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**WILEY**
INTRODUCTION
An anterior glottic web is an abnormal fusion of the anterior aspect of the membranous vocal folds. Noncongenital glottic webs are usually iatrogenic from intubation or laryngeal surgery. Infection with pathogens such as *C. diphtheriae* or *B. cereus*, or autoimmune disease, can also cause these lesions. These lesions do not have malignant potential. As such, if they are not impacting quality of life, webs are usually managed conservatively without continued follow-up. We present six patients whose initial in-office diagnoses were consistent with idiopathic benign anterior glottic webs as determined by three laryngologists (A.M.K., J.M.B., M.J.P.). Further evaluation revealed the diagnoses of laryngeal squamous cell carcinoma in all cases. The high risk of malignancy in cases of idiopathic anterior glottic web necessitates biopsy for tissue diagnosis of all such lesions.

Key Words: Anterior glottic web, squamous cell carcinoma, laryngeal cancer, dysphonia.

MATERIALS AND METHODS
Three laryngologists (A.M.K., J.M.B., M.J.P.) selected six patients whose initial in-office diagnoses were consistent with idiopathic benign anterior glottic webs as determined by three laryngologists (A.M.K., J.M.B., M.J.P.). Further evaluation revealed the diagnoses of laryngeal squamous cell carcinoma (SCCa) in all cases.

RESULTS
Description of Cases
Four of the six cases had no history of intubation or laryngeal surgery. Images from the direct laryngoscopic exams can be found in Figure 1. Of these four patients, three were healthy nonsmoking females presenting with progressive dysphonia (patients 3, 4, and 6), and the fourth (patient 2) was a 64-year-old male with extensive medical history presenting with a 40 pack-year smoking history and a year of progressive dysphonia that had failed to improve despite multiple courses of antibiotics. The remaining two patients had previous intubation and laryngologic history (Fig. 2). Of these, patient 1 was a 64-year-old male with a remote smoking history and prior intubation for shoulder surgery, with subsequent hoarseness 3 years prior to presentation. The patient had undergone laryngeal surgery 2 years prior to diagnosis for a left mid-fold pathologically benign polyp. The next year, the patient was noted to have an anterior web and right posterior granulation. Over the ensuing 11 months, the patient’s dysphonia failed to improve with management by general otolaryngologist, resulting in the patient’s presentation to a laryngologist. The patient was taken to the operating room for biopsy, lysis of web, steroid injection, and mitomycin C application, at which time the diagnosis of SCC was made. Patient 5 was a 66-year-old male with
a history of smoking a pack per day for many years but who had quit over 10 years prior. The patient presented with a 20-year history of dysphonia with raspiness and vocal straining that had recently worsened. The patient had previously had a lumbar discectomy and was referred for evaluation of worsening hoarseness. There was no history of traumatic intubation, and the patient’s dysphonia began prior to the surgery, although it subsequently worsened. Thus, the intubation event was not considered related to the formation of the glottic web. An overview of each patient’s clinical history can be found in Table I. All six patients were examined with videostrobolaryngoscopy in the office and were taken to the operating room for direct laryngoscopy and endoscopic surgical treatment of the glottic web. Biopsies are not typically taken during this surgery, but in each case the anterior glottic tissue did not appear quite normal under high-powered microscopy, prompting the surgeon to perform a biopsy. All patients were ultimately diagnosed with T1b SCCa. Four of the six patients underwent definitive radiation therapy and are currently free of disease. One patient recently had an endoscopic cordectomy and is free of disease 4 months postoperatively. The final one case is undergoing radiation therapy at the time of preparation of this article.

**DISCUSSION**

The existence of an idiopathic glottic web in an adult is disputable. There is only one previously documented report of such a web.1 Of consequence, this report was updated 2 years later when the web recurred and was found to have SCCa. Two This report presents six cases of benign-appearing anterior glottis webs, all of which were positive for SCCa. Three occurred in female nonsmoking patients. Although glottic webs are generally a benign process, a high index of suspicion for SCCa must be maintained when evaluating adult patients with idiopathic anterior glottic webs. Multiple patients in this series were managed by other providers who did not obtain tissue

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**TABLE I.**

Clinical History of Patients With Anterior Glottic Webs Found to Be SCC on Pathological Analysis.

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age</th>
<th>Sex</th>
<th>Medical History</th>
<th>Surgical History</th>
<th>Smoking</th>
<th>Voice symptoms</th>
<th>Length of Sx</th>
<th>Years Since Tx</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>64</td>
<td>M</td>
<td>Reflux</td>
<td>Shoulder surgery, previous vocal polyp excision</td>
<td>Past smoker</td>
<td>Rough and strained</td>
<td>3 years</td>
<td>2 years</td>
</tr>
<tr>
<td>2</td>
<td>64</td>
<td>M</td>
<td>ASD, Pulm HTN, Pulmonary embolism, COPD, HLD, GERD</td>
<td>TURP, ASD repair, IVC filter, nasal surgery</td>
<td>40-year pack hx</td>
<td>Increased effort, decreased endurance, and increased fatigue</td>
<td>1 year</td>
<td>1 year</td>
</tr>
<tr>
<td>3</td>
<td>54</td>
<td>F</td>
<td>DM, Hypothyroid, GERD</td>
<td>None</td>
<td>Never smoker</td>
<td>Raspy, fatigue, strain</td>
<td>10 years</td>
<td>10 years</td>
</tr>
<tr>
<td>4</td>
<td>36</td>
<td>F</td>
<td>None</td>
<td>None</td>
<td>Never smoker</td>
<td>Raspy, breaks, strain and fatigue</td>
<td>1 year</td>
<td>7 years</td>
</tr>
<tr>
<td>5</td>
<td>66</td>
<td>M</td>
<td>DM, HLD, HTN</td>
<td>Lumbar discectomy</td>
<td>Previous 1 PPD, quit &gt;10 years prior</td>
<td>Breathy, raspy, strained, gradual progression</td>
<td>20 years</td>
<td>In process</td>
</tr>
<tr>
<td>6</td>
<td>32</td>
<td>F</td>
<td>HPV viral warts, anemia, anxiety</td>
<td>None</td>
<td>Never smoker</td>
<td>Hoarseness, raspy, increased effort, decreased endurance, breaks</td>
<td>2 years</td>
<td>In process</td>
</tr>
</tbody>
</table>

ASD = atrial septal defect; COPD = chronic obstructive pulmonary disorder; DM = diabetes mellitus; F = female; GERD = gastroesophageal reflux disease; HLD = hyperlipidemia; HPV = human papillomavirus; HTN = hypertension; IVC = inferior vena cava; M = male; SCC = squamous cell carcinoma; SX = symptoms; TURP = transurethral resection of prostate; TX = treatment.
diagnosis of the presumed web, resulting in delayed diagnoses. However, all patients were ultimately diagnosed at early stage, resulting in good outcomes. These lesions appear to be indolent and seem to respond well to either radiation therapy or surgery with good oncologic and functional outcomes.

CONCLUSION

In the adult population, anterior glottis webs are described as the result of an insult to the vocal folds in terms of trauma, infection or inflammation. If no etiology for the process can be identified, then all such lesions must be biopsies to rule out malignancy, regardless of the appearance.

BIBLIOGRAPHY