

CASE REPORT

Esophagitis Dissecans Superficialis (EDS) Secondary to corrosive ingestion: Case Report

MAHA ABD AL HAMED GHANEM^{1,*}, SARA ATTIA GHITANI¹

¹Forensic Medicine and Clinical Toxicology Department, Faculty of Medicine, Alexandria University, Egypt

Abstract

Background: Ingestion of corrosive chemicals is a major problem, especially in developing countries. Ingestion may be deliberate as suicide attempts (mostly in adolescents and adults) or accidental (mostly in children).

Case presentation: A 50-year-old male patient was brought to the APC – he was suffering from vomiting following ingestion of NaOH. On examination: he complained of severe dysphagia, drooling, hoarseness of voice, severe pain, and a burning sensation in his mouth. The vital signs were heart rate of 100 beats /minute, blood pressure 140/90 mmHg, temperature 37°C, respiratory rate of 26/min, and GCS was 15. The patient was stabilized on intravenous treatment and NBO. Follow-ups were carried out for all vital signs, and laboratory tests were carried out, with an initial improvement in his condition. After 6 days, the patient vomited vigorously, and tissues extruded from his mouth, where a complete sloughing of esophageal mucosa occurred. The patient was transferred to the cardiothoracic department where they decided to maintain conservative treatment and NBO for 2 weeks. Later, the patient was prepared for gastrostomy followed by colon transposition. The patient improved and was discharged with a follow-up regimen.

Discussion: Esophagitis Dissecans Superficialis (EDS) is a rare esophageal lesion characterized by sloughing of the esophageal mucosa, there is limited information on EDS resulting from corrosive poisoning. Endoscopy was not performed for fear of perforation and CT was carried out instead of endoscopy. Patients usually have an excellent response to treatment, with proton pump inhibitors and steroids. These are the same management lines that followed before surgical intervention. The surgeons perform an esophagectomy and colonic transposition on the patient to avoid stricture in the future. This is considered an acceptable treatment.

Conclusion: Clinical toxicologists should be expecting esophageal sloughing as one of the corrosive ingestion complications within a week of ingestion.

Keywords: Corrosive, esophageal mucosa, suicide attempted, Sodium Hydroxide

How to cite this article: Ghanem MA, Ghitani SA. Esophagitis Dissecans Superficialis (EDS) Secondary to corrosive ingestion: Case Report. *Asia Pac J Med Toxicol.* 2024; 13(2): 76-80.

INTRODUCTION

World Health Organization (WHO) estimates that unintentional poisoning caused 193,460 to 346,000 fatalities between 2004 and 2012 globally. 84% to 91% of these fatalities took place in low- and middle-income nations [1].

Corrosives are common poisonings that cause tissue injury in contact with multiple organ systems, most commonly the gastrointestinal, respiratory, ophthalmologic, and dermatologic systems. Based on chemical composition and physical properties, corrosives can be classified into alkalis, acids, and others [2].

The clinical manifestations of corrosive substance ingestion are variable and may not necessarily correspond to the severity of the damage. Symptoms are determined primarily by the site of the damage. Upper gastrointestinal tract involvement usually is the first contact point. It may manifest as drooling of saliva, dysphagia, odynophagia,

vomiting, and/or retrosternal chest pain for esophageal damage. Spontaneous vomiting is associated with a higher incidence of more severe esophageal injury. However, gastric injury may present as hematemesis, epigastric discomfort, and/or abdominal pain [3].

Oral manifestations are one of the most common complaints that follow corrosive substance ingestion. Patients may present with immediate pain with burning in the mouth & throat, lip &/or tongue edema, erythema, erosions, or ulcerations. Visible burns to the face, lips, and oral cavity may be seen and appear as white or gray patches with an erythematous border. GIT perforation may occur in the early stages of severe cases. Esophageal perforation leading to mediastinitis is associated with chest pain, dyspnea, fever, subcutaneous emphysema, and a pleural rub. Perforation of the stomach or small intestine produces clinical features of peritonitis (abdominal guarding, rebound tenderness, and diminished bowel sounds). GIT perforation is complicated by septic shock and multi-organ failure [4].

*Correspondence to: Prof. Dr. Maha A Ghanem, Professor of Forensic Medicine and Clinical Toxicology, Faculty of Medicine, Alexandria University, Egypt. Email: ghanemmaha63@gmail.com, Tel: 00201223374415

CASE REPORT

A 50-year-old male patient was admitted to APC (Alexandria poison center) with a history of accidental ingestion of a corrosive substance (NaOH) at his workplace. The corrosive fluid was present in a bottle of water, so he swallowed a large amount before feeling a severe burning sensation. He sought medical advice within half an hour after the corrosive ingestion complaining of severe dysphagia, drooling, hoarseness of voice, severe pain, and a burning sensation in his mouth.

Clinical examination on admission

Day 1:

- CNS: the patient was fully conscious (GCS 15) with bilateral regular rounded reactive pupils.
- CVS: patient was hemodynamically stable with an average blood pressure (140/90 mmHg) and normal sinus rhythm (100b/min)
- Chest: crepitations on the right side
- Abdomen: lax not tender
- Mouth condition: lip edema, redness, and ulceration over the tongue.

Immediately ABG analysis was done; PH 7.34/ PaCO₂ 19/ HCO₃ 10.6 and CBC was taken, and its result was within normal average. At the emergency room, the patient received supportive treatment as the following:

- Nothing by mouth (NBO)
- IV fluids (500 cc normal saline, 500 cc ringer and 500 cc glucose 5%)
- Proton pump inhibitor (40mg pantoprazole “controloc”).
- 1 ampoule dexamethasone for the lip edema
- Nebulizers (adrenaline, farcoline and Atrovent)
- Dentinox gel and BBC sprays for tongue and mouth lesions

After that, a follow-up ABG was done; PH 7.40/ PaCO₂ 38/ HCO₃ 23.5. Standing chest and abdomen X-rays were done and were unremarkable.

Day 2: The patient developed a fever (38.5 C), repeated cough, and one attack of stridor (improved after nebulizer with adrenaline). Follow-up CBC showed leukocytosis Hb 12.6 g/dl/ WBCs 11.1/ul/ platelet 270/ul. Therefore, empirical antibiotic therapy was started (2 gm ceftriaxone/day).

Day 3: Hoarseness of voice was not improved and upon consultation with the ENT department, they recommended giving 4 mg dexamethasone IV every 12 h.

Days 4-6: The patient improved regarding stridor attacks and the mouth condition. However, the hoarseness of voice, dysphagia, and cough showed no improvement. Upon trials to start oral intake, vomiting with streaks of blood occurred. So, the patient was advised to be on NBO again and to receive total parenteral nutrition.

Day 7: The patient was complaining of dysphagia, hoarseness of voice, and attacks of cough with streaks of blood. The clinical assessment was as follows:

- CNS: the patient was fully conscious (GCS 15) with bilateral regular rounded reactive pupils.
- CVS: the patient was hemodynamically stable with average blood pressure (130/70 mmHg) and normal sinus

rhythm (86 b/min)

- Chest: bilateral equal air entry and unremarkable chest X-ray

- Abdomen: no guarding and not tender

- Mouth condition: no lip edema, a small ulcer on the right side of the tongue.

ABG was repeated PH 7.52/ PaCO₂ 20/ HCO₃ 29. The patient received Total Parenteral Nutrition and IV fluids. Suddenly severe repeated cough occurred with sloughing of esophageal mucosa (Figure 1).

Urgent neck, chest, and abdomen CT was done and revealed (Figure 2).

- No pneumoperitoneum
- Minimal pelvic collection at the time of examination
- Mild bilateral perinephric fat standing and seen extending along Rt paracolic gutter
- Pancreas was of average size
- Appendix and bowel loops were of average caliber
- Chest: bilateral minimal pleural collection with fissure extension on the left side

In addition, after ICU consultation, IV fluid boluses were added plus Fortum and clindamycin (2 mg IV/ 8h and 600 mg IV /8h respectively). After a multispecialty consultation, the patient was transferred to the cardiothoracic unit. The initial plan was to manage the patient conservatively. Later, the patient was prepared for gastrostomy and then colon transposition.

DISCUSSION

The outcome of corrosive ingestion in a clinical setting is determined by the severity and penetration of the initial damage. Minor injuries affecting only the mucosa typically recover without any effects, while injuries of a moderate degree that go beyond the mucosa can lead to esophageal stricture. Severe full-thickness injuries present as either perforation during the initial phase or as a stricture during the healing phase [4].



Figure 1. The sloughed mucosa protruded out of the patient's mouse

Sloughing esophagitis or esophagitis dissecans superficialis, (EDS) is a rare esophageal lesion characterized by sloughing of the esophageal mucosa secondary to excessive medication intake, various autoimmune disorders, and exposure to chemical irritants [5] While many reports

are linking EDS to severe illnesses and specific medications, there is limited information on EDS resulting from corrosive poisoning.

Typical signs include dysphagia, odynophagia, chest discomfort, acid reflux, feeling bloated, and nausea or

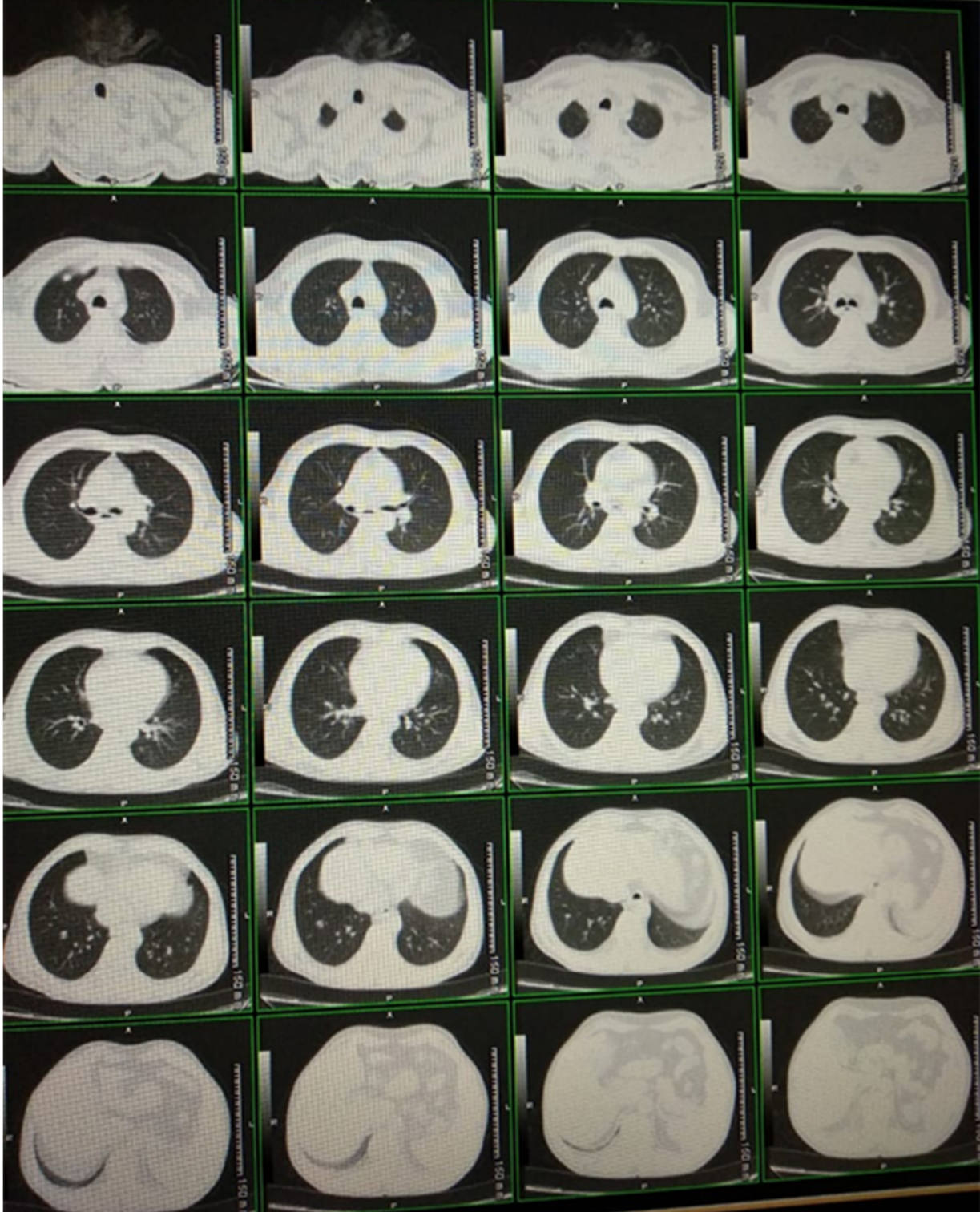


Figure 2a. CT chest with minimal bilateral pleural collection

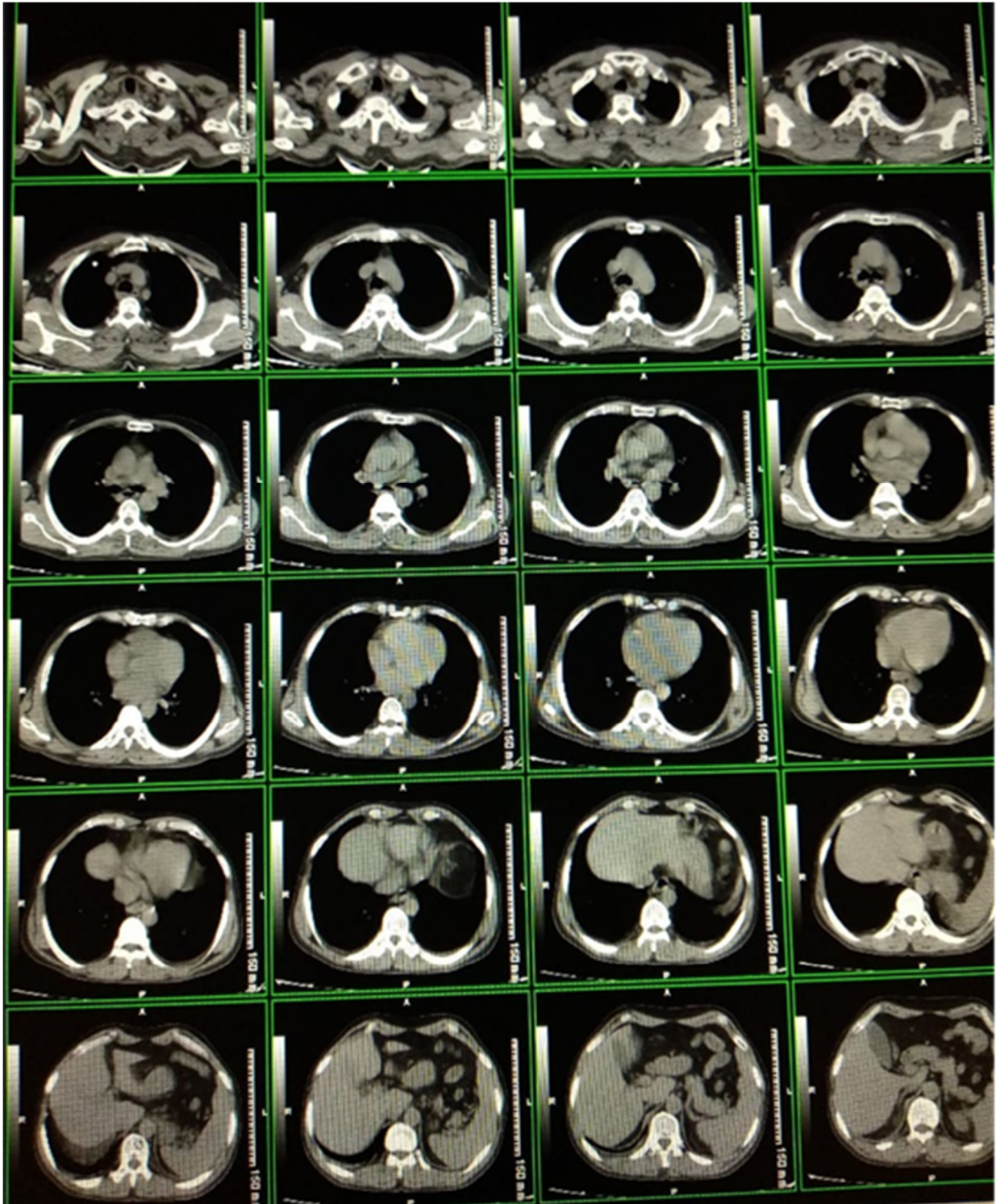


Figure 2b. CT chest with minimal bilateral pleural collection

vomiting. Most lesions are discovered through endoscopy, although, in rare instances, hematemesis or vomiting esophageal casts may occur [6].

In our case where the patient had severe dysphagia, drooling, hoarseness of voice, severe pain, and burning sensation in his mouth, we expected laryngospasms,

perforations, fistulas, and mediastinitis. However, we didn't expect complete esophageal mucosa sloughing as it's not a common complication following corrosive ingestion. Endoscopy is the diagnostic method in most cases yet it was not performed for fear of perforation. CT was carried out and this coincides with Cutaia et al 2023 [7] who stated that (CT)

is preferable to endoscopy as it avoids the risk of esophageal perforation and allows the evaluation of esophageal injuries as well as of the surrounding tissues.

Then et al 2021 [8] mentioned a similar case, where a 65-year-old female was diagnosed with EDS after incidental ingestion of hair dye containing resorcinol and paraphenylenediamine (PPD). Similar to our patient EDS can spread throughout the esophagus. Usually, EDS is found in the distal and middle sections of the esophagus. As seen in Figure 1, the separated mucosa was one large piece with minimal bleeding.

Tao et al 2021 [6] discussed EDS in 15 individuals, after paraquat ingestion. Esophageal sloughing occurred between 3–8 days after oral paraquat poisoning. The majority of patients experienced physical difficulties with swallowing. There are additional symptoms as well, such as sore throat or dysphagia, nausea, vomiting, upper stomach discomfort, hematemesis, abdominal distension, and frequent coughing.

Usually, the histopathologic characteristics of EDS are vague. Common characteristics include intraepithelial splitting and parakeratosis. The deeper squamous mucosa frequently seems normal and even entirely separated from the surface layer, giving the illusion of having two tones. Inflammation can vary in severity and can show no symptoms at all. The prognosis is usually very favorable, and long-term complications related to this entity are rare. Patients usually have an excellent response to treatment, which entails discontinuation of the offending agent and proton pump inhibitors and steroids [6,8].

These are the same management lines we followed before surgical intervention. The surgeons perform an esophagectomy and colonic transposition on the patient to avoid stricture in the future. This is considered an acceptable treatment [9].

In conclusion, our patient had EDS due to NaOH ingestion. Physicians should be aware of EDS as one of the complications that may occur within a week of corrosive ingestion.

Ethical approval: Ethical approval for this study procedure was obtained from the ethical committee of Alexandria University (Serial NO:0306780, IRB NO:00012098, FWA NO:00018699). Confidentiality of all

data was considered and preserved.

Funding and Support: There are no funding sources.

Conflict of interest: All authors declare no conflict of interest.

REFERENCES

1. World Health Organization (WHO). Prevention and management of cases of poisoning. Geneva, Switzerland: WHO; 2020.
2. El-Sobky H, El-Shanawany SM, Ghanem M, Atef M. Role of N-acetylcysteine, and vitamin B complex in improving outcomes of corrosive ingestion. *Toxicol Res (Camb)*. 2024 Jan 4;13(1):tfad125. doi: 10.1093/toxres/tfad125. PMID: 38188454; PMCID: PMC10768881.
3. Hashmi MU, Ali M, Ullah K, Aleem A, Khan IH. Clinico-epidemiological characteristics of corrosive ingestion: a cross-sectional study at a tertiary care hospital of Multan, South-Punjab Pakistan. *Cureus* 2018;10(5):e2704.
4. Kalayarasan R, Ananthkrishnan N, Kate V. Corrosive Ingestion. *Indian J Crit Care Med*. 2019 Dec;23(Suppl 4): S282-S286. doi: 10.5005/jp-journals-10071-23305. PMID: 32021005; PMCID: PMC6996660
5. Qasim A, Jyala A, Ghazanfar H, Baqui A, Patel H. Esophagitis Dissecans Superficialis: Unveiling the Enigmatic Entity of Esophageal Mucosal Sloughing. *Cureus* 15(8): 2023e43549. Doi:10.7759/cureus.43549
6. Tao X, Yu G, Guo W, Kan B, Song L, Li H, Jian X. Esophagitis dissecans superficialis associated with acute transoral paraquat poisoning: Clinical study of 15 cases. *Sci Prog*. 2021 Apr-Jun;104(2):368504211019647. doi: 10.1177/00368504211019647. PMID: 34019441; PMCID: PMC10454878.
7. Cutaia G, Messina M, Rubino S, Reitano E, Salvaggio L, Costanza I, et al. Caustic ingestion: CT findings of esophageal injuries and thoracic complications. *Emerg Radiol* 28, 845–856 (2021). <https://doi.org/10.1007/s10140-021-01918-1>
8. Then EO, Grantham T, Lopez M, Reddy M, Gaduputi V. Esophagitis Dissecans Superficialis (EDS) Secondary to Hair Dye Ingestion: Case Report and Literature Review. *Clinics and Practice*. 2021; 11(2):185-189. <https://doi.org/10.3390/clinpract11020026>
9. Handaya Y, Sunardi M. Ileocolonic Transposition Esophagogastric Bypass as an Antireflux Treatment for Corrosive Esophageal Injury. *Ann Coloproctol*. 2017 Aug;33(4):150-155. doi: 10.3393/ac.2017.33.4.150. Epub 2017 Aug 31. PMID: 28932725; PMCID: PMC5603345.