

## Introduction

- While mucoepidermoid carcinoma is a common malignancy of the major salivary glands, this tumor can arise from salivary tissue anywhere in the upper aerodigestive tract, including the mucous-secreting cells of the larynx.<sup>1,2</sup>
- As it is infrequently encountered, laryngeal mucoepidermoid carcinoma is often initially misdiagnosed as more common cancers of the larynx like squamous cell carcinoma.<sup>1</sup>
- Accurate diagnosis and treatment selection are essential for improving prognosis of this rare malignancy.<sup>3</sup>

## Purpose

- The purpose of this study was to conduct a systematic review of current literature on cases of primary laryngeal mucoepidermoid carcinoma in an effort to better characterize this disease entity.

## Methods

- The Preferred Reporting Systems for Systematic Reviews and Meta-Analysis (PRISMA) guidelines were followed for this systematic review.<sup>4</sup>
- We performed a literature search of laryngeal mucoepidermoid carcinoma by searching PubMed, Cochrane Library, and Embase.
- Articles presenting cases of laryngeal mucoepidermoid carcinoma were included.
- Review articles, animal studies, non-English-language articles, and abstracts were excluded from analysis.
- For each study, we reported:
  - Patient demographics
  - Primary site
  - Presenting symptoms
  - Time from symptom onset to presentation
  - Imaging modality
  - Tissue sampling used
  - Tumor features
  - Treatment modality
  - Outcomes following treatment
  - Recurrence status

Figure 1 – PRISMA Flow Diagram

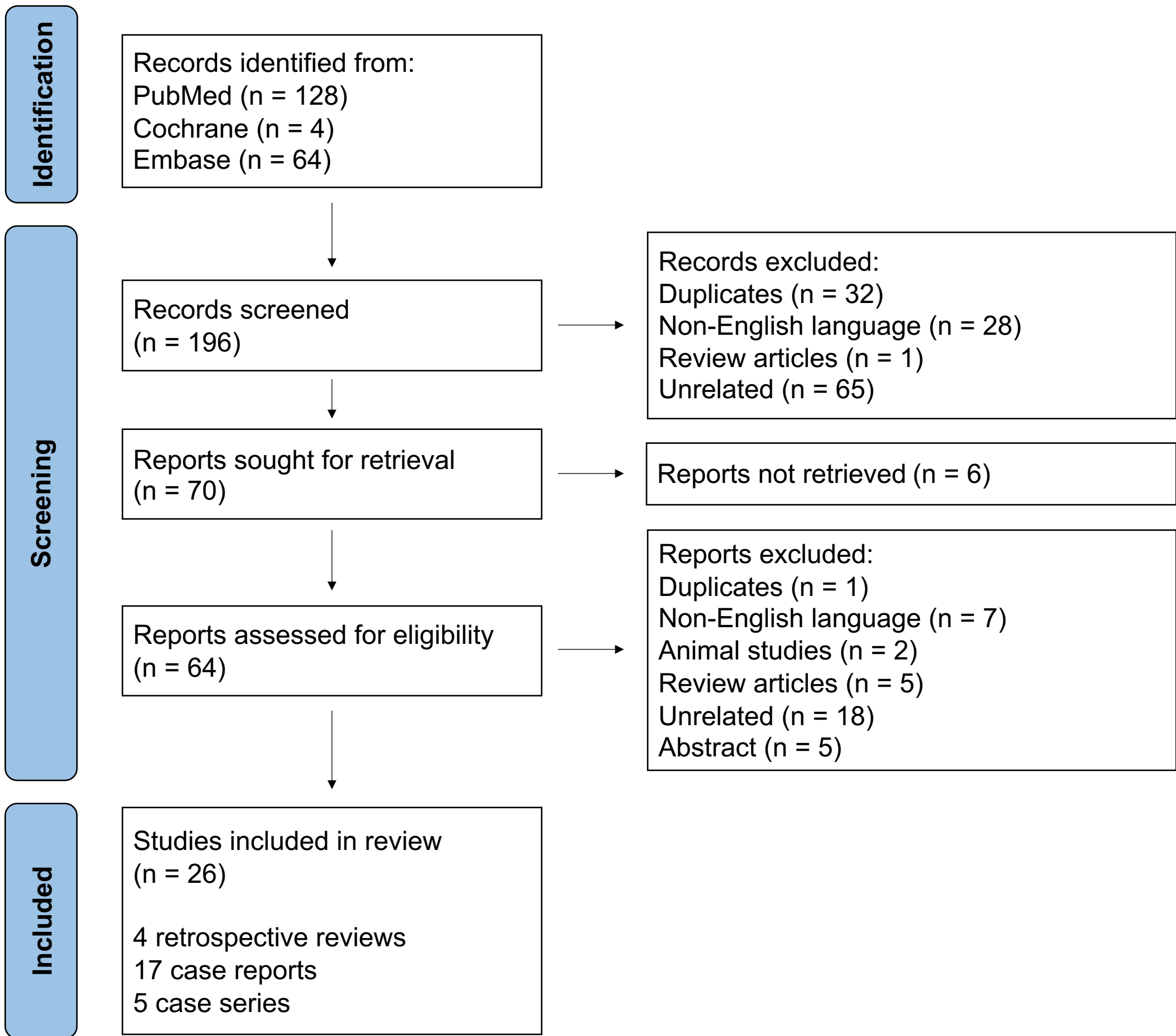


Table 1 – Included Studies

| Authors                   | Year | Study Type           | Number of Patients |
|---------------------------|------|----------------------|--------------------|
| Lam et al.                | 1996 | Retrospective Review | 1                  |
| Seo et al.                | 1980 | Case Report          | 1                  |
| Alavi et al.              | 1999 | Retrospective Review | 5                  |
| Alimoglu et al.           | 2011 | Case Report          | 1                  |
| Luna-Ortiz et al.         | 2009 | Case Report          | 1                  |
| Calis et al.              | 2006 | Case Report          | 2                  |
| Monin et al.              | 2006 | Case Report          | 1                  |
| Karatayli-Ozgursoy et al. | 2016 | Retrospective Review | 1                  |
| Mahlstedt et al.          | 2002 | Retrospective Review | 5                  |
| Yu et al.                 | 2013 | Case Series          | 1                  |
| Tanaka et al.             | 2010 | Case Report          | 1                  |
| Kaznelson et al.          | 1979 | Case Series          | 1                  |
| Yilmaz et al.             | 2013 | Case Report          | 1                  |
| Gatti et al.              | 1980 | Case Report          | 1                  |
| Thomas                    | 1971 | Case Report          | 2                  |
| Cumberworth et al.        | 1989 | Case Series          | 2                  |
| Mitchell et al.           | 1988 | Case Report          | 1                  |
| Bhagat et al.             | 2012 | Case Report          | 1                  |
| Shonai et al.             | 1998 | Case Report          | 1                  |
| Prgommet et al.           | 2003 | Case Report          | 3                  |
| Binder et al.             | 1980 | Case Report          | 1                  |
| Damiani et al.            | 1981 | Case Series          | 12                 |
| King et al.               | 2016 | Case Report          | 1                  |
| Ho et al.                 | 1984 | Case Report          | 1                  |
| Ferlito et al.            | 1981 | Case Series          | 11                 |
| Okinaka et al.            | 1984 | Case Report          | 1                  |

Table 2 – Patient Demographics, Clinical Characteristics, and Outcomes

| Category                                 | Count (% total) | Category                              | Count (% total)   |
|------------------------------------------|-----------------|---------------------------------------|-------------------|
| <b>Age, (mean)</b>                       | 55.6 years      | <b>Tumor Grade (n=39)</b>             |                   |
| <b>Sex (n=50)</b>                        |                 | Low                                   | 13 (21.7%)        |
| Male                                     | 39 (65%)        | Intermediate                          | 7 (11.7%)         |
| Female                                   | 11 (18.3%)      | High                                  | 19 (31.7%)        |
| <b>Race (n=17)</b>                       |                 | <b>T Stage (n=25)</b>                 |                   |
| White                                    | 13 (21.7%)      | 1                                     | 5 (8.3%)          |
| Black                                    | 1 (1.7%)        | 2                                     | 12 (20.0%)        |
| Hispanic                                 | 1 (1.7%)        | 3                                     | 6 (10.0%)         |
| Asian                                    | 2 (3.3%)        | 4                                     | 2 (3.3%)          |
| <b>Primary Site (n=58)</b>               |                 | <b>N Stage (n=24)</b>                 |                   |
| Supraglottis                             | 38 (63.3%)      | 0                                     | 17 (28.3%)        |
| Glottis                                  | 20 (33.3%)      | 1                                     | 4 (8.5%)          |
| Subglottis                               | 10 (16.7%)      | 2                                     | 0 (0.0%)          |
| <b>Presenting Symptoms (n=30)</b>        |                 | 3                                     | 3 (6.4%)          |
| Dysphonia                                | 21 (35.0%)      | <b>M Stage (n=24)</b>                 |                   |
| Dysphagia                                | 5 (8.3%)        | 0                                     | 24 (100%)         |
| Dyspnea                                  | 4 (6.7%)        | <b>Treatment (n=59)</b>               |                   |
| Neck Mass                                | 4 (6.7%)        | Total laryngectomy                    | 22 (36.7%)        |
| Stridor                                  | 3 (5.0%)        | Partial laryngectomy                  | 19 (31.7%)        |
| Cough                                    | 0 (0.0%)        | Transoral laser excision              | 0 (0.0%)          |
| Odynophagia                              | 5 (12.0%)       | Microlaryngoscopy                     | 2 (3.3%)          |
| Weight Loss                              | 0 (0.0%)        | Primary radiotherapy alone            | 8 (13.3%)         |
| Hemoptysis                               | 1 (1.7%)        | Primary chemoradiotherapy             | 0 (0.0%)          |
| Otalgia                                  | 1 (1.7%)        | Adjuvant chemotherapy                 | 1 (1.7%)          |
| Halitosis                                | 0 (0.0%)        | Adjuvant radiotherapy                 | 15 (25.0%)        |
| Globus Sensation                         | 1 (1.7%)        | Adjuvant chemoradiotherapy            | 0 (0.0%)          |
| <b>Time to Presentation (n=21, mean)</b> | 353 days        | No treatment                          | 2 (3.3%)          |
| <b>Imaging Modality (n=14)</b>           |                 | <b>Outcomes (n=47)</b>                |                   |
| CT                                       | 10 (16.7%)      | Alive with no existing disease        | 33 (70.2%)        |
| MRI                                      | 4 (6.7%)        | Dead (other causes)                   | 5 (10.6%)         |
| Ultrasound                               | 0 (0.0%)        | Alive with disease                    | 4 (8.5%)          |
| X-Ray                                    | 3 (5.0%)        | Dead with disease                     | 2 (4.3%)          |
| <b>Tissue Sampling (n=48)</b>            |                 | Lost to follow up                     | 3 (6.4%)          |
| Fine needle aspiration                   | 0 (0.0%)        | <b>Follow Up Duration (range)</b>     | 0.25 – 180 months |
| Biopsy                                   | 48 (80.0%)      | <b>Recurrence</b>                     | 6 (12.8%)         |
|                                          |                 | <b>Time to Recurrence (n=6, mean)</b> | 19.3 months       |

## Discussion

- A total of 196 studies were evaluated, with 26 studies meeting inclusion criteria. Among the included studies, we identified 60 cases of laryngeal mucoepidermoid carcinoma, further reinforcing the known rarity of laryngeal mucoepidermoid carcinoma.
- Most patients were male and white, with a supraglottic, high grade, stage T2N0M0 primary tumor at initial diagnosis.
- The most common presenting symptoms were dysphonia, dysphagia, and odynophagia.
- The majority of patients underwent surgical treatment, and other modalities like radiotherapy and chemotherapy were more likely to have an adjuvant role.
- Outcomes following treatment have been positive, with the majority of patients alive after follow up with no evidence of disease.
- Postoperative complications were noted in 4 cases, including cricoarytenoid joint ankylosis, lymphedema, mucositis, and chylous fistula.
- Tumor recurrence took place in 6 cases after an average of 19.3 months, and were treated with neck dissection, radiotherapy, or a combined modality approach.
- Otherwise there were few recorded cases of post-treatment complications and cancer recurrence, indicating the effectiveness of current approaches for treating mucoepidermoid carcinoma.

## Conclusions

- Mucoepidermoid carcinoma is a rare primary tumor of the larynx, with few cases noted in the literature. Despite being seldom encountered in the clinical setting, our study shows that current treatment approaches centered around surgical management have led to positive outcomes for patients, emphasizing the importance of prompt and accurate diagnosis at initial presentation.

## Contact

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