

# Killian-Jamieson Diverticulum an Incidental Finding During a Total Thyroidectomy

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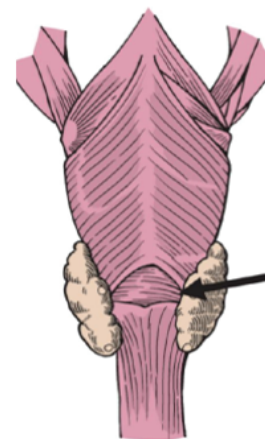
## 1. Abstract

Killian-Jamieson diverticulum (KJD) is a rare pharyngoesophageal diverticulum arising from the Killian-Jamieson triangle, located below the cricopharyngeal muscle. Its coexistence with thyroid nodules is uncommon and may present diagnostic challenges, as it can mimic thyroid pathology on imaging. A 68-year-old female presented with a multinodular goiter and a dominant thyroid nodule suspicious for malignancy due to indeterminate fine-needle aspiration (FNA) results and concerning ultrasound findings, including peripheral Doppler flow and microcalcifications. Imaging also revealed a posterior mass, raising suspicion for an exophytic thyroid nodule or pathologic lymph node. The patient underwent total thyroidectomy to address the indeterminate thyroid nodule and eliminate malignancy risk. During surgery, an unexpected pouch was identified posterior to the thyroid gland, consistent with KJD. Postoperative barium swallow confirmed the diagnosis. As the patient was asymptomatic, the diverticulum was managed conservatively, with plans for follow-up monitoring. The thyroid nodule was confirmed benign on histopathology, and no complications occurred. This case highlights the importance of considering KJD during thyroid surgery, as its sonographic appearance may mimic thyroid nodules. Failure to recognize KJD intraoperatively risks significant pharyngeal or esophageal injury. Preoperative imaging interpretation and intraoperative vigilance are essential to prevent complications. Conservative management is appropriate for asymptomatic KJD, reserving surgical intervention for symptomatic cases. This report underscores the value of individualized patient management and careful surgical planning in rare cases of thyroid pathology coexisting with esophageal diverticula.

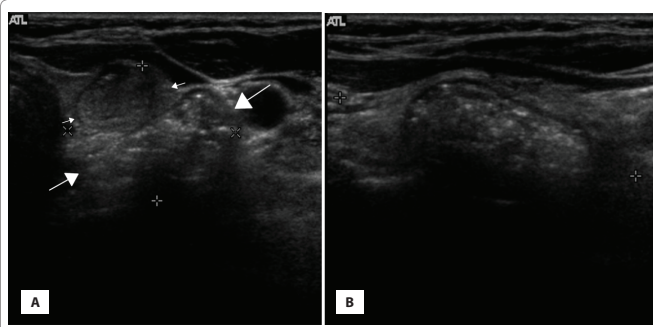
## 2. Introduction

Killian-Jamieson diverticulum (KJD) is a rare form of pharyngoesophageal diverticula emerging in the anterolateral wall of the cervical esophagus. It arises in an area of weakness called Killian-Jamieson triangle, located below the cricopharyngeal muscle [Figure 1]. Patients with KJD most commonly present with suprasternal dysphagia, cough, heartburn and epigastric pain [1]. Diagnosis is based on contrast radiography of the pharynx and esophagus [2]. There are several described surgical approaches to treatment; including open as well as endoscopic techniques. We report a case of a 68 year old female who presented to the clinic with multinodular goiter and a dominant nodule on the left side of measuring 3<sup>cm</sup>. Fine-needle aspiration (FNA) of the nodule yielded indeterminate results, making it difficult to rule out malignancy preoperatively. While the FNA report did not provide a definitive diagnosis the ultrasound findings—showing peripheral Doppler flow and microcalcifications—raised concern for potential malignancy. Additionally, the large mass posterior to the thyroid, which was suspected to be an exophytic thyroid nodule or pathologic lymph node, increased the uncertainty

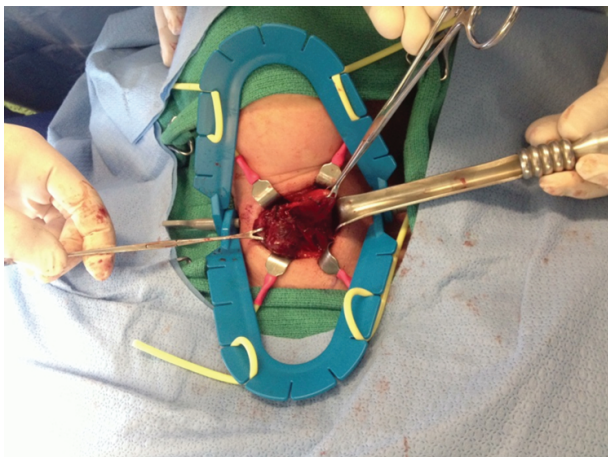
regarding the nature of the lesion [Figure 2A,2B]. In such cases, total thyroidectomy is often considered the best course of action to eliminate the risk of undiagnosed malignancy and provide a definitive histological diagnosis. Total thyroidectomy not only provides a definitive histological diagnosis but also minimizes the risk of leaving any potentially malignant tissue untreated. Indeterminate thyroid nodules carry a 15-25% risk of malignancy, and in cases like this one, where imaging findings raise additional concerns, surgery is often considered the most prudent course of action to ensure patient safety and comprehensive treatment. By opting for a total thyroidectomy, we ensured both the removal of the suspicious nodule and the ability to definitively evaluate the surrounding structures through pathological examination [3]. During the surgery, as we started to expose the left lobe of the thyroid gland in the lateral aspect, it appeared to continue both posterior and inferior. Further dissection suggested that this was muscle tissue; possibly a diverticulum. We passed an NG tube through the oral cavity and down through the esophagus. As we freed the thyroid gland from the esophagus, a pouch was evident and believed to be a diverticulum [Figure 3&4]. We opted not to repair this diverticulum at the time of the surgery as the patient had not been consented prior and the patient had not voiced any concerns of dysphagia. This could be left for a later date for endoscopic treatment if the patient eventually becomes symptomatic. We continued the thyroid dissection as we initially planned. We identified the recurrent laryngeal nerve in the trachea-esophageal groove. The course of the nerve proceeded distally between the Diverticulum and the superior lobe of the thyroid and entered the larynx in its anticipated location



**Figure 1:** Anatomical illustration depicted the anterolateral aspect of the cervical esophagus, highlighting the area of the Killian-Jamieson triangle (indicated by the arrow).

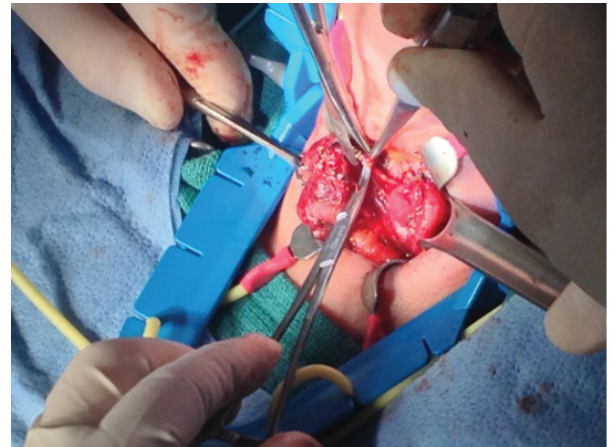


**Figure 2:** A) Ultrasound image of the left thyroid lobe. The small arrows indicate the thyroid nodule, while the large arrows point to the diverticulum. B) Long-axis ultrasound view of the Killian-Jamieson diverticulum.

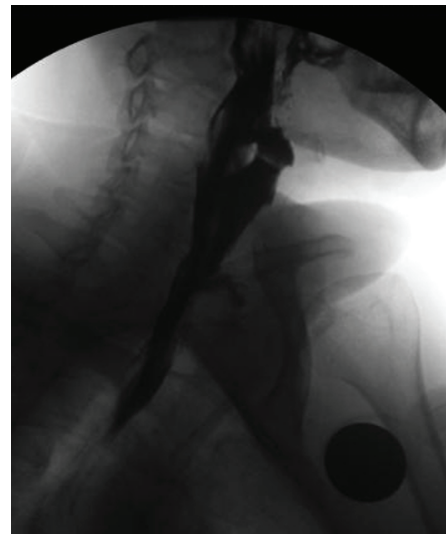


**Figure 3:** Intraoperative image showing the exposed Killian-Jamieson diverticulum during thyroid dissection.

at the cricothyroid joint. Once completed, we verified the function of the left recurrent laryngeal nerve using the Hilger nerve stimulator. It was found to be stimuable. We then proceeded to perform the same procedure on the contra lateral side, where no abnormalities were identified. Following the completion of the dissection of the right lobe, the nerve was found to be stimuable. After one month, the patient did undergo a barium swallow that demonstrated a Killian-Jamieson diverticulum[Figure 5]. Since the patient was not symptomatic, we decided not to operate on her, and just to follow-up. Given the frequency of thyroid surgery, identifying a co-existing diverticulum is a possibility, albeit rare, given the low incidence of Killian-Jamieson diverticulum. On ultrasound, diverticula may mimic exophytic thyroid nodules, especially as gas bubbles within the diverticula may have a similar sonographic appearance to microcalcifications in a thyroid nodule [4]. If a diverticulum is encountered during surgery but not recognized, significant injury to the pharynx and/or esophagus could occur. If one suspects during the course of the surgery, insertion of an NG tube can aid in the confirmation and dissection. Given that the patient in this article is asymptomatic, the decision to manage the Killian-Jamieson diverticulum conservatively is aligned with current best practices. As Saisho et al. [5]. Discussed, the management of KJD should be individualized, particularly when patients are asymptomatic. In such cases, a conservative approach involving careful monitoring and follow-up is often recommended, avoiding the potential risks associated with surgical interventions. This strategy is especially prudent when the patient does not exhibit symptoms such as dysphagia or other complications that would necessitate immediate surgical correction. The low incidence of complications in asymptomatic patients supports the decision to opt for a non-surgical approach, reserving surgery for cases where symptoms develop or if there is a risk of future complications..



**Figure 4:** Intraoperative image demonstrating the continuation of the diverticulum as it merges with the cervical esophagus.



**Figure 5:** Barium swallow study performed one month postoperatively, demonstrating the presence of the Killian-Jamieson diverticulum.

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