CASE REPORT

Rare Association of Killian-Jamieson Diverticulum and Peptic Stricture of the Esophagus: Is It Causal or Casual?

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Abstract

Killian-Jamieson diverticulum (KJD) is a rare esophageal diverticulum that arises from the anterolateral wall of the proximal cervical esophagus in the Killian-Jamieson space. Although rare presentations include dysphagia, globus sensation, or a suspected thyroid nodule, it is often asymptomatic. Treatment is indicated only in symptomatic cases. We report a 55-year-old female who had long-standing heartburn and presents now with dysphagia, weight loss, and anemia. Imaging and upper endoscopy revealed peptic stricture and an associated KJD. She underwent serial endoscopic dilatation of the peptic stricture and was symptomatically better afterwards. She is currently doing well on follow-up.

Keywords: Case report, Diverticulum, Endoscopy, Esophageal stricture.

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Background

Killian-Jamieson diverticulum is a rare esophageal diverticulum located at the hypopharynx and cervical esophagus junction.[1] Other rare anatomically related diverticula are Zenker's diverticulum (ZD) and Laimer's diverticulum (LD). These pharyngoesophageal diverticula are similar in clinical presentation and often detected incidentally in elder patients. The epiphrenic esophageal diverticulum may occur in patients with distal esophageal mechanical obstruction or esophageal motility disorders.[2] In contrast, an upper esophageal diverticulum in patients with distal esophageal obstruction is a rarity. Zenker's diverticulum has been described in a patient with peptic stricture of the esophagus.[3] However, the association of KJD with peptic stricture of the esophagus has never been reported to the best of our knowledge.

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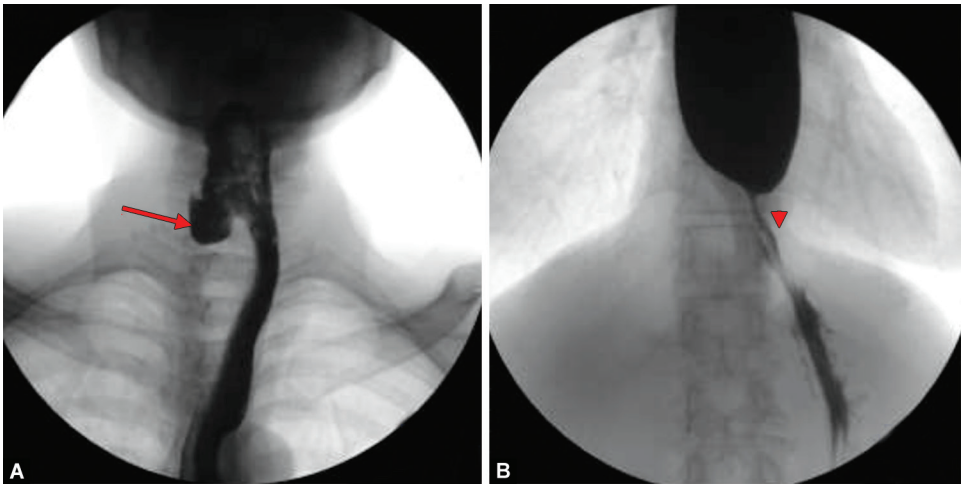
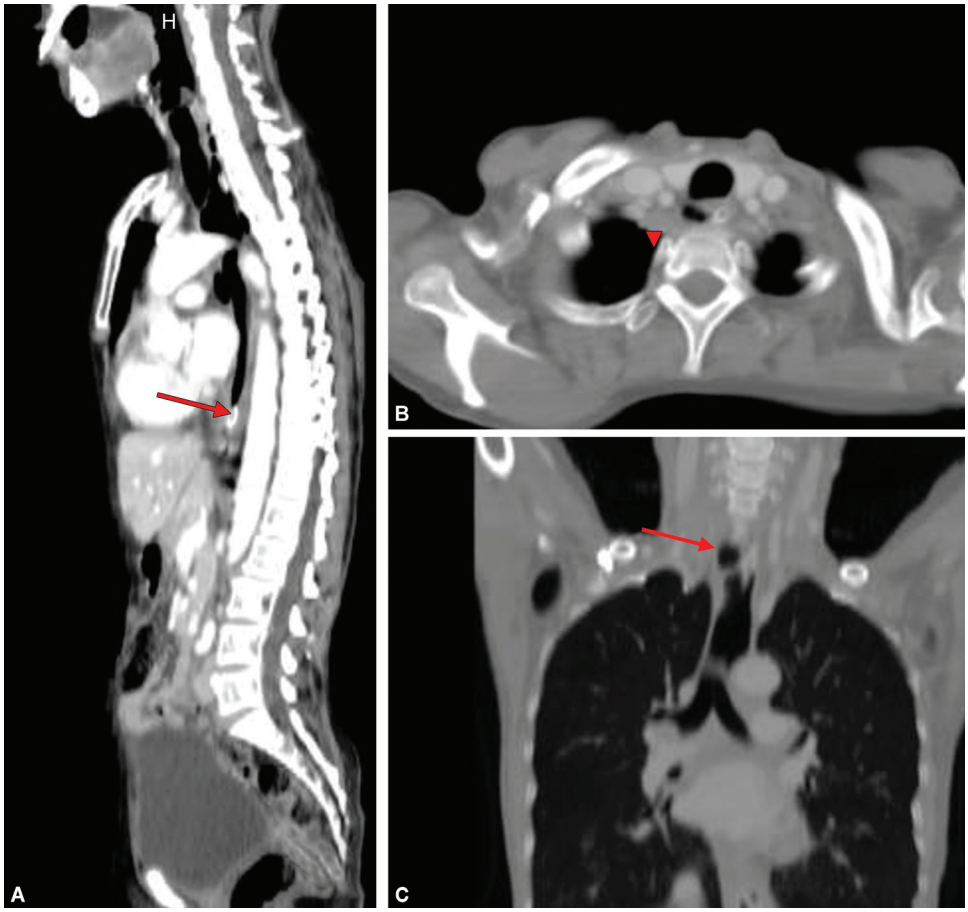
Case Description

A 55-year-old female presented with progressive dysphagia to solids and lost 10 kg weight over two years. She had heartburn and epigastric burning pain during the past 5 years, for which she took over-the-counter acid-suppressive medications. She denied a history of ingesting a caustic substance, radiotherapy, atopy, and other comorbid illnesses. None of her family members had any gastrointestinal disease. She was neither an alcoholic nor a smoker. On examination, she was pale and ill-nourished. She did not have significant lymph node enlargement. Examination of the abdomen, cardiovascular and respiratory systems was unremarkable. Blood investigations showed hemoglobin 8.8 gm/dL, total leukocyte count 6.4×10^9/L, platelet counts 510×10^9/L, and serum ferritin 8.1 µg/L. Peripheral smear showed microcytic and hypochromic red blood cells. Barium swallow showed a 3 cm × 2 cm sized diverticulum from the right lateral wall of the cervical esophagus and a short segment narrowing in the distal esophagus with upstream dilation (Fig. 1). We initially suspected gastroesophageal reflux disease (GERD) with peptic stricture of the esophagus; however, we wanted to rule out underlying malignancy because of profound weight loss and anemia. Hence a computed tomography (CT) scan of the neck and thorax was done, which confirmed KJD and showed a homogenous circumferential wall thickening in the lower esophagus with no significant periesophageal lymph nodes (Fig. 2).

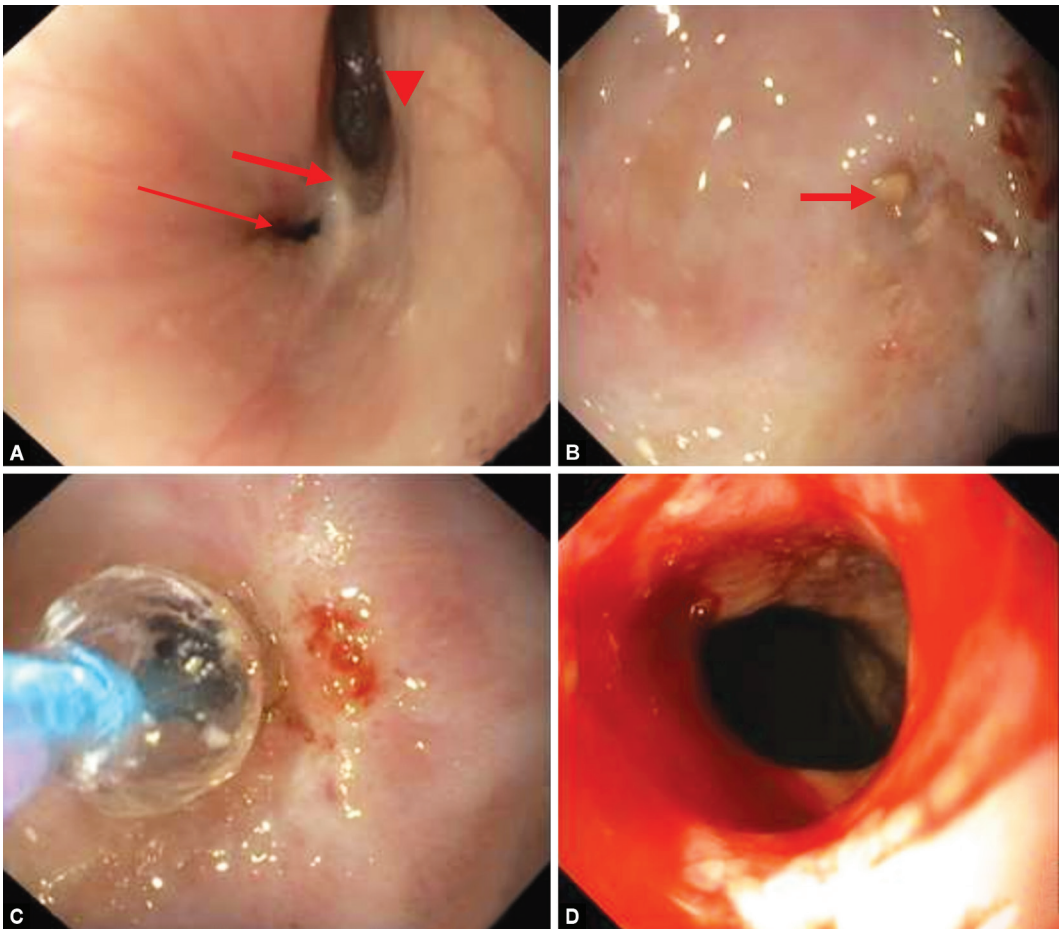
Esophagogastroduodenoscopy revealed KJD at 20 cm from incisors and a tight stricture at the lower esophagus beyond which the endoscope was not negotiable (Fig. 3). The stricture was dilated with a controlled radial expansion (CRE) balloon up to 12 mm (Fig. 3). Biopsies from the stricture site were negative for malignancy. We considered peptic stricture and malignancy of the distal esophagus in the differential diagnosis. Though profound weight loss and anemia raised suspicion of malignancy, the long duration of symptoms, benign CT scan characteristics, and biopsy from the stricture site confirmed peptic stricture in this case. The upper esophageal diverticulum in barium swallow and endoscopy prompted us to consider ZD, KJD, and LD. However, the CT scan confirmed the origin of the diverticulum from the anterolateral wall of the esophagus below the cricopharyngeus muscle. Hence, a final diagnosis of KJD and peptic stricture was made. The patient underwent three CRE balloon dilatation sessions from 12 to 15 mm



Figs 1A and B: Barium swallow showing (A) Diverticulum from the cervical esophagus; (B) Short segment narrowing in the distal esophagus with upstream dilatation



Figs 2A to C: Computer tomogram scan of neck and thorax showing (A) Homogenous circumferential wall thickening in the distal esophagus with no significant lymph node enlargement; (B) Diverticulum situated below the level of the cricoid cartilage; (C) Diverticulum seen arising from the right lateral wall of the cervical esophagus



Figs 3A to D: Endoscopy images (A) Arrowhead pointing the diverticulum, broad arrow showing the intervening septum, and long slender arrow pointing the esophageal lumen; (B) Arrow pointing to the tight stricture in the distal esophagus; (C) Dilatation of the stricture using controlled radially expanding balloon; (D) Post dilatation view of the stricture

at 4-weeks intervals. Post dilatation, she was started on capsule omeprazole 20 mg twice daily along with hematinics. After 6 months, she gained 7 kg weight, could take feeds normally, and her repeat hemoglobin was 10.9 gm/dL. She is currently doing well during follow-up.

Discussion

Killian-Jamieson diverticulum is a mucosal outpouching arising from the anterolateral wall of the proximal cervical esophagus in Killian-Jamieson space, bound by cricopharyngeus muscle fibers superiorly and longitudinal muscle fibers of the esophagus laterally. Ekberg and Nylander first described this rare clinical entity in 1983.[4] Hypopharyngeal diverticula are classified based on anatomical location. Zenker's diverticulum arises posteriorly in the midline from the esophagus, just above the cricopharyngeus muscle, whereas LD occurs posteriorly below the cricopharyngeus muscle. The pathogenesis of KJD is yet to be well known. The proposed mechanisms were the discoordination of pharyngeal constrictors, cricopharyngeal spasm, and non-compliance of the cricopharyngeus muscle.[5] The long-standing acid reflux causes the shortening of esophageal longitudinal muscle and increases the risk of mucosal and sub-mucosal herniation.[6] Feussner and Sievert proposed that structural lesions in the upper esophageal sphincter muscle fibers cause the development of the pharyngeal diverticula.[7] Tang et al. hypothesized that KJD might result from functional outflow obstruction in the esophagus similar to ZD.[8] However, manometric studies did not support the above hypothesis.[9] In our patient, the temporal relationship of long-standing GERD symptoms followed by a tight peptic stricture could suggest that an increase in intraluminal pressure might have led to a pulsion-type diverticulum in the anatomical area of weakness.[10] The increase in pressure is further accentuated by simultaneous closure of the cricopharynx, which favors more for the development of KJD than ZD as the cricopharyngeus muscle situated above the diverticulum prevents transmission of intraluminal pressure proximally into the hypopharynx.

Killian-Jamieson diverticulum occurs in elder patients, similar to ZD. It is mostly asymptomatic and discovered incidentally on imaging like barium swallow, ultrasound, and computed tomography of the neck. Killian-Jamieson diverticulum is less symptomatic than ZD due to the presence of the cricopharyngeal sphincter just above it, preventing the aspiration of luminal contents into the hypopharynx; hence, overflow aspiration and aspiration pneumonia were uncommon in KJD. If symptomatic, the presentations are dysphagia, suspected thyroid nodule, and Globus sensation.[11] Because of their close location, a large KJD may masquerade as a thyroid nodule on ultrasound imaging. Even though KJD arises anterolaterally from the esophagus, it is difficult to differentiate it from ZD on endoscopy. Barium swallow

and computed tomography will further help in making a diagnosis. It would be challenging to distinguish KJD from a large ZD even on barium swallow as KJD are usually smaller and less likely to retain barium. In such cases, a CT scan would precisely localize the origin of the diverticulum relative to the cricoid cartilage, thereby confirming the diagnosis. Treatment for KJD is indicated only in symptomatic patients. Open surgical diverticulectomy is the most preferred procedure.[11] The recurrent laryngeal nerve (RLN) lies close to the neck of KJD; hence a careful dissection is required to prevent injury.[12] Endoscopic diverticulotomy is a transoral procedure where a carbon dioxide laser or a stapler divides the septum between the KJD and esophagus. The advantages are no skin incision, shorter operative duration, minimal postoperative pain, and shorter hospitalization. Nevertheless, the risk of RLN is higher with the endoscopic approach.[13] Recently, endoscopic tunneling diverticulotomy has been considered safe and effective compared to direct diverticulotomy.[14]

Conclusion

In conclusion, KJD is not uncommon in Gastroenterology clinics. It is often diagnosed incidentally or during dysphagia evaluation in elder patients. This case report reiterates the hypothesis that an increase in intraluminal pressure may lead to the development of KJD. However, further prospective studies are required to establish a causal relationship between GERD and its sequelae with KJD.

References

1. Rodgers PJ, Armstrong WB, Dana E. Killian-Jamieson Diverticulum: A case report and a review of the literature. Ann Otol Rhinol Laryngol 2000;109(11):1087–1091. DOI: 10.1177/000348940010901117.
2. Soares RV, Montenovo M, Pellegrini CA, et al. Laparoscopy as the initial approach for epiphrenic diverticula. Surg Endosc 2011;25(12): 3740–3746. DOI: 10.1007/s00464-011-1779-x.
3. Alkhormi AM, Memon MY. A Case of Zenker's diverticulum in a patient with tight esophageal peptic stricture. J Digest Endosc 2020;11:232–234. DOI: https://doi.org/10.1055/s-0039-3401383.
4. Ekberg O, Nylander G. Lateral diverticula from the pharyngo-esophageal junction area. Radiology 1983;146(1):117–122. DOI: 10.1148/radiology.146.1.6401363.
5. Goyal RK, Martin SB, Shapiro J, et al. The role of cricopharyngeus muscle in pharyngoesophageal disorders. Dysphagia 1993;8(3): 252–258. DOI: 10.1007/BF01354547.
6. Sasaki CT, Ross DA, Hundal J. Association between Zenker diverticulum and gastroesophageal reflux disease: Development of a working hypothesis. Am J Med 2003;115(Suppl 3A):169S–171S. DOI: 10.1016/s0002-9343(03)00218-3.
7. Feussner H, Siewert JR. Zenker's diverticulum and reflux. Hepatogastroenterology 1992;39(2):100–104. PMID: 1634175.
8. Tang SJ, Tang L, Chen E, et al. Flexible endoscopic Killian-Jamieson diverticulotomy and literature review (with video). Gastrointest Endosc 2008;68(4):790–793. DOI: 10.1016/j.gie.2008.01.005.
9. Nilsson ME, Isberg A, Schiratzki H. The hypopharyngeal diverticulum. A simultaneous cineradiographic and manometric examination. Acta Otolaryngol 1988;106(3–4):314–320. DOI: 10.3109/00016488809106442.
10. Negus VE. Pharyngeal diverticula; observations on their evolution and treatment. Br J Surg 1950;38(150):129–46. DOI: 10.1002/bjs.18003815002.
11. Haddad N, Agarwal P, Levi JR, et al. Presentation and management of Killian Jamieson diverticulum: A comprehensive literature review. Ann Otol Rhinol Laryngol 2020;129(4):394–400. DOI: 10.1177/0003489419887403.
12. Saisho K, Matono S, Tanaka T, et al. Surgery for Killian-Jamieson diverticulum: A report of two cases. Surg Case Rep 2020;6(1):17. DOI: 10.1186/s40792-020-0789-0.
13. Yun P-J, Huang H-K, Chang H, et al. Endoscopic diverticulotomy with a stapler can be an effective and safe treatment for Killian-Jamieson diverticulum. J Thorac Dis 2017;9(9):E787–E791. DOI: 10.21037/jtd.2017.08.14.
14. Zakaria A, Barawi M. Endoscopic treatment of Killian-Jamieson diverticulum using submucosal tunneling diverticulotomy technique. VideoGIE 2020;5(11):525–526. DOI: 10.1016/j.vgie.2020.05.031.