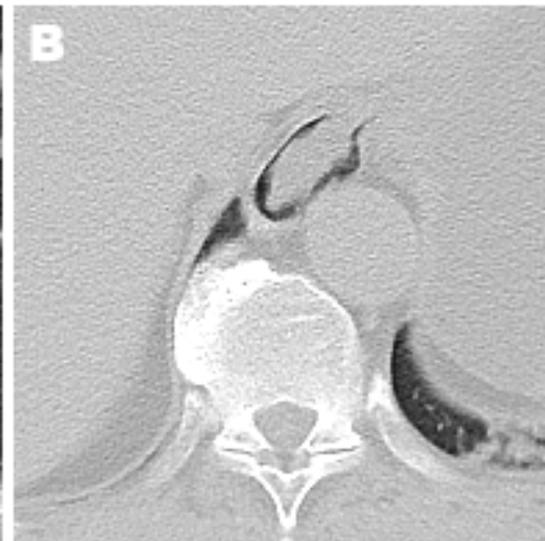
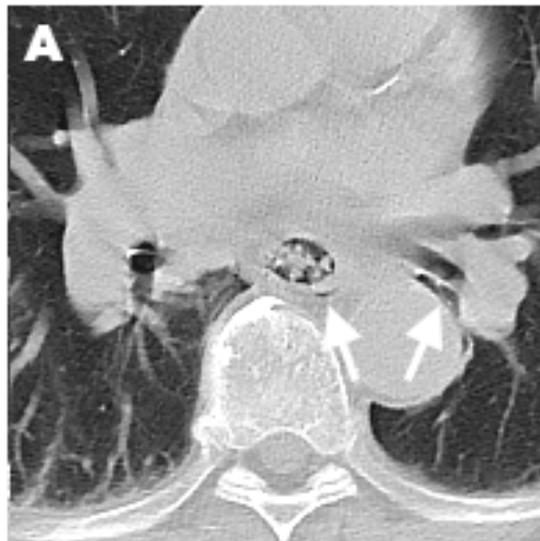


Figure 3. Curved coronal (A) and sagittal (B) CT reformat demonstrating the circumferential long segment IED.

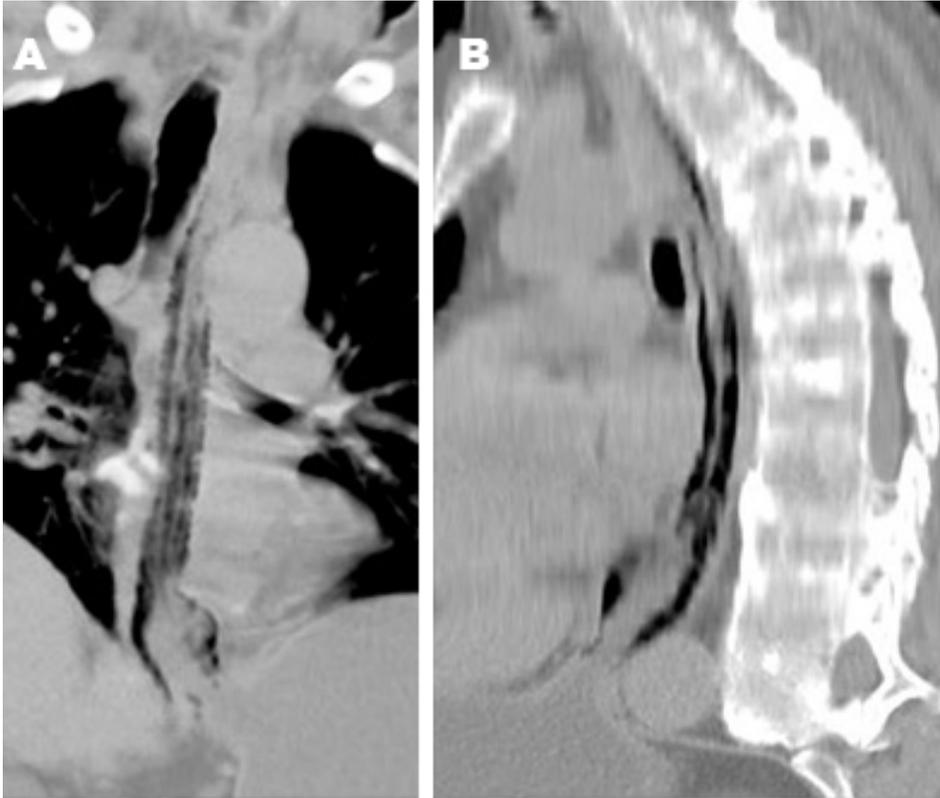
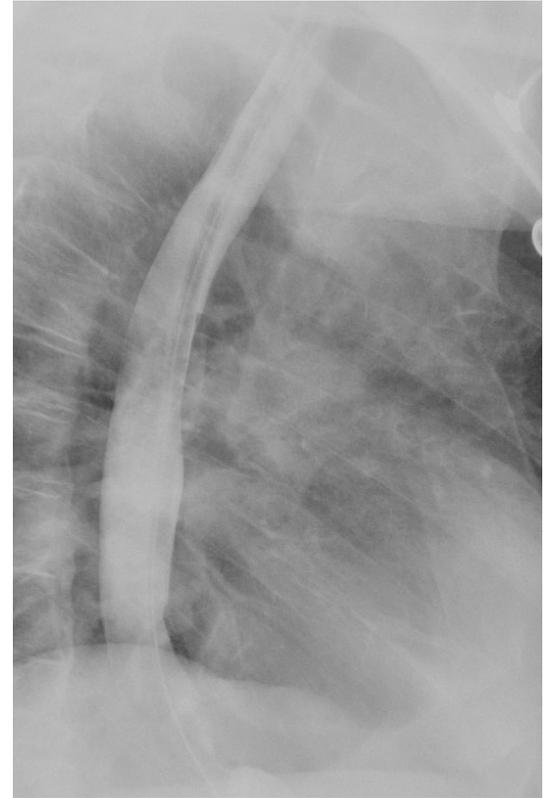


Figure 4. Barium esophagography demonstrating no contrast extravasation from the esophagus.



diagnostic of an intramural esophageal dissection (IED). Also present was minimal pneumomediastinum (Fig. 2). The patient was admitted to the hospital and managed conservatively – nothing by mouth and nasogastric tube decompression. He had a negative barium esophagogram on hospital day #2 (Fig. 4) and was able to tolerate an oral diet. He was discharged without complications.

DISCUSSION

Intramural esophageal dissection (IED) was originally described as intramural rupture of the esophagus by Marks and Keet in 1968.¹ It has also been referred to as intramucosal esophageal dissection, esophageal apoplexy, and submucosal hematoma.² It is a rare clinical entity characterized by a mucosal injury and creation of a true and false lumen in the esophagus, conceptually similar to an aortic dissection. Traditionally described in elderly women in their seventh or eighth decades on anticoagulation or with a coagulopathy, it is now accepted that IED can occur in a wide variety of patients such as the previously healthy patient in this case report. It is thought that IED either results from a mucosal tear that leads to dissection of the submucosa or from a submucosal dissection (commonly from submucosal bleeding) that leads to a mucosal tear.³ IED has also been reported as a complication of endoscopy.³ IED is usually managed

conservatively with pain control, nothing by mouth, and IV hydration with most patients being able to return to oral intake within 2 to 3 days.⁴

IED is usually thought of as a contained injury without extraluminal esophageal perforation. A meta-analysis of IED done in 1997 found no reported cases progressing to complete esophageal perforation.⁴ However a case report in 2008 reported extraluminal perforation consisting of air leakage during endoscopically diagnosed IED.⁵ The small amount of pneumomediastinum observed in our case adds support to the few existing reports of IED associated with extraluminal air leakage, considered to be the mildest form of esophageal perforation.⁶ CT is likely more sensitive for trace amounts of pneumomediastinum than contrast esophagography that has been the traditionally employed radiologic method of diagnosing IED. So it is possible that previously reported cases that did not use CT were only able to exclude more serious esophageal perforations that would have involved frank leakage of contrast material or large amounts of pneumomediastinum.

We hypothesize that with advances in CT technology, including volumetric data acquisition allowing for multi dimensional reformatting, coupled with the increased utilization of CT scanners in the Emergency Room, CT will likely have an important role in the diagnosis and management of IED while simultaneously assessing for more serious

conditions like esophageal rupture and aortic dissection. In our case, based on the lack of significant pneumomediastinum on CT and the negative barium study, conservative management was successfully pursued.

CONCLUSION

Intramural esophageal dissection (IED) is a rare clinical entity involving a mucosal injury and creation of a true and false lumen within the esophagus. We report on a case of IED caused by repeated vomiting due to a small bowel obstruction associated with a small amount of pneumomediastinum on CT. IED has traditionally been believed not to be associated with esophageal perforation. Our case adds to the few reported instances where IED has been associated with extraluminal air leakage, the mildest form of esophageal perforation and demonstrates imaging not previously published in the radiology literature. Our case was successfully managed conservatively.

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