*Jambura Medical and Health Science Journal, Vol.4 No.2 (August 2025)*
**p-ISSN 2830-0580 | e-ISSN 2830-4608**

**CASE REPORT** **Open Access**

# Killian-Jamieson Diverticulum in a 15-Year-Old Patient: A Rare Pediatric Radiologic Case Report

**Eny Sanre[1,*]**

[1]Department of Radiology, Faculty of Medicine, Hasanuddin University, Makassar, Indonesia

*Corresponding Author. Email: enysanre52@gmail.com, Telp: +6281318023798

## ABSTRACT

Killian-Jamieson diverticulum (KJD) is a rare pharyngoesophageal diverticulum arising from a muscular defect in the anterolateral wall of the proximal cervical esophagus, located just inferior to the cricopharyngeus muscle and superolateral to the longitudinal fibers within the Killian–Jamieson area. Its incidence is approximately one-quarter that of Zenker's diverticulum (ZD), with an estimated prevalence of 0.025% in the general population. Reports in the pediatric population are exceedingly uncommon, suggesting a potential congenital etiology. Although frequently asymptomatic, KJD may present with nonspecific clinical manifestations, most notably dysphagia, as well as globus sensation, regurgitation, or chronic cough. Diagnosis is most reliably achieved with barium esophagography, which demonstrates the characteristic lateral outpouching. Computed tomography (CT) or endoscopy may assist in excluding alternative cervical pathologies. We present the case of a 15-year-old female who underwent open diverticulectomy with cricothyroid myotomy under general anesthesia, with an uneventful postoperative course and no evidence of recurrent laryngeal nerve injury or fistula formation at two weeks of follow-up.

**Keywords:** Barium esophagography, esophageal diverticulectomy, killian-jamieson diverticulum, pediatric dysphagia, recurrent laryngeal nerve

JMHSJ Jambura Medical and Health Science Journal

**Published by:**
Universitas Negeri Gorontalo

**Address:**
Jend. Sudirman St. No.6, Gorontalo City, Gorontalo, Indonesia

**Mobile number:**
+62852 3321 5280

**Email:**
jmhsj@ung.ac.id

**Article History:**
Received 23 June 2025
Accepted 29 August 2025
Published 31 August 2025

**DOI:**
https://doi.org/10.37905/jmhsj.v4i2.32946

## Introduction

Killian-Jamieson Diverticulum (KJD) is an uncommon pharyngoesophageal diverticulum that originates from a muscular defect in the anterolateral wall of the proximal cervical esophagus, located immediately inferior to the cricopharyngeus muscle and superolateral to the longitudinal muscle fibers of the esophagus, within the region known as the Killian–Jamieson area. KJD is a very rare entity, with an incidence of approximately one-quarter of Zenker's Diverticulum (ZD) and an estimated prevalence of around 0.025% in the general population.[1] It is even rarer in the child population, with only one article published by Shambayati et al. in 2017, suggesting a possible congenital nature of KJD.[2] It is often distinguished from the more common ZD, which originates from the space in the posterior aspect below the inferior pharyngeal constrictor muscle and above the cricopharyngeus muscle. It also tends to be larger and more symptomatic than KJD.[1]

Although frequently asymptomatic, KJD may present with non-specific complaints such as dysphagia (most often), globus sensation, regurgitation, or chronic cough.[3] In some instances, it is discovered incidentally during imaging studies or neck ultrasonography performed for other indications. The appearance of KJD may mimic a thyroid nodule on neck ultrasonography.[1] Accurate diagnosis typically requires barium esophagography, which demonstrates the lateral outpouching, though computed tomography (CT) or endoscopic assessment may also be used to rule out other cervical pathologies.[4]

Management of KJD depends on the presence and severity of symptoms. Asymptomatic patients may be observed, while symptomatic cases often require surgical excision. A transcervical diverticulectomy with or without esophageal myotomy is the preferred approach due to the proximity of the diverticulum to the recurrent laryngeal nerve (RLN), which mandates meticulous surgical technique to prevent vocal cord paralysis. Endoscopic treatment using a stapler device has also been described as a minimally invasive option in selected cases.[4]

Due to its rarity and potential for misdiagnosis, KJD should be considered in the differential diagnosis of cervical masses or unexplained upper esophageal symptoms, especially when located laterally on imaging.

## Case

A 15-year-old female was referred to the Ear, Nose, and Throat (ENT) department with a chief complaint of persistent dysphagia for both solids and liquids for the past month. The complaint began after an incident four years before presentation, where the patient choked while drinking tea. Over time, she experienced recurrent episodes of choking, particularly while drinking and occasionally while asleep. She also reported a persistent sensation of a

foreign body in her throat and occasional odynophagia. However, the complaint was not severe until 2025 when the patient experienced persistent dysphagia.

On physical examination, the general condition was fair with a Glasgow Coma Scale (GCS) of 15. Vital signs were within normal limits: blood pressure 110/60 mmHg, pulse rate 90/min, respiratory rate 22/min, and temperature 36.6°C. On the anthropometric status, the patient's body weight was 27 kg, height 146 cm, weight/age 54% (very underweight), height/age 90.6% (normal stature), weight/height 72.9% (malnourished). Physical examination revealed no abnormalities in the head and neck region. The tonsils were graded T1–T1 without hyperemia, and the oropharyngeal mucosa appeared normal. Pulmonary, abdominal, and extremity examinations were unremarkable. Laboratory results showed a hemoglobin level of 12.4 g/dL, white blood cell count of 9,760/µL, and platelet count of 351,000/µL. Based on clinical suspicion of esophageal structural abnormality, further imaging was conducted.

A barium esophagogram revealed proximal esophageal outpouching consistent with KJD, which projected anterolaterally from the proximal cervical esophagus. The estimated size of the outpouching was 0.81 x 2.80 cm. This finding was supported by additional contrast studies (esophagography and abdominal radiography) showing pooling and delayed passage in the proximal esophagus. There was no evidence of tracheoesophageal fistula or gross esophageal obstruction (Figure 1)**.**

Given the persistent symptoms and radiologic confirmation of the diverticulum, the patient underwent functional-saving surgery with open diverticulectomy of KJD with cricothyroid myotomy under general anesthesia. Intraoperatively, the diverticulum was identified lateral to the cricopharyngeal muscle after dissection through the right sternocleidomastoid muscle. The diverticulum was excised, hemostasis was achieved, and the esophageal wall was repaired primarily, followed by a layered closure with sutures. A drain was placed within the surgical site.

The postoperative course was uneventful. The patient was monitored in a non-intensive unit and showed gradual improvement in oral intake. Two weeks after surgery, the patient experienced no hoarseness and could swallow slowly, indicating no postoperative complications such as RLN injury or fistula formation. Postoperative endoscopic examination resulted in reflux esophagitis and gastroesophageal reflux disease (GERD) with cicatric formation at the proximal esophagus.

This case report was conducted by the ethical standards of the ethics committee of our institution. Written informed consent was obtained from the patient's legal guardian for the publication of this case report and any accompanying images.

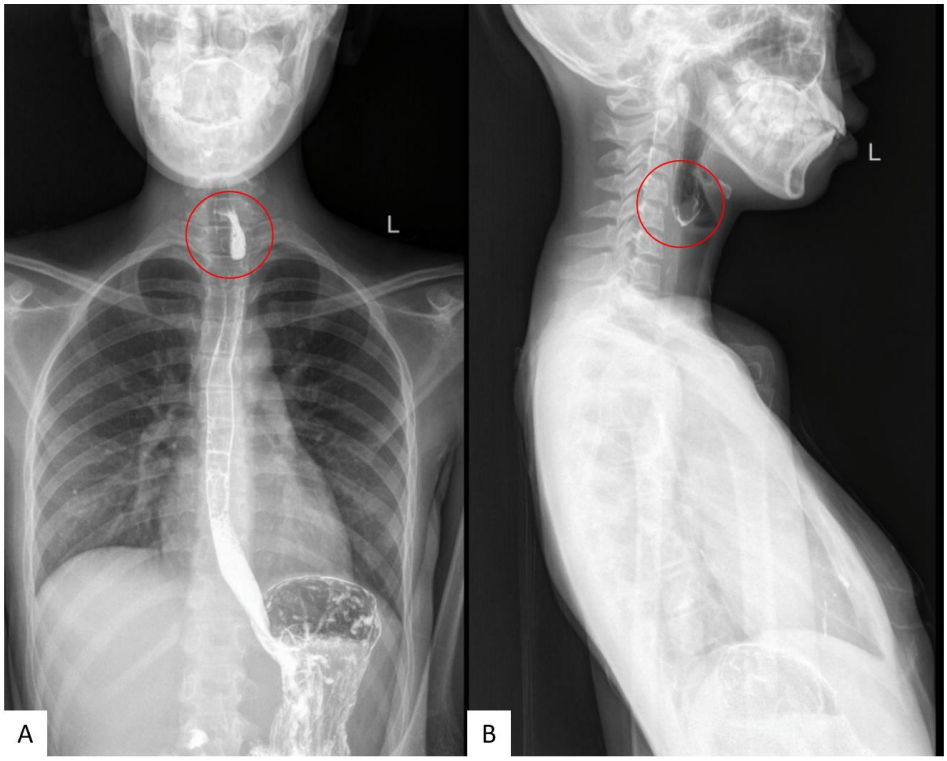


**Figure 1.** Barium esophagomagduodenography anteroposterior (A) and lateral (B) views of the patient showed a proximal esophageal outpouching (red circle), consistent with Killian-Jamieson Diverticulum.

## Discussion

### Anatomy and diagnosis

Killian-Jamieson Diverticulum is an exceptionally rare cervical esophageal outpouching arising through the anterolateral Killian–Jamieson area below the cricopharyngeal muscle and superolateral longitudinal muscle fibers of the esophagus. This location is in intimate proximity to the RLN branches, which traverse the Killian–Jamieson space (Figure 2)**.** By comparison, ZD (posterior hypopharyngeal diverticulum) is roughly four times more common.[1]

The patient characteristics of KJD are similar to those of ZD. Most of both cases are elderly, with an average age of 72 years in KJD and 66 years in ZD. KJD often presents incidentally or with vague symptoms. The prevalence of both cases is 0.025% in KJD and 0.01% in ZD.[4] The incidence of KJD in the pediatric population is unknown due to very scarce literature, with only one case of KJD reported in a 2-year-old patient. The patient presented with dysphagia that started with the introduction of solid food. The patient was initially diagnosed with non-resolving GERD, then later confirmed as KJD with esophagography and upper gastrointestinal endoscopy. It highlights the need for a high index of suspicion in young

patients.[2] Our 15-year-old patient represents an exceedingly rare presentation, underscoring that KJD can present with dysphagia and globus even in the pediatric population, albeit less dramatically than in adults.

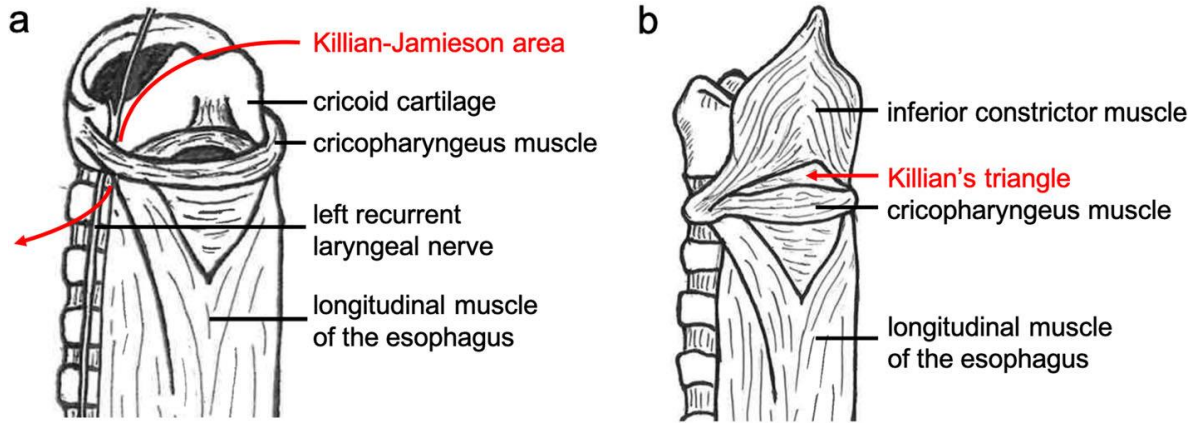


**Figure 2.** Illustration of the muscular gaps serving as the origin of pharyngoesophageal diverticula. (a) The Killian-Jamieson Diverticulum (KJD) originates from a muscular defect in the anterolateral wall of the proximal cervical esophagus, situated just inferior to the cricopharyngeal muscle and superolateral to the longitudinal muscle fibers of the esophagus, within the Killian–Jamieson area. This location is in close proximity to the entry point of the RLN into the larynx. (b) The ZD arises from a muscular gap in the posterior aspect between the inferior border of the inferior pharyngeal constrictor muscle and the superior border of the cricopharyngeal muscle, a region known as Killian's triangle.[1]

The diagnosis of KJD relies on radiological assessment, as the clinical presentation of KJD is non-specific. Barium esophagography is the modality of choice in diagnosing KJD, followed by ultrasound and cervical CT.[5,6] The anterolateral origin of KJD provides a radiologic clue on esophagography. KJD appears as a lateral cervical pouch projecting inferior to the cricopharyngeal, whereas ZD is a posterior pouch above the muscle (Figure 3).[7] In our patient's esophagogram, a large anterolateral cervical diverticulum was evident, which is characteristic of KJD.

Diagnostically, KJD can be challenging, especially in younger patients. Because the diverticula are often small (average 1.4 cm) and asymptomatic, they are frequently misrecognized or mistaken for thyroid pathology.[9] Indeed, KJD may appear on ultrasound as thyroid-adjacent cystic or hyperechoic lesions with air artifact. In the first reported KJD on thyroid ultrasound, hyperechoic "lesions with reverberation artifacts" were noted behind both thyroid lobes, raising the suspicion of a thyroid mass (Figure 4). When ultrasound cannot

definitively distinguish a thyroid nodule from a pharyngoesophageal pouch, barium esophagography or CT should be obtained to confirm the diagnosis and avoid unnecessary biopsy.[10]

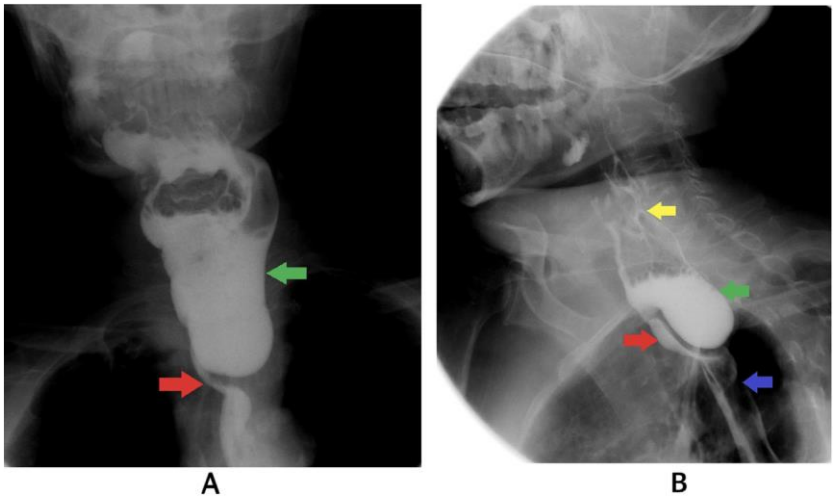


**Figure 3.** *Spot images from a barium swallow study.* (A) Left-sided esophageal outpouching (green arrow) causing compression and mild displacement of the esophagus to the right. (B) Similar diverticulum (green arrow) with its opening located at the C4–C5 level (yellow arrow), compressing the esophagus (red arrow), while the distal esophagus maintains a normal caliber (blue arrow).[8]

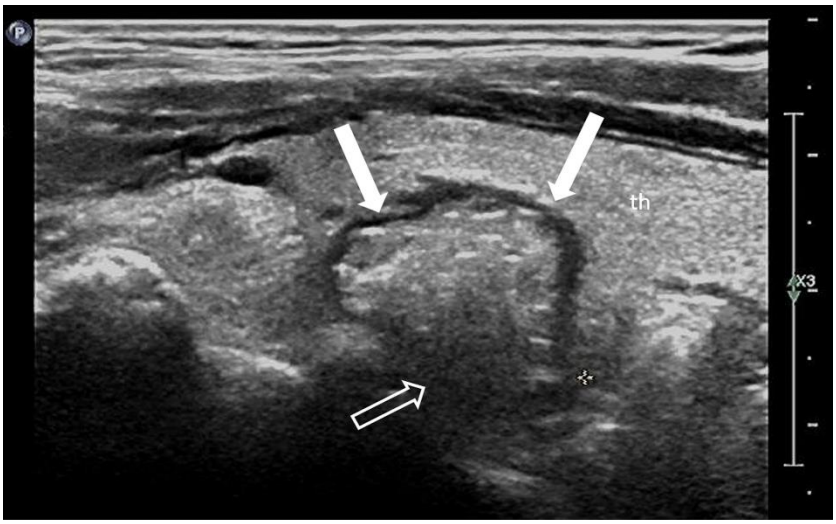


**Figure 4.** Ultrasound of the neck showing reverberation artifacts mimicking thyroid nodules, later identified as KJD.[10]

Contrast-enhanced CT can directly demonstrate an air-filled diverticulum posterior to the thyroid lobe. In one case of presumed Zenker's, CT showed an "air-contained diverticulum arising from behind the left lobe of the thyroid," alerting the team to a KJD. Thus, combined

imaging (barium esophagography plus cervical CT or ultrasound) is recommended to delineate the diverticulum's location, size, and relation to adjacent structures. Endoscopic examination may reveal the diverticular opening at about 17–20 cm from the incisors on the anterior lateral wall, but caution is required to identify KJD versus Zenker's, as treatment differs. Overall, the literature stresses a low threshold for barium swallow in unexplained cervical dysphagia or globus, even in children, to catch rare entities like KJD.[11] On CT imaging, the relationship to the thyroid gland could be misdiagnosed as thyroid gland pathology or a hypopharyngeal diverticulum (Figure 5)**.**[5]

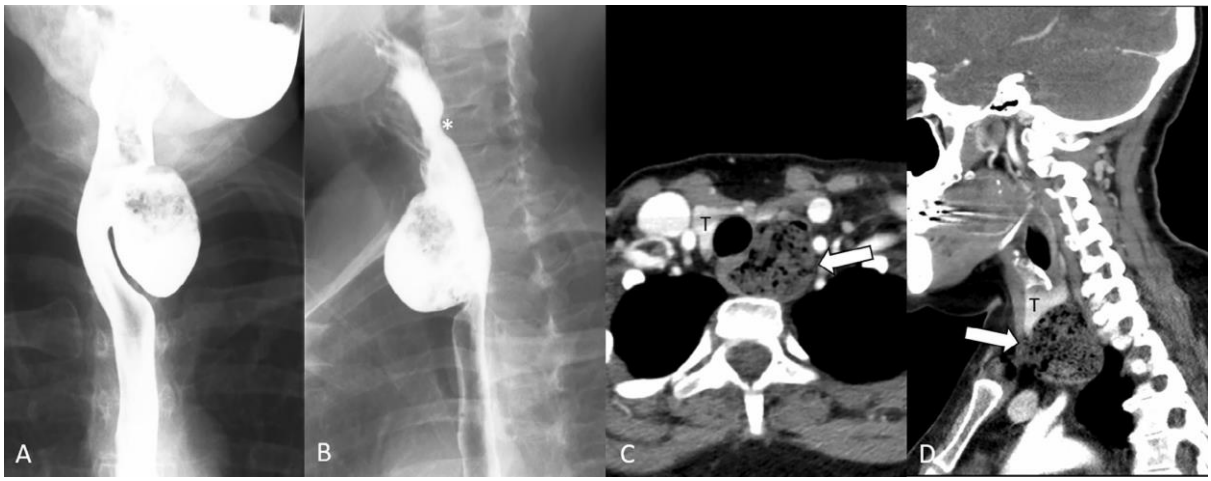


**Figure 5.** A 57-year-old female with imaging characteristics of Killian–Jamieson diverticulum (KJD). (A) Anteroposterior (AP) esophagogram shows a lateral hypopharyngeal diverticulum. (B) Lateral esophagogram demonstrates the diverticulum arising anterolaterally from the esophagus, just below the cricopharyngeal muscle (*). (C) Axial CT image showing the diverticulum (white arrow) arising from the left esophagus, immediately inferior to the thyroid gland (T), containing retained food material. (D) Sagittal CT image again demonstrating the diverticulum (white arrow) located just below the thyroid gland (T).[5]

**Treatment and outcomes**

The management of symptomatic KJD is surgical, which includes conventional diverticulectomy (67%), endoscopic diverticulectomy (28%), and diverticulopexy (5%). Open surgical diverticulectomy is typically performed via a transverse or vertical cervical incision, with or without concomitant esophagostomy.[6]

The patient in this case underwent open diverticulectomy, and the diverticulum was identified lateral to the cricopharyngeal muscle. Conventional open diverticulectomy remains the standard treatment, as it restores normal pharyngoesophageal anatomy and eliminates the

potential—albeit unreported in KJD—risk of malignant transformation within the diverticulum. For comparison, Herbella et al. reported a prevalence of malignant transformation ranging from 0.3% to 7% in ZD.[6]

In our case and others, the diverticulum was excised with a stapler and a short (3 cm) myotomy was performed to improve esophageal emptying.[5] Several case series have shown that open resection with myotomy provides durable relief of dysphagia. For example, a recent multicenter report found that all KJD patients (albeit <5% of hypopharyngeal diverticula) underwent open transcervical excision, and symptom scores improved significantly postoperatively. Traditional surgery reliably resolves symptoms, but it carries the usual operative risks – notably injury to the RLN given its close relation. Thus, many authors advocate the use of intraoperative neural monitoring or meticulous dissection. Orzell et al. even argue that nerve monitoring should be used "to minimize risk of injury to the RLN" during diverticulectomy. Indeed, in the reported series, no permanent nerve palsy was described when care was taken. In high-risk surgical candidates (e.g., elderly or comorbid), some surgeons have also employed a diverticulopexy (fixation without resection) to avoid extensive dissection, although evidence is limited.[5]

Endoscopic diverticulectomy for KJD is not commonly performed due to the high risk of RLN injury, as the RLN entry point into the larynx corresponds to the base of the diverticulum. This proximity increases the risk of nerve transection and thermal damage. Only a few reports have described successful endoscopic management, including the use of monopolar cautery or carbon dioxide laser to separate the intervening septum, and endoscopic staplers or needle knives to divide the septum.[6]

In the past decade, less-invasive endoscopic techniques have emerged for KJD, modeled on Zenker's therapy.[5] Endoscopic septotomy can be performed with flexible endoscopes, either using a stapling device or needle-knife instruments. Yun et al. reported on an 88-year-old with KJD treated by flexible endoscopy: under barium swallow guidance, they performed endoscopic diverticulotomy with a surgical stapler, successfully relieving symptoms without recurrent laryngeal injury.[12] Similarly, a small series of flexible endoscopic septotomy (using scissors, clips, or knives) has been published, indicating that a complete septal myotomy (or "diverticulotomy") may be achieved endoscopically. The potential advantage is avoiding an external neck incision. However, given the narrow anterolateral diverticular neck and nearby nerves, clinicians have expressed caution. Orzell et al. warned of the "potential dangers of endoscopic repair of the RLN" and preferred open excision in their series.[7]

## Conclusion

Killian-Jamieson Diverticulum in the pediatric population is extraordinarily rare, but awareness of its existence is crucial to avoid misdiagnosis. Detailed knowledge of the anatomy (anterolateral location, proximity to RLN) and thoughtful use of imaging (barium esophagography, CT, neck ultrasonography) allow accurate identification. Once diagnosed, treatment can be tailored to the patient. Traditional open transcervical diverticulectomy (with myotomy and nerve monitoring) remains a definitive option, while advanced endoscopic approaches (flexible septotomy) offer effective alternatives in skilled hands. Our 15-year-old patient's successful management highlights both the diagnostic challenges and the expanding therapeutic armamentarium for this uncommon disorder.

## Conflict of Interest

All authors declare that they have no conflicts of interest.

## Funding Sources

Nothing to declare

## Acknowledgments

Nothing to declare

## References

1. Saisho K, Matono S, Tanaka T, Mori N, Hino H, Fujisaki M, et al. Surgery for Killian-Jamieson diverticulum: a report of two cases. *Surg Case Rep*. 2020; 6(1):17.
2. Shambayati M, Johnson J, Prabhu S, Mantor C, Halabi I. The first reported pediatric case of Killian-Jamieson diverticulum. *J Pediatr Surg Case Rep*. 2017;22:42–3.
3. Zaharia S, Pleșca D, Gherman ID, Mujdei LE, Ciortescu I. Killian-Jamieson diverticulum: A rare cause of dysphagia. *Radiol Case Rep.* 2023;18(9):3331–5.
4. Oh J, Norris A, Artigue M, Kruger J. Killian-Jamieson Diverticulum: Management of a Rare Esophageal Diverticula. *Cureus*. 2021; 13(9):e17820.
5. Howell R, Tang A, Allen J, Altaye M, Amin M, Bayan S, et al. Killian Jamieson Diverticulum, the Great Mimicker: A Case Series and Contemporary Review. *The Laryngoscope*. 2023;133(9):2110–5.
6. Chaudhry IUH, Al Ghamdi AM, Al Qahtani Y, Algazal T, Razzaq B, Al Abdulhai MA, et al. A rare cause of dysphagia and simultaneous hoarseness of voice in the octogenarian: a Killian–Jamieson diverticulum, management, and review of literature. *Ann Med Surg.* 2023;85(3):583–8.
7. Orzell S. Killian-Jamieson Diverticulum: A Case Report and Argument for Transcervical

Diverticulectomy. *J Otolaryngol Rhinol.* 2016;2(4):1-4 .

8. Dahal P, Malla SK, Upadhyaya RP, Parajuli S, Dhakal N. Zenker's diverticulum: A case study of dysphagia in an elderly gentleman. *Radiol Case Rep*. 2024;19(10):4417–21.
9. Assefa RL, Bejjani M, Mehta A, Shrigiriwar A, Fayyaz F, Shimamura Y, et al. Peroral endoscopic myotomy as a treatment for Killian–Jamieson diverticulum (KJ-POEM). *Endosc Int Open*. 2024;12(10):E1214–9.
10. Chen X, Liu J, Gu C, Ding S, Zhou S, Chen X, et al. Ultrasonographic characteristics of KILLIAN-JAMIESON diverticula. *J Clin Ultrasound.* 2021;49(6):527–32.
11. Martin-Harris B, Brodsky MB, Michel Y, Castell DO, Schleicher M, Sandidge J, et al. MBS Measurement Tool for Swallow Impairment—MBSImp: Establishing a Standard. *Dysphagia*. 2008;23(4):392–405.
12. Yun PJ, Huang HK, Chang H, Lee SC, Huang TW. Endoscopic diverticulotomy with a stapler can be an effective and safe treatment for Killian-Jamieson diverticulum. *J Thorac Dis.* 2017;9(9):E787–91.