

# An Unusual Presentation of Reinke's Edema

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## Introduction

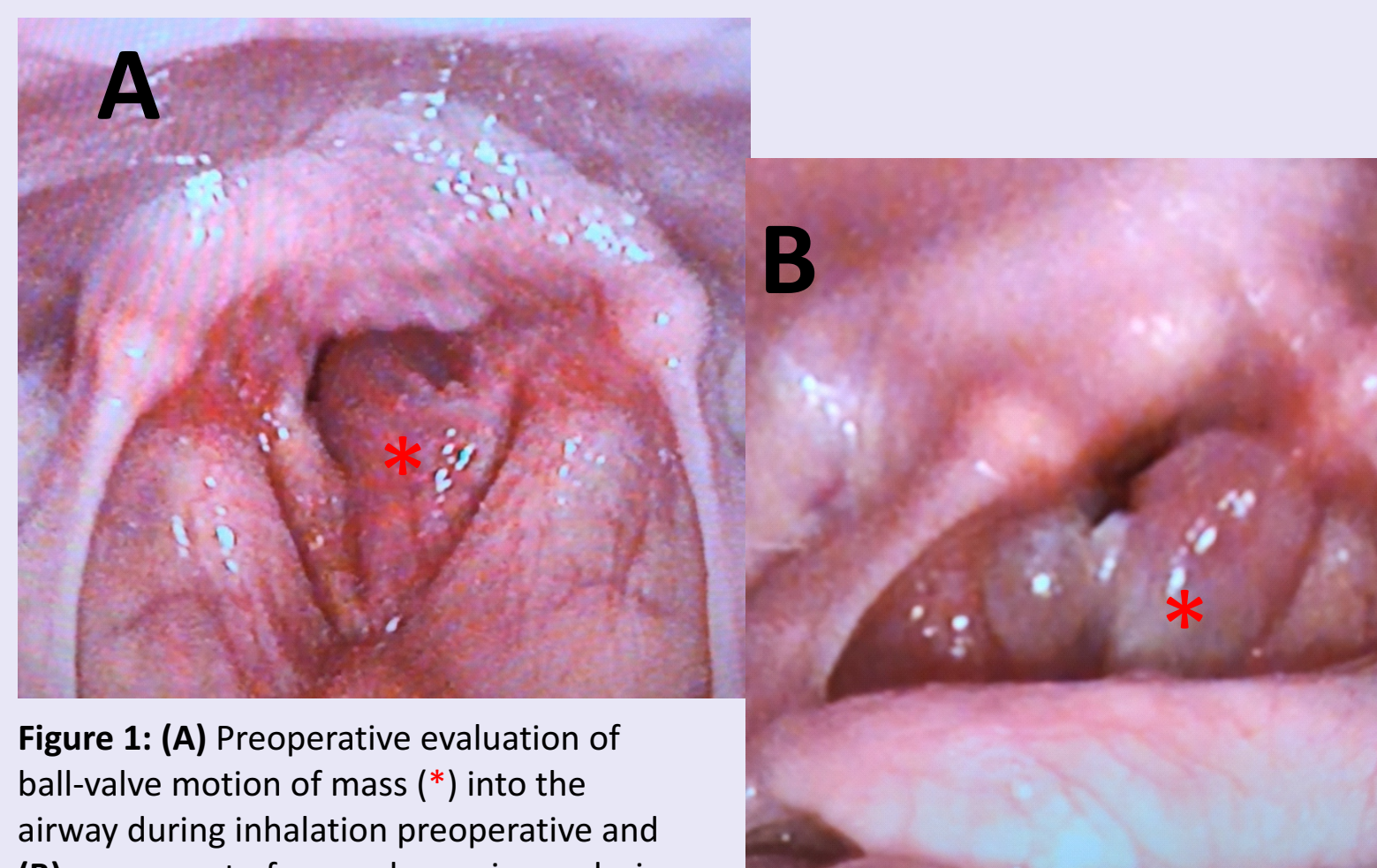
Reinke's edema (RE) is a benign disorder of the vocal folds, characterized by swelling of the superficial lamina propria. This entity is commonly associated with smoking but has been shown to be associated with other inflammatory factors. While it most commonly presents with dysphonia, we present a case of RE presenting emergently with biphasic stridor and respiratory distress.

## Methods

The following case will be presented with a thorough review of the literature in order to discuss common patient demographics, presentation, pathophysiology, and recommendations for treatment based off various classification schemes.

## Case Presentation

A 68-year-old female with a history of chronic smoking and chronic obstructive pulmonary disease (COPD) presented to the Emergency Department (ED) with acute dyspnea for 24 hours. She had a history of dysphonia as well, but she denied any significant change in her voice. She endorses feeling of constriction in her throat and specific tightening of her throat associated with her acute worsening of shortness of breath. Her fiberoptic flexible laryngoscopy in the ED demonstrated a ball-valving mass seeming to protrude from the left true vocal fold towards anterior commissure and obstructing >50% of the airway. Given her acute distress, she was consented for an urgent microdirect laryngoscopy with biopsy.



**Figure 1:** (A) Preoperative evaluation of ball-valve motion of mass (\*) into the airway during inhalation preoperative and (B) movement of mass above airway during exhalation.

Intraoperatively, a rigid direct laryngoscopy showed a large pedunculated, soft lesion attached to the left true vocal fold. Similarly, there was a smaller pedunculated lesion of similar character, but much smaller, coming from the right true vocal fold. Biopsies of the left mass revealed low grade dysplasia on frozen with large amount of reactive tissue and disordered maturation.

## Literature Review

RE is a benign pathologic phenomenon where the superficial lamina propria layer of the vocal fold becomes edematous with a mucoid gelatinous fluid along its entire length (1). Because of this, the vocal fold becomes grossly enlarged and loses its synchronic vibratory wave. Within the later stages, polypoid degeneration further occurs, causing this mucoid fluid to be replaced by fibrous tissue septa that cause a polypoid appearance of the true vocal folds (1). Unfortunately, the exact mechanism of this pathologic phenomenon is largely unknown, but it is clinically strongly associated with cigarette smoking and tobacco exposure (2). However, it can also be commonly associated with vocal abuse, laryngopharyngeal reflux (LPR), or other inflammatory states (2). Luckily, RE is not often associated with dysplasia or other atypical changes, often quoted as 0-3% (3). Specifically, Marcotullio et al. demonstrated that the longer a patient is exposed to cigarettes, the more severe the lesion in addition to a high risk for recurrence of RE with continued tobacco exposure (2).



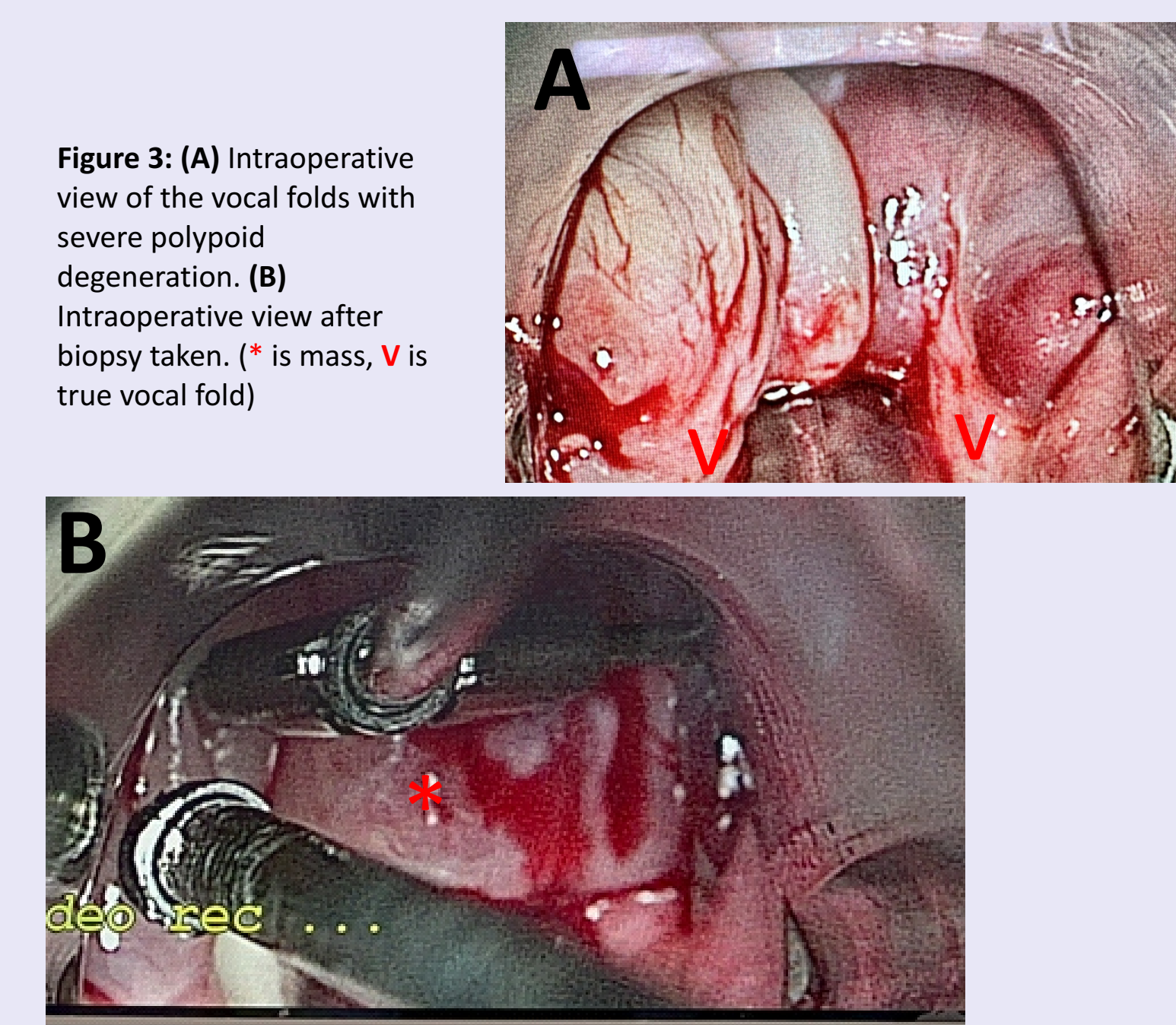
**Figure 2:** (A) Axial cut showing obstruction at the level of the glottis from a soft tissue mass (\*). (B1-3) Coronal anterior to posterior cuts showing the same (\*).

The grading for RE is not standardized and various tools can be used depending on the desired measurement. For example, grading scales presented by Tan et al. translate RE symptoms as airway obstruction while Yonekawa et al are more based on amount of total vocal fold involvement and its affect on the voice (3, 4, 5). Additionally, given the unstandardized grading methods, there is no consensus for treatment. Medical management typically consists of voice rest, structured speech therapy, smoking cessation, and consideration for LPR management (1). Further invasive intervention is typically offered once smoking cessation is achieved and if there is no resolution or improvement of symptoms within 6 months. Surgical management can include microflap with removal of excess gelatinous mucosa with cold steel, laser ablation, removal of excessive superficial lamina propria with microdebrider, or radiofrequency ablation (1, 6).

While most commonly the presentation of RE consists of changes in the voice, such as increase in jitter, shimmer, lower basal frequency, and decreased in maximum phonation time, RE can rarely present as respiratory distress (7, 8). Within the literature, only two case reports have been published describing an RE presentation with respiratory distress, one requiring emergent intubation and other requiring an awake tracheostomy (3, 9). While this presentation is unusual, the astute physician should always keep RE on the differential for acute airway compromise in a smoker or professional voice user.

## Discussion

: Most commonly, when treating RE, conservative measures such as smoking cessation are the first line of treatment. However, various OR treatments as well as office-based procedures have been evaluated for the best outcomes in patients with RE. Specifically, using cold steel, microdebrider, radiofrequency ablation, injections, and laser are various options in the OR versus laser or injections within the office setting. We will review the various literature comparing these techniques as well as compare the various grading techniques which have been proposed.



**Figure 3:** (A) Intraoperative view of the vocal folds with severe polypoid degeneration. (B) Intraoperative view after biopsy taken. (\* is mass, V is true vocal fold)

## References

1. Khodeir MS, Hassan SM, El Shoubary AM, Saad MNA. Surgical and Nonsurgical Lines of Treatment of Reinke's Edema: A Systematic Literature Review. *J Voice*. 2021 May;35(3):502.e1-502.e11. doi: 10.1016/j.jvoice.2019.10.016. Epub 2019 Nov 21. PMID: 31761692.
2. Marcotullio D, Magliulo G, Pezone T. Reinke's edema and risk factors: clinical and histopathologic aspects. *Am J Otolaryngol*. 2002 Mar-Apr;23(2):81-4. doi: 10.1053/ajot.2002.30961. PMID: 11893974.
3. Cheah SC, Yee LW, Kok WL, Nazri Zamri FI, Baki MM. A Rare Cause of Acute Dyspnoea: Reinke Oedema. *Indian J Otolaryngol Head Neck Surg*. 2023 Sep;75(3):2420-2422. doi: 10.1007/s12070-023-03714-4. Epub 2023 Apr 8. PMID: 37636736; PMCID: PMC10447806.
4. Tan M, Bryson PC, Pitts C, Woo P, Benninger MS. Clinical grading of Reinke's edema. *Laryngoscope*. 2017 Oct;127(10):2310-2313. doi: 10.1002/lary.26647. Epub 2017 Jun 5. PMID: 28581063.
5. Yonekawa H. A clinical study of Reinke's edema. *Auris Nasus Larynx*. 1988;15(1):57-78. doi: 10.1016/s0385-8146(88)80010-5. PMID: 3421866.
6. Lou X, Lou Z. Reinke's Edema: Cold Steel Versus Radiofrequency Coblation. *Ear Nose Throat J*. 2023 Aug 19;1455613231194131. doi: 10.1177/01455613231194131. Epub ahead of print. PMID: 37596878.
7. Longo L, Pipitone LL, Clifone A, Gobbi L, Mariani L. Reinke's Edema: New Insights into Voice Analysis, a Retrospective Study. *J Voice*. 2023 Sep 14;S0892-1997(23)00249-7. doi: 10.1016/j.jvoice.2023.08.008. Epub ahead of print. PMID: 37716890.
8. Colizza A, Ralli M, Cavalcanti L, Cambria F, Greco A, de Vincentiis M. Voice Quality Analysis of Reinke's Edema According to Recent New Classification. *J Voice*. 2022 Jun 8;S0892-1997(22)00142-4. doi: 10.1016/j.jvoice.2022.05.009. Epub ahead of print. PMID: 35690531.
9. Honda K, Haji T, Satoh S, Tamura T, Motoyoshi K, Ozawa K. Use of the Microdebrider for Reinke's Edema Compromising the Airway. *Prac Oto Rhino Laryn*. 2008. 101:791-794.