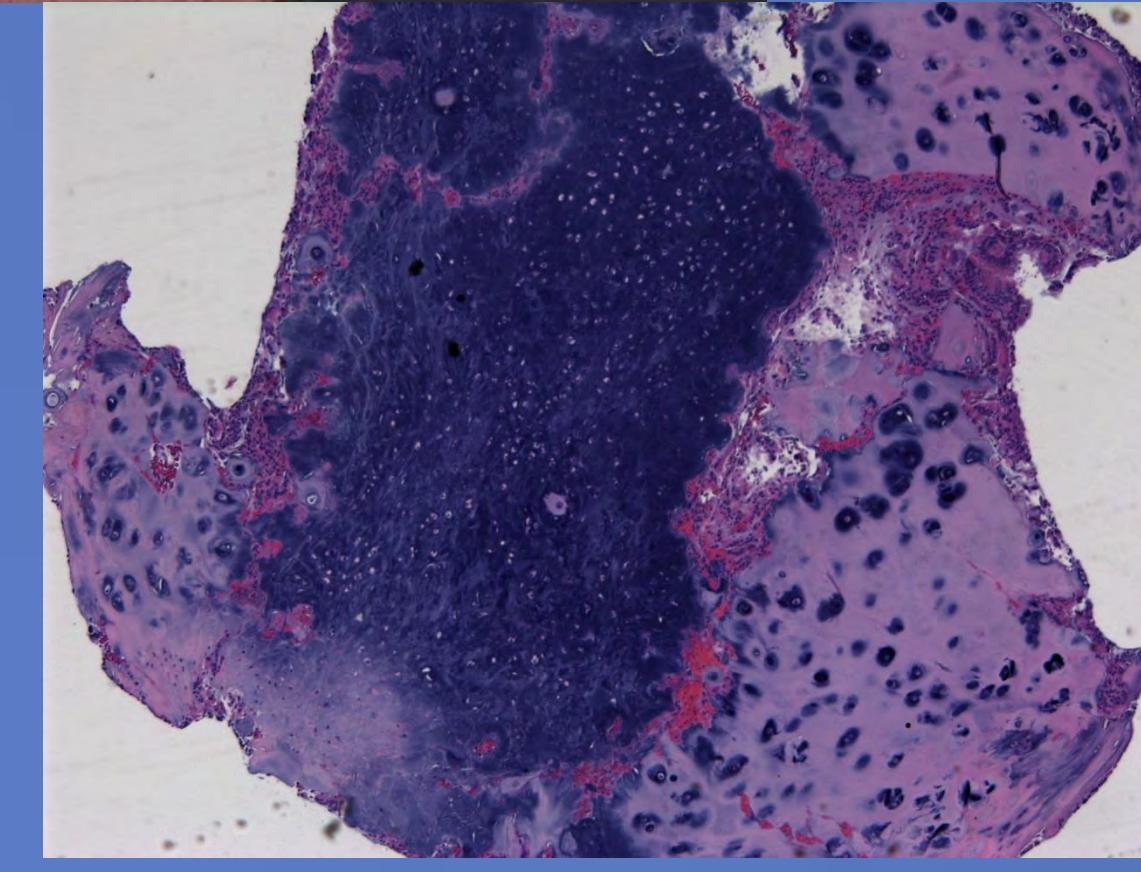
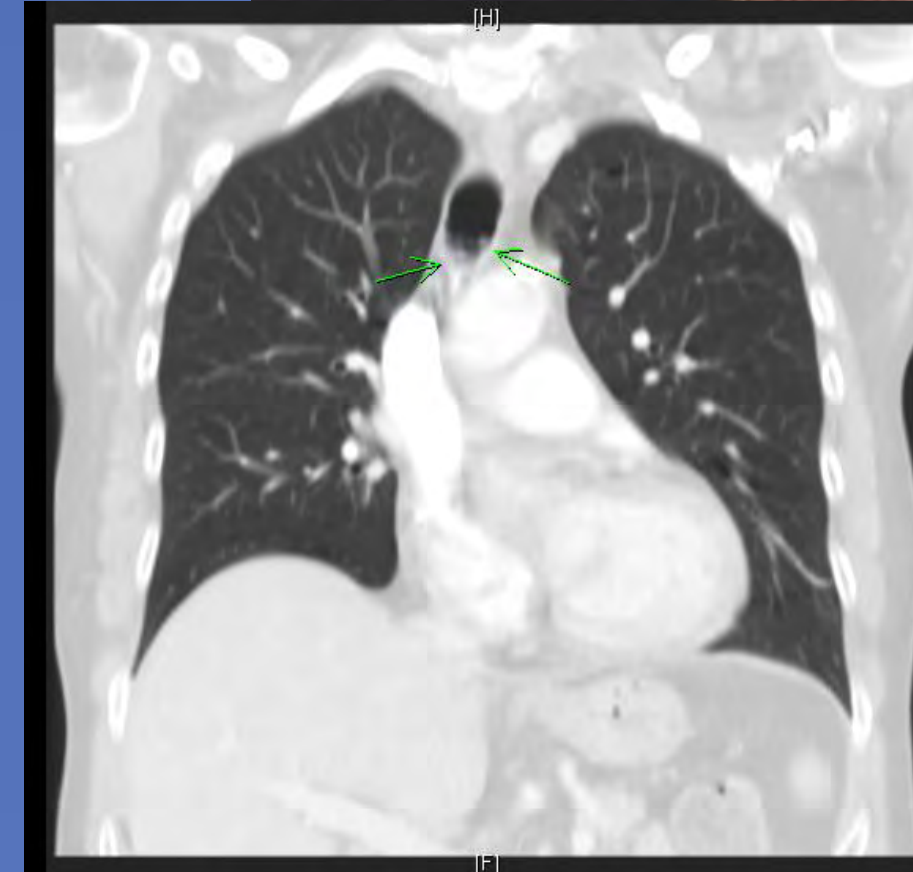
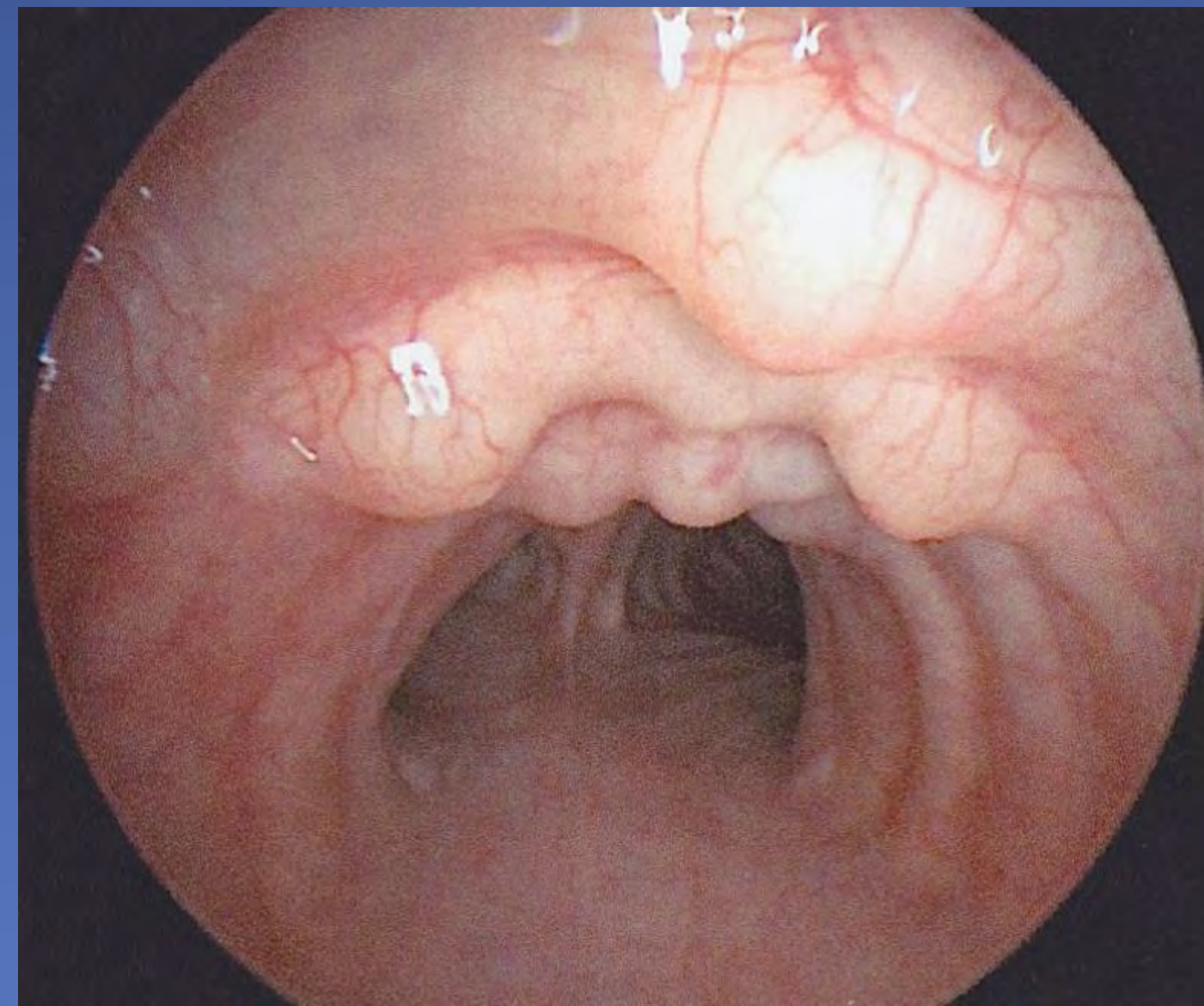


INTRODUCTION

- Rare benign disease characterized by multiple submucosal osseous and cartilaginous nodules in trachea and bronchi with “rock garden” appearance.¹
- Previously seen only incidentally on autopsy, now seen increasingly on high-definition CT and bronchoscopy.⁵
- Median age at diagnosis is 63 yo, though one case reported as young as 11 yo.⁵ Possible female predominance. Loose association with atrophic rhinitis and *Klebsiella ozaenae*.
- 85% present with chronic respiratory manifestations including cough, hemoptysis, dyspnea, or atrophic rhinitis.⁵
- The differential diagnosis includes saber-sheath trachea, relapsing polychondritis, tracheobronchial amyloidosis, papillomas, carcinomas, endobronchial sarcoidosis.
- Bronchoscopic findings: beaded appearance on primarily anterolateral tracheal wall along length of trachea and bronchi. Pars membranacea involvement atypical, 15% in one study. Nodules are hard, not friable and do not bleed easily.^{1,5}
- Endoscopic biopsy may be needed for final diagnosis. Histopathological studies show bony and cartilaginous nodules in tracheal submucosa. Marrow with active hematopoiesis can be seen in bone nodules. Squamous metaplasia common.⁴

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CASE PRESENTATION

- M. T. is a 67-year old female presenting with non-productive cough for 6 months. CT Chest revealed tracheal lesions thought to be papilloma.
- Past medical history: HTN, diabetes type II, depression, left breast infiltrating ductal carcinoma s/p left mastectomy and TRAM reconstruction
- Physical exam unremarkable. Chest clear to auscultation.
- Sputum culture: normal flora, negative acid-fast bacilli
- CT Chest: 15-22 nodules within trachea, each less than 5mm in size
- Bronchoscopy: multiple firm submucosal nodules on anterior and lateral walls of trachea from below cricoid to carina. Minimal bleeding on biopsy.
- Pathology: disorganized cartilaginous tissue with degeneration. No osseous tissue or squamous metaplasia.

DISCUSSION

- TO is a rare disease which is benign but can be progressive: minimal progression 28%, significant 17%⁵.
- Rarely presents as obstructive lesions and can rarely result in difficult intubation⁴
- Although of unknown etiology, an association with atrophic rhinitis and *Klebsiella ozaenae* has been suggested though not proven.⁵
- 61% had positive bronchial bacterial cultures, likely from disruption of tracheal architecture and decreased mucociliary clearance⁵
- Bronchoscopic findings of multiple sessile submucosal firm nodules on anterior and lateral tracheal wall are pathognomonic
- Most patients require only nonspecific symptomatic treatment to minimize complications, though endoscopic laser resection has been reported for obstructive lesions^{1,2,4}. A majority of patients will require antibiotic therapy for positive cultures.⁵
- Important to keep on differential to prevent unnecessary treatment or chemotherapy.

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