



# Killian-Jamieson diverticulum lined with two epithelia in a Korean cadaver

Min-Kyoung Cha<sup>1,\*</sup>, Seung Weon Kang<sup>1,\*</sup>, Young Hee Maeng<sup>2</sup>, Jinu Kim<sup>3</sup>, Sang-Pil Yoon<sup>3,4</sup>

<sup>1</sup>Medical Course, School of Medicine, Jeju National University, Jeju, Departments of <sup>2</sup>Pathology and <sup>3</sup>Anatomy, Jeju National University School of Medicine, Jeju, <sup>4</sup>Institute for Medical Science, Jeju National University, Jeju, Korea

**Abstract:** Killian-Jamieson diverticulum is a permanent protrusion of anterolateral proximal esophagus through anatomically weak muscular gap, known as Killian-Jamieson area, into adjacent area. During a routine educational dissection, we found a well-defined lateral diverticulum just inferior to the transverse fibers of the cricopharyngeus muscle in a Korean male cadaver. It had a dimension of 1.8×1.4×1.0 cm with two types of epithelial cells, stratified squamous and simple cuboidal to low-columnar epithelium, and attenuated and haphazardly arranged muscle fibers. No epithelial dysplasia or malignant transformation was identified except ulcerative changes. Although Killian-Jamieson diverticulum is a very rare disease, clinicopathological aspects should be considered.

**Key words:** Killian-Jamieson triangle, Diverticulum, Epithelium, Cadaver

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## Introduction

Pharyngoesophageal diverticuli are relatively rare diseases [1-3]: the Zenker's diverticulum is an outpouching from the muscular gap in the posterior portion above the cricopharyngeus muscle with an estimated incidence of less than 0.5% and the Killian-Jamieson diverticulum is an outpouching from a muscular gap in the anterolateral wall of the proximal cervical esophagus just below the cricopharyngeus muscle and superolateral to the longitudinal muscle of the esophagus with an incidence ratio of 1:4 as compared to Zenker's. Although simultaneously occurring Zenker's and Killian-Jamieson diverticula in one patient was reported [4], we showed a direct evidence of Killian-Jamieson diverticulum lined with two dif-

ferent epithelial cells in a Korean male cadaver.

## Case Report

During a routine educational dissection at Jeju National University Medical School in 2017, we found a well-defined lateral diverticulum of the proximal esophagus in a 55-year-old Korean male cadaver, whose cause of death was "unknown."

At the neck, superior, middle and inferior pharyngeal constrictor muscles were dissected. When the outer longitudinal layer of the esophagus was removed, a lateral outpouching (Fig. 1A) was detected on the lateral part just inferior to the transverse fibers of the cricopharyngeus muscle, the most inferior part of the inferior pharyngeal constrictor muscle. The lateral outpouching of a hollow structure (rectangle in Fig. 1A) had a dimension of 1.8×1.4×1.0 cm, and the thickness of its wall was about 2 mm.

Histopathologically, the diverticular wall consisted of mucosa, muscle layer, and adventitia (Fig. 1B, C). The mucosal surface was lined by two types of epithelial cells: stratified squamous epithelium (Fig. 1D) and simple cuboidal or low-

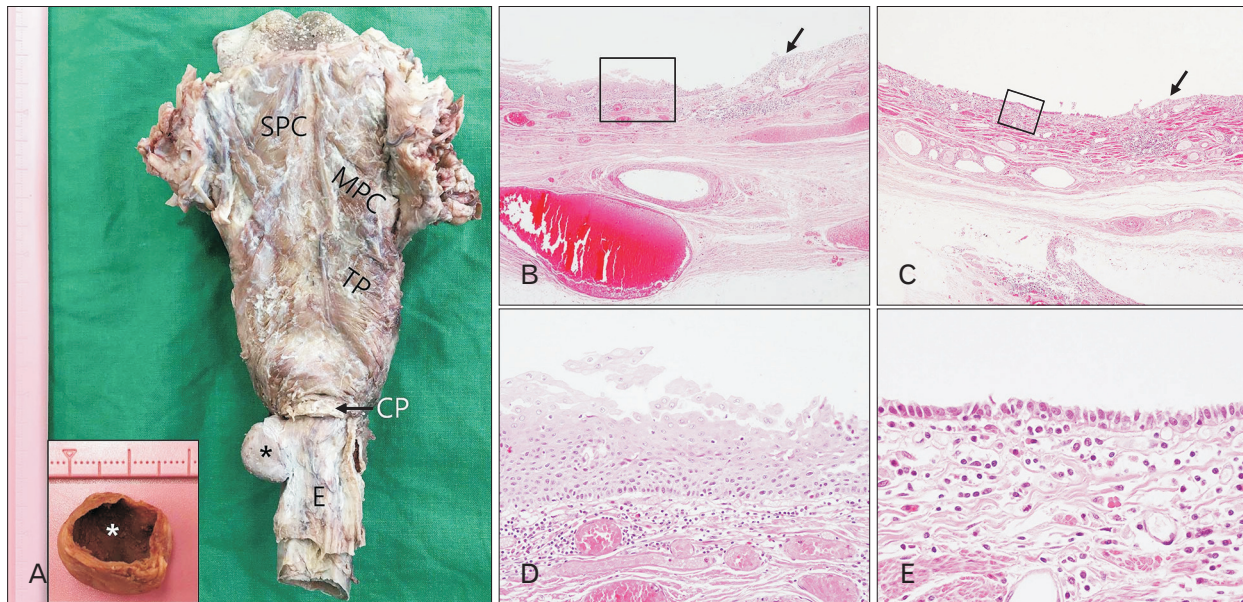
### Corresponding author:

Sang-Pil Yoon  
Department of Anatomy, School of Medicine, Jeju National University,  
102 Jejudaehang-ro, Jeju 54987, Korea  
Tel: +82-64-754-3823, Fax: +82-64-725-2593, E-mail: spyoon@jejunu.ac.kr

\*These two authors contributed equally to this work.

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**Fig. 1.** Photographs of Killian-Jamieson diverticulum. (A) A well-defined diverticulum (asterisk) was observed just inferior to the transverse fibers of the cricopharyngeus muscle (CP, arrow), in a lateral position. (B, C) The diverticular wall consists of mucosa, muscle layer, and adventitia (H&E,  $\times 40$ ) and shows multiple foci of superficial ulcerations (arrows). The mucosal surface is lined by stratified squamous epithelium (D,  $\times 200$ ) and partly by cuboidal or low-columnar epithelium (E,  $\times 400$ ). E, esophagus; MPC, middle pharyngeal constrictor muscle; SPC, superior pharyngeal constrictor muscle; TP, thyropharyngeus muscle.

columnar epithelium (Fig. 1E). Multiple foci of superficial ulceration were observed. The muscular fiber was attenuated and haphazardly arranged. No epithelial dysplasia or malignant transformation was identified.

## Discussion

Killian-Jamieson diverticulum is a thin-walled diverticulum, mean diameter 1.5 cm (range, 0.5–10 cm), which is usually considered as a false diverticulum without a muscular layer [3, 5]. In this report, a typical Killian-Jamieson diverticulum was observed between the fibers of the cricopharyngeus muscle superiorly and longitudinal muscle of the esophagus inferiorly (so called Killian-Jamieson area [1]) with a diameter of  $1.8 \times 1.4 \times 1.0$  cm and haphazardly arranged and attenuated muscle fibers. Our case, however, had different property on the epithelial lining, stratified squamous epithelium and cuboidal to low-columnar epithelium, which has never been reported to the best of our knowledge.

There might be a possibility of the unrecognized or erroneously classified Killian-Jamieson diverticulum as Zenker's, because the majority of articles about hypopharyngeal diverticula have concentrated on Zenker's diverticulum. The lateral Killian-Jamieson diverticula, however, might be relatively

common, with a range of 35% [6] up to 44% [7] of hypopharyngeal diverticula. The incidence of the Killian-Jamieson diverticulum was reported 1.87% (16 of 854) [7] to 3.4% (17 of 500) [8] from dysphagia patients, which is a very similar incidence of Zenker's (2.34%, 20 of 854) [7].

Although the incidence of an occult malignancy (squamous cell carcinoma) in the wall of a long-standing Zenker's diverticulum has been reported to be 0.4% [9], the incidence of malignant transformation on Killian-Jamieson diverticulum has never been reported. Zenker's and Killian-Jamieson diverticula have similar histopathologic characteristics: therefore they might share common risk factors for malignancy, such as larger diverticula of long duration [9]. In addition, the occurrence of metaplasia to simple cuboidal to low columnar epithelium suggests that there might be a possibility of persistent stimulations developing into a dysplastic or malignant transformation. In this case, we carefully excluded the possibility of adenocarcinoma according to the literature that columnar lining esophagus without intestinal metaplasia is less associated with adenocarcinoma [10].

Taken together, awareness of the fact that Killian-Jamieson diverticula can be misdiagnosed as thyroid nodules [5] is important to avoid unnecessary interventions. The differentiation between Zenker's and Killian-Jamieson diverticula is

also important, as surgical management differs [4]. In addition, physicians should aware the possibility of carcinogenesis in the Killian-Jamieson diverticulum, although no epithelial dysplasia or malignant transformation was identified in this direct evidence.

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