# Causes and management of Esophageal Hematoma

**Abstract:**

Intramural hematoma of the esophagus (IHE) or dissecting intramural hematoma is a relatively unusual complication of acute mucosal and submucosal lesions that results in a blood accumulation between the layers of the esophagus. Esophageal hematoma is an uncommon disorder that can occur spontaneously or as a result of trauma, poisoning, or medical intervention. Mallory-Weiss syndrome, Boerhaave syndrome, and IHE are all forms of acute mucosal damage of the esophagus, with IHE being the rarest of the three. In general, esophageal traumatic damage, including traumatic penetration and perforation, is uncommon, making IHE incidence and prevalence difficult to measure. Although most esophageal hematomas are asymptomatic, they can cause significant chest discomfort, dysphagia, and hematemesis. They should be distinguished from Mallory-Weiss tear and Boorhaave's syndrome, which they may closely resemble in such cases. Moreover, cardiovascular and respiratory diseases should be ruled out, therefore further tests such as an electrocardiogram, chest X-ray, and laboratory testing can be useful. The majority of cases resolve with conservative treatments, with symptoms disappearing in 1-2 weeks. NPO, IV fluids, acid suppression, and treatment of coagulopathy are all conservative procedures. In this review, we'll be looking at the disease etiology, epidemiology, diagnosis, and management.

**Introduction:**

Esophageal hematoma is an uncommon disorder that can occur spontaneously or as a result of trauma, poisoning, or medical intervention. In 1968, Marks and Keet described a case of a spontaneous intramural esophageal hematoma. This unusual ailment is now well-documented in the literature. [1-7]

The esophagus is a muscular tube that links the throat to the stomach and is around 25 centimetres long. It is made up of four layers: the innermost mucosal layer, the submucosal layer, the muscle layer, and the adventitial layer. The submucosal layer is the layer underneath the mucosa. Blood arteries, the Meissner nerve plexus, and esophageal glands are all found in the second layer submucosa, which links the mucosal and muscular layers. Intramural hematoma of the esophagus (IHE) or dissecting intramural hematoma is a relatively unusual complication of acute mucosal and submucosal lesions that results in a blood accumulation between the layers of the esophagus. IHE can occur spontaneously or as a result of trauma involving a foreign body, toxic drug consumption, or iatrogenic intervention. Symptoms of IHE might be similar to those of other acute cardiopulmonary disorders. Acute chest discomfort, odynophagia or dysphagia, and hematemesis are the classic trio associated with IHE. IHE is usually a fairly infrequent and harmless illness. With adequate diagnosis and care, the prognosis is typically favourable. [8-11]

Mallory-Weiss syndrome, Boerhaave syndrome, and IHE are all forms of acute mucosal damage of the esophagus, with IHE being the rarest of the three. Traumatic IHE and spontaneous IHE are the two types of IHE. The majority of esophageal instrumentation, such as endoscopic procedures or biopsies, results in traumatic IHEs. Increased intra-abdominal pressure induced by vomiting, coagulation problems, and renal failure are all examples of spontaneous causes. Antiplatelet treatment has also been linked to a higher incidence of IHE. Acute retrosternal pain, odynophagia or dysphagia, hematemesis, and heartburn are all symptoms of IHE, with the clinical triad of acute retrosternal pain, odynophagia or dysphagia, and hematemesis being the most common. Only 35% of IHE patients have all three of these symptoms, whereas 95% have at least one. The level of hematemesis is usually less than that seen in Mallory-Weiss syndrome patients. [9,12-17]

Despite its rarity, esophageal hematoma is a possible cause of acute chest discomfort that is likely to become more prevalent as the use of various antithrombotic drugs increases. Unless further symptoms motivate endoscopic investigation, early diagnosis might be difficult and relies on proper imaging techniques, such as computed tomography. If an endoscopy reveals a big solitary hematoma, aortoesophageal fistula should be ruled out radiologically. Because spontaneous luminal rupture followed by easy mucosal repair is typical, a conservative treatment is usually suitable after the diagnosis is established. [18]

**Etiology:**

Esophageal hematomas are most usually associated with vomiting or retching, but spontaneous hematomas (which occur more frequently in individuals with bleeding problems) can also occur.

The following are conditions that might cause or predispose to esophageal hematoma: Coagulopathies (such as hemophilia, or treatment with anticoagulants or aspirin), a set of instruments (such as with endoscopy or variceal sclerotherapy), Ingestion of a foreign body, Food-induced damage, chest trauma (as a result of abrasive trauma by foodstuffs), Cardioversion and anticoagulation, toxicity ingestion, and endotracheal intubation are all considerations. [1]

The blind insertion of a transesophageal endosonographic probe for valvular heart disease detection, as well as its growing use during cardiothoracic surgery, increases the risk of esophageal hematoma development. According to a recent assessment of the literature on the relationship between transesophageal echocardiography and gastrointestinal bleeding after cardiac surgery, the total proportion of postoperative gastrointestinal symptoms was 11%, and frank upper gastrointestinal haemorrhage was 2.1 percent. Only two patients suffered bleeding issues during a multicenter study of 10419 tests on the safety of transesophageal echocardiography, necessitating cessation of the procedure. To reduce contact pressure and esophageal mucosal injury, most authors propose a careful examination of upper digestive symptoms to rule out underlying esophageal disease, adequate lubrication of the

endosonographic tip, and avoiding fixing the probe in a flexed posture for lengthy durations. [19]

SOH (Spontaneous Intramural Oesophageal Haematoma) is frequently linked to coagulopathies or the use of antiplatelet or anticoagulant medications. This was clear in one case study, in which the patient was on clopidogrel for a long time. She also had uncontrolled hypertension, which, while not typically mentioned as a contributory factor, is included in a number of case reports as part of the previous medical history. Given that the patient had been complaining of chest discomfort for three weeks before to presentation, the haematoma may have developed gradually, probably as a result of a minor capillary leak aggravated by uncontrolled hypertension and antiplatelet medication. Coagulopathies and anticoagulant therapy are the key underlying reasons, and care is generally conservative, as documented for spontaneous haematomas in other regions of the gastrointestinal system. [20]

The esophagus can be injured anywhere along its length. Surgical repair of abdominal perforations is the primary method. Non-operative primary care is suitable for many thoracic and cervical perforations, with surgery as a second-line treatment option. The method used is typically determined by the patient's clinical condition and the existence (or absence) of damage to neighbouring anatomic structures. The trachea is on one side, the spine is on the other, and the carotid sheath is on both sides of the cervical esophagus. Penetrating damage to the cervical esophagus is intimately linked to injury to neighbouring critical tissues in terms of morbidity and death. The cervical esophagus, along the region delimited by the inferior pharyngeal constrictor and the cricopharyngeus muscle, is the most at-risk zone for iatrogenic instrumentation damage in the normal esophagus. [21]

**Epidemiology:**

In general, esophageal traumatic damage, including traumatic penetration and perforation, is uncommon, making IHE incidence and prevalence difficult to measure. Bimodal age distribution is mentioned in one major case series study, with the first peak around 45 years and the second peak at 75 years. IHE has been seen more frequently in older ladies, who are twice as likely to acquire the disorder as males for unexplained reasons. Patients with underlying coagulopathy disorders, such as haemophilia, or inpatients receiving antiplatelet or anticoagulant medications, are more likely to develop both spontaneous and secondary IHE. This acute esophageal disease is common in older people who are taking antiplatelet or anticoagulant medication. Despite the fact that the emergence of this entity is an uncommon event, with the simple availability of contemporary radiological and endoscopic equipment, it is increasingly being detected early. [8,22-24]

Esophageal injuries (EI) are uncommon in general. The usual incidence of EI may be as low as one to two instances per month, even in big trauma centres. Gunshot wounds (approximately 75 percent) and stab wounds are the most prevalent etiologies of penetrating injuries in the United States (about 15 percent ). Many penetrating EIs have been linked to injury to adjacent

structures, including as mediastinal organs (e.g., trachea, heart, lungs). Combined esophageal and tracheal perforations, albeit unusual, can be fatal. If the great vessels are also damaged, the mortality rate is exceedingly significant. Penetrating damage to the esophageal hiatus may result in injury to other vital organs and tissues, including the aorta, heart, liver, spleen, colon, pancreas, and stomach. [21]

**Diagnosis:**

IEHs have been labelled as esophageal apoplexy, intramural haemorrhage, and intramural dissection in the literature. It can happen after an esophagus dilatation operation. Chest discomfort and/or hematemesis are the most typical presenting symptoms. In 35% of people, the triad of chest discomfort, dysphagia, and hematemesis is present. Epigastric discomfort and odynophagia are two more possible symptoms. Due to the generic nature of the symptoms and the rarity of SIEH, other cardiovascular and gastrointestinal disorders are frequently examined before a diagnosis is made. Endoscopic observations of a longitudinal vascular lesion or a mass lesion with luminal compression may also indicate the presence of esophageal varices or cancer. An intraluminal or intramural soft tissue density can be detected with a CT scan. Upper gastrointestinal endoscopy is the preferred examination, which frequently reveals a friable mucosa with a blue longitudinal hematoma, with or without signs of mucosal break. The use of endoscopic ultrasonography to make a diagnosis may also be beneficial. [25-31]

Esophageal lesions such as Boerhaave or Mallory-Weiss syndrome are among the clinical differential diagnoses for intramural hematoma of the esophagus. Boerhaave syndrome is a complete transmural rupture of the distal esophagus caused by a rapid increase in intraesophageal pressure, which can occur as a result of violent vomiting, severe coughing, abrupt trauma, childbirth, straining, or weight lifting. Mackler's triad is a typical clinical presentation that includes vomiting, lower thoracic discomfort, and subcutaneous emphysema. The esophagus is torn and ruptured at the bottom portion of the esophagus. Following a strong cough, retching, or forceful vomiting, Mallory-Weiss syndrome causes a longitudinal mucosal rupture at the gastroesophageal junction or stomach cardia. Hematemesis is the most common symptom. Other digestive pathologies such as perforated peptic ulcer and pancreatitis, cardiac or vascular diseases such as ischemic heart disease, dissection or aneurysm rupture of the thoracic aorta or pulmonary embolism, or pulmonary lesions such as pneumothorax can all be misdiagnosed as intraamural hematoma of the esophagus. [32-36]

Although most esophageal hematomas are asymptomatic, they can cause significant chest discomfort, dysphagia, and hematemesis. They should be distinguished from Mallory-Weiss tear and Boorhaave's syndrome, which they may closely resemble in such cases. The diagnosis is usually made with a barium swallow or a CAT scan, which shows intraluminal filling deficiencies or a double-barrelled appearance of the esophagus. Endoscopy has been the primary examination in recent years, especially when hematemesis is the presenting symptom. Because spontaneous remission is the norm, esophageal hematomas are treated conservatively with a nil-by-mouth diet, intravenous alimentation, and antibiotics in severe instances. Surgery

to remove a hematoma and close an esophagus mucosal rupture is only done in rare cases. [20,38-43]

To rule out cardiovascular and respiratory diseases, further tests such as an electrocardiogram, chest X-ray, and laboratory testing are useful. Historically, barium or Gastrografin swallows were used to detect an intramural esophageal hematoma. Chest CT or MRI scans, upper gastrointestinal endoscopy, and endoscopic ultrasonography are all common procedures nowadays. Historically, the predominant radiological imaging was barium or gastrografin swallow, which showed an extended tubular filling defect with smooth edges or a stripe of contrast filling the dissection area as well as the esophageal lumen (mucosal stripe sign or double-barreled esophagus). The initial quick and noninvasive radiological study of choice is currently a chest CT scan, which can rule out various thoracic diseases. The esophageal wall thickening is generally symmetric or asymmetric, with a well-defined nonenhancing, high-attenuation intramural esophageal mass running down the esophagus wall. [33]

**Management:**

The majority of cases resolve with conservative treatments, with symptoms disappearing in 1-2 weeks. NPO, IV fluids, acid suppression, and treatment of coagulopathy, if present, are all conservative procedures. In stable individuals, a soft diet can be initiated and progressed based on symptom improvement. Surgical intervention is normally reserved for patients who have had a major haemorrhage or have become hemodynamically unstable. [44]

The following is part of medical care management: [1]

- For the first several days, nothing by mouth (NPO) should be applied. Oral intake should be progressively resumed. On days 4-6, a stable patient can begin a soft diet. Most patients are able to swallow within a few days, thus parenteral nutrition is rarely necessary.
- While the patient is NPO, intravenous fluids and a blood transfusion should be given if necessary. To lessen the risk of esophageal ulcers, acid suppression should also be addressed. As needed, antiemetics are prescribed.
- Any coagulation abnormalities should be addressed.
- Sclerosant injections have been used to treat large esophageal hematomas on occasion. Because this condition is so uncommon, a clear indication for its treatment has yet to be established. The rupture of the intramural hematoma is a common complication of endoscopic sclerotherapy.

Recurrent bleeding or difficulties should raise suspicion of hematoma leakage or rupture into the esophageal lumen, as well as an enlarging hematoma, and should be treated as an urgent emergency with airway protection and hemodynamic resuscitation. In the case of recurrent major hematemesis, therapeutic angiography may be required to control bleeding and hematoma growth caused by transarterial embolization. Surgery is typically linked with poor results, although it may be essential if conservative therapy fails or if a patient has large

recurrent bleeding resulting in hemodynamic instability or severe esophageal luminal blockage or perforation. [8]

**Conclusion:**

Esophageal hematoma is an uncommon disorder that can occur spontaneously or as a result of trauma, poisoning, or medical intervention. Being rare it can often be misdiagnosed. Therefore careful approach to the diagnosis should be followed. Some test such as CT, and x-rays can be used to rule out any cardiovascular or respiratory diseases. Endoscopy can be used for diagnosis, however it may also increase the risk of bleeding. The majority of cases resolve with conservative treatments, with symptoms disappearing in 1-2 weeks. NPO, IV fluids, acid suppression, and treatment of coagulopathy are all conservative procedures.



References:


1. Jennifer Lynn Bonheur; Esophageal Hematoma Treatment & Management. Medscape. https://emedicine.medscape.com/article/174496-treatment
2. Freeman AH, Dickinson RJ. Spontaneous intramural oesophageal haematoma. Clin Radiol. 1988 Nov. 39(6):628-34.
3. Adeonigbagbe O, Khademi A, Washington M. Spontaneous esophageal hematoma. Am J Gastroenterol. 1999 Dec. 94(12):3655
4. Chen TA, Lo GH, Lai KH. Spontaneous rupture of iatrogenic intramural hematoma of esophagus during endoscopic sclerotherapy. Gastrointest Endos. 1999 Dec. 50(6):850-1.
5. Baehr PH, McDonald GB. Esophageal disorders caused by infection, systemic illness, medications, radiation, and trauma. In: Feldman M, Scharschmidt BF, Sleisenger MH, eds. Gastrointestinal and Liver Disease: Pathophysiology, Diagnosis, Management. Philadelphia, Pa: WB Saunders Co; 1998. 534.
6. Cullen SN, Chapman RW. Dissecting intramural haematoma of the esophagus exacerbated by heparin therapy. QJM. 1999 Feb. 92(2):123-4
7. Wang AY, Riordan RD, Yang N, Hiew CY. Intramural haematoma of the esophagus presenting as an unusual complication of endotracheal intubation. Australas Radiol. 2007 Dec. 51 Suppl:B260-4.

8. Sharma A, Hoilat GJ, Ahmad SA. Esophageal Hematoma. [Updated 2021 Jun 25]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK459228/
9. Yamada T, Motomura Y, Hiraoka E, Miyagaki A, Sato J. Nasogastric Tubes Can Cause Intramural Hematoma of the Esophagus. Am J Case Rep. 2019 Feb 20;20:224-227.
10. Mandavdhare HS, Gupta P, Maity P, Sharma V. Image Diagnosis: Esophageal Intramural Hematoma in Sudden-Onset Chest Pain and Dysphagia. Perm J. 2018;23:18-141.
11. Chu L, Yang JS, Yu KX, Chen CM, Hao DJ, Deng ZL. Usage of Bone Wax to Facilitate Percutaneous Endoscopic Cervical Discectomy Via Anterior Transcorporeal Approach for Cervical Intervertebral Disc Herniation. World Neurosurg. 2018 Oct;118:102-108.
12. Fujimoto Y, Shirozu K, Shirozu N, et al. Esophageal submucosal hematoma possibly caused by gastric tube insertion under general anesthesia. AA Case Rep. 2016;7(8):169–71.
13. Strowd RE, Agborbesong P, Eapen M, Ervin S. Intramural hematoma of the esophagus presenting as chest pain. J Hosp Med. 2010;5(7):421–23.
14. Tong M, Hung WK, Law S, et al. Esophageal hematoma. Dis Esophagus. 2006;19(3):200–2.
15. Kise Y, Suzuki R, Shimada H, et al. Idiopathic submucosal hematoma of esophagus complicated by dissecting aneurysm, followed-up endoscopically during conservative treatment. Endoscopy. 2001;33(4):374–78.
16. Smith G, Brunnen PL, Gillanders LA, Teo HS. Oesophageal apoplexy. Lancet. 1974;1(7854):390–92.
17. Sen A, Lea RE. Spontaneous oesophageal haematoma: a review of the difficult diagnosis. Ann R Coll Surg Engl. 1993;75(4):293–95.
18. Zimmer V, Lammert F. Clinical images: Multiple esophageal submucosal hematomas. CMAJ. 2010 Jan 12;182(1):62. doi: 10.1503/cmaj.081683. Epub 2009 Aug 24. PMID: 19703914; PMCID: PMC2802609.
19. Zimmer V, Lammert F. Clinical images: Multiple esophageal submucosal hematomas. CMAJ. 2010 Jan 12;182(1):62. doi: 10.1503/cmaj.081683. Epub 2009 Aug 24. PMID: 19703914; PMCID: PMC2802609.
20. Ouatu-Lascar R, Bharadhwaj G, Triadafilopoulos G. Endoscopic appearance of esophageal hematomas. World J Gastroenterol. 2000 Apr;6(2):307-309. doi: 10.3748/wjg.v6.i2.307. PMID: 11819586; PMCID: PMC4723514.
21. Cooray S, Dellaportas D, Caruana C, Davies AR. Spontaneous Intramural Oesophageal Haematoma in a Patient with Uncontrolled Hypertension: An Unusual Chest Pain Aetiology. Case Rep Surg. 2017;2017:4086056. doi: 10.1155/2017/4086056. Epub 2017 Feb 20. PMID: 28316858; PMCID: PMC5338307.
22. Mubang RN, Sigmon DF, Stawicki SP. Esophageal Trauma. [Updated 2021 Aug 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK470161/

23. Ito S, Iwata S, Kondo I, Iwade M, Ozaki M, Ishikawa T, Kawamata T. Esophageal submucosal hematoma developed after endovascular surgery for unruptured cerebral aneurysm under general anesthesia: a case report. JA Clin Rep. 2017;3(1):54.
24. Randhawa MS, Rai MP, Dhar G, Bandi A. Large oesophageal haematoma as a result of transoesophageal echocardiogram (TEE). BMJ Case Rep. 2017 Nov 08;2017.
25. Cullen SN, McIntyre AS. Dissecting intramural haematoma of the esophagus. Eur J Gastroenterol Hepatol. 2000 Oct;12(10):1151-62.
26. Cheung J, Müller N, Weiss A. Spontaneous intramural esophageal hematoma: case report and review. Can J Gastroenterol. 2006 Apr;20(4):285-6. doi: 10.1155/2006/764714. PMID: 16609759; PMCID: PMC2659907.
27. Younes Z, Johnson DA. The spectrum of spontaneous and iatrogenic esophageal injury: Perforations, Mallory-Weiss tears, and hematomas. J Clin Gastroenterol. 1999;29:306–17.
28. Lu MS, Liu YH, Liu HP, Wu YC, Chu Y, Chu JJ. Spontaneous intramural esophageal hematoma. Ann Thorac Surg. 2004;78:343–5.
29. Yamashita K, Okuda H, Fukushima MD, Arimura Y, Endo T, Imai K. A case of intramural esophageal hematoma: Complication of anticoagulation with heparin. Gastrointest Endosc. 2000;52:559–61.
30. Ashman FC, Hill MC, Saba GP, Diaconis JN. Esophageal hematoma associated with thrombocytopenia. Gastrointest Radiol. 1978;3:115–8.
31. Folan RD, Smith RE, Head JM. Esophageal hematoma and tear requiring emergency surgical intervention. A case report and literature review. Dig Dis Sci. 1992;37:1918–21.
32. Enns R, Brown JA, Halparin L. Intramural esophageal hematoma: A diagnostic dilemma. Gastrointest Endosc. 2000;51:757–9.
33. Cao DT, Reny JL, Lanthier N, Frossard JL. Intramural hematoma of the esophagus. Case Rep Gastroenterol. 2012 Jul 26;6(2):510-7. doi: 10.1159/000341808. PMID: 23730267; PMCID: PMC3668800.
34. Van Laethem JL, Devière J, Cremer M. Serial endoscopic findings of spontaneous intramural hematoma of the esophagus. Endoscopy. 1997;29:44–46.
35. Hiller N, Zagal I, Haldas-Halpern I. Spontaneous intramural hematoma of the esophagus. Am J Gastroenterol. 1999;94:2282–2284.
36. Strowd RE, Agborbesong P, Eapen M, Ervin S. Intramural hematoma of the esophagus presenting as chest pain. J Hosp Med. 2010;5:421–423.
37. Clark W, Cook IJ. Spontaneous intramural haematoma of the esophagus: radiologic recognition. Australas Radiol. 1996;40:269–272.
38. Sen A, Lea RE. Spontaneous oesophageal haematoma: a review of the difficult diagnosis. Ann R Coll Surg Engl. 1993;75:293–295.
39. Kerr WF. Spontaneous intramural rupture and intramural haematoma of the esophagus. Thorax. 1980;35:890–897.
40. Yeoh NT, McNicholas T, Rothwell-Jackson RL, Goldstraw P. Intramural rupture and intramural haematoma of the esophagus. Br J Surg. 1985;72:958–960.

41. Ackert JJ, Sherman A, Lustbader IJ, McCauley DI. Spontaneous intramural hematoma of the esophagus. Am J Gastroenterol. 1989;84:1325–1328.
42. Tim LO, Segal I, Mirwis J. Intramural haematoma of the esophagus. The role of endoscopy. S Afr Med J. 1982;61:798–800.
43. Folan RD, Smith RE, Head JM. Esophageal hematoma and tear requiring emergency surgical intervention. A case report and literature review. Dig Dis Sci. 1992;37:1918–1921.
44. Sharma B, Lowe D, Antoine M, Shah M, Szyjkowski R. Intramural Esophageal Hematoma Secondary to Food Ingestion. Cureus. 2019 Sep 11;11(9):e5623. doi: 10.7759/cureus.5623. PMID: 31696016; PMCID: PMC6820886.