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ABSTRACT

Objective: Ulcerative mucosal manifestations of Crohn's disease in the head and neck are uncommon but can share clinical and radiographic traits with head and neck squamous cell carcinomas (HNSCCs). We present a diagnostically challenging case of a HNSCC of the pyriform sinus arising within a field of active Crohn's-related inflammation that was the primary cause for loss of laryngeal function.

Study Design: Case report and literature review

Results: A 67-year-old male smoker with a history of intestinal Crohn's presented with a destructive pyriform sinus lesion associated with distorted supraglottic anatomy and ipsilateral vocal fold fixation. Biopsy showed HNSCC, leading to staging as T4aN0M0 by clinical and radiologic criteria. Pathologic analysis following laryngectomy revealed a well circumscribed T2N0M0 tumor confined to the pyriform sinus, with laryngeal destruction instead arising from previously unrecognized multifocal Crohn's inflammation in continuity with the cancer. Thus no adjuvant therapy was given and durable cancer control was achieved.

Conclusion: To our knowledge, this is the first report of a HNSCC arising within a field of active Crohn's inflammation. The case reveals challenges in integrating clinical, radiologic, and pathologic findings for accurate diagnosis and staging of a head and neck mucosal lesion in patients with Crohn's disease. The case further highlights uncertainties inherent in treating HNSCC in patients with head and neck manifestations of Crohn's. Given the association of Crohn's with intestinal malignancy, the case further raises speculation regarding head and neck Crohn's as an unrecognized risk factor for HNSCC.

INTRODUCTION

Crohn's disease (CD) is an idiopathic chronic inflammatory disorder of the gastrointestinal tract that has a spectrum of clinical presentations. Mucosal involvement in the head and neck is unusual but has been described in the oral cavity, pharynx, cervical esophagus, nasal cavity, orbit, and middle ear [1,2]. CD rarely involves the larynx, and to date only 12 laryngeal CD cases are reported [3]. This report describes an unusual case of an early stage hypopharyngeal squamous cell carcinoma arising within a background of extensive CD inflammation that caused laryngeal destruction.

CASE REPORT

A 67-year-old male active smoker presented with three months of progressive odynophagia, hoarseness, dyspnea, and aspiration. Office endoscopic evaluation and computed tomography (CT) revealed an exophytic mass at the base of the right pyriform sinus associated with distorted right supraglottic anatomy that obscured the glottic airway (Fig. 1A). Past medical history was notable for diagnosis 7 years prior with stricturing CD confined to the ascending colon, which was controlled using mesalamine. Exam under anesthesia delineated a mass arising from the right medial pyriform sinus, with its superior border just below the aryepiglottic fold. In addition, an ulcer at the lower boarder of the mass extended inferiorly across the pyriform apex into the upper post-cricoid mucosa. Sclerotic changes were seen in the arytenoid and cricoid cartilages on contrast-enhanced CT (Fig. 1B), and the right true vocal fold was fixed. A single focal biopsy of the exophytic component of the mucosal changes indicated squamous cell carcinoma. The lesion was staged as a T4aN0M0 squamous cell carcinoma of the pyriform sinus.

The impression of a locally advanced pyriform sinus HNSCC and the severe laryngeal dysfunction supported a recommendation of total laryngectomy. Intra-operative examination of the laryngectomy specimen revealed a 2 cm exophytic mass in the superior half of the right medial pyriform sinus, with its inferior margin closely abutting a large ulcer involving the pyriform apex and upper post-cricoid mucosa. Pathologic analysis of the exophytic mass revealed a circumscribed, moderately differentiated SCC with a pushing invasion pattern (Fig. 1C) and no involvement of the laryngeal skeleton. The changes at the level of the cricoid cartilage were instead comprised of extensive fibrosis and sinus tracts eroding cricoid cartilage and contained no malignant cells (Fig. 1D). Similarly, mucosal ulcerations in the inferior half of the pyriform sinus and other hypopharyngeal sites contained only granulation tissue and a chronic inflammatory infiltrate (Fig. 1E). The widespread inflammation and fibrosis appeared to underlie the distorted, immobile hemi-larynx. Such findings in a patient with known CD strongly suggested inflammatory disease and not HNSCC to be the dominant laryngeal destructive process. Thus, a final pathologic stage of T2N0M0 was assigned, and no adjuvant therapy was given.

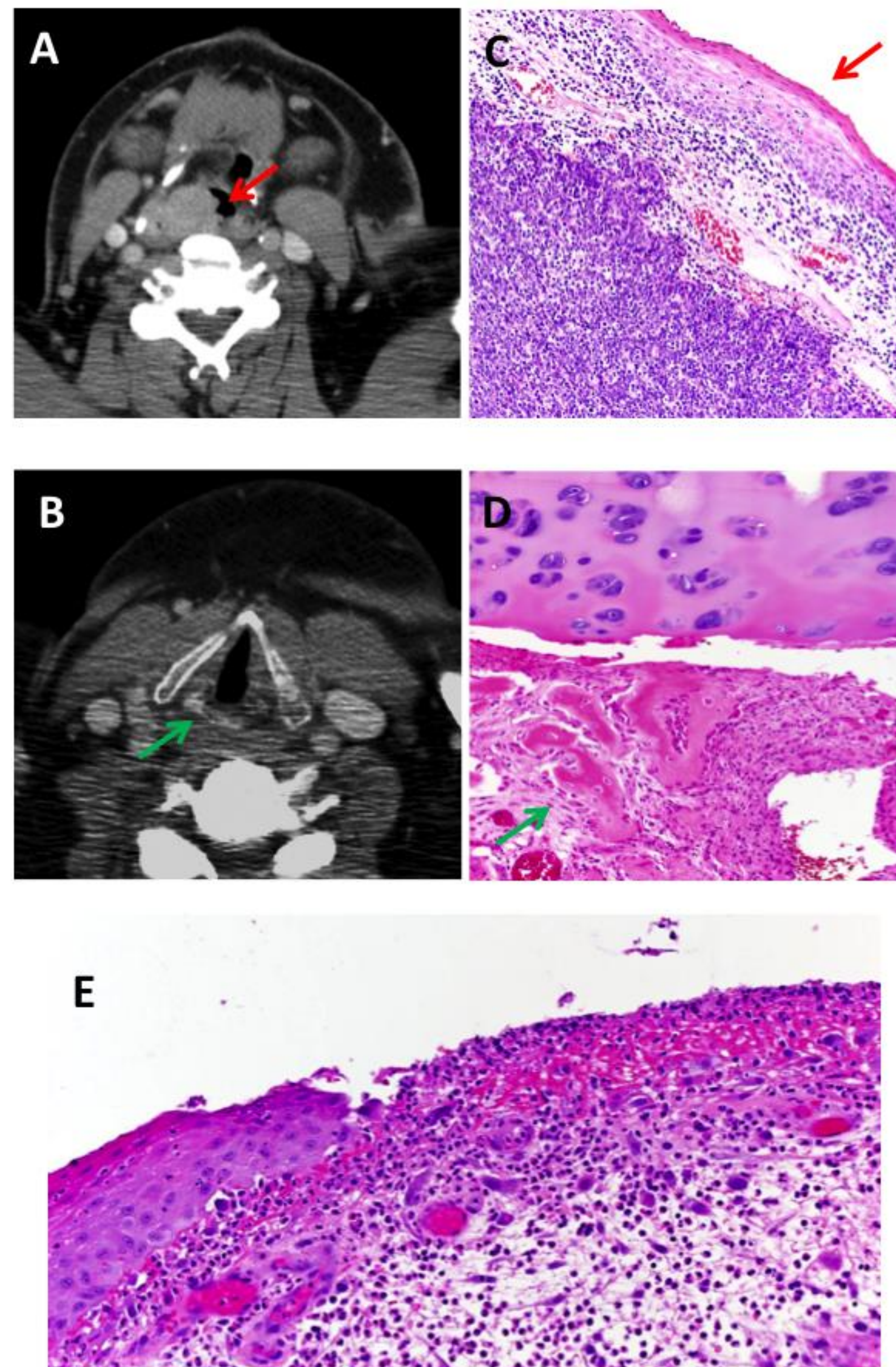


Figure 1. Correlation of anatomic computed tomography (CT) with pathologic findings in adjacent head and neck squamous cell carcinoma (HNSCC) and Crohn's disease (CD) lesions. Color-coded arrows in contrast-enhanced CT images (left) indicate locations of findings in micrographs of H&E sections (right). Axial CT sections show a mass at the right pyriform sinus base (A) and sclerosis at the right crico-arytenoid joint (B). These findings correspond to a moderately differentiated HNSCC with a pushing invasive front deep to normal aryepiglottic fold mucosa (C) and sinus tracts with adjacent fibrosis and cartilage destruction but no malignant cells (D), respectively. Multifocal mucosal ulcers in the inferior pyriform sinus, postcricoid region, and posterior pharyngeal wall contained chronic inflammation and granulation tissue but no malignancy (E). Micrographs are 20x.

DISCUSSION

- Extra-intestinal manifestations (EIMs) may be the initial CD presentation or arise at any time during the disease course. The prevalence of EIMs in patients with CD is 35% [4,5]. Laryngeal involvement is exceedingly rare but can manifest as ulcerative lesions of the epiglottis, arytenoids, and laryngeal vestibule with associated edema [1].
- To our knowledge, this case is the first reported HNSCC arising in a field of CD-related mucosal inflammation.
- In this context, true vocal fold fixation is also described here as a novel extra-intestinal CD sequela and resulted from inflammation and fibrosis of the paraglottic muscles and cricoarytenoid joint.
- Smokers with intestinal CD generally suffer a more severe disease course [6]. Thus it is plausible that smoking not only contributed to this patient's hypopharyngeal HNSCC but also underlies his development of extra-intestinal CD in the same mucosal field.
- The case also leads to speculation that either extra-intestinal CD or its therapies can be cofactors contributing to HNSCC carcinogenesis and progression. Notably, CD is a known risk factor for colorectal and small intestinal cancer and also increases risk for multiple other malignancies including cutaneous squamous cell and urothelial carcinomas [5]. The mechanisms of carcinogenesis in CD patients are incompletely understood but appear linked to both long-standing inflammation and its therapeutic immune suppression.
- Active CD in the same field as a HNSCC has potential to complicate both surgery and adjuvant radiation for the malignancy. Risks of elective surgical treatment of CD complications such as intractable fistula or stricture may be diminished by first abating acute disease exacerbations medically [7]. Thus perioperative optimization may have been considered in this case had the pharyngeal involvement with CD been identified prior to laryngectomy.
- CD patients also suffer greater acute and late toxicities from abdominal or pelvic radiotherapy, indicating potential for similar but presently undefined effects in the head and neck [8]. In our case, careful delineation of malignant versus inflammatory pathologies in surgical specimen proved important for down-staging and thus avoiding radiotherapy without compromise in oncologic outcome.

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