CASE REPORT
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Progressive Vocal Fold Paralysis in Systemic Sarcoidosis Requiring Multistage Surgical Management: Case Report

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ABSTRACT

Sarcoidosis-related vocal fold paralysis is rare, with bilateral involvement posing a significant airway challenge. This article describes the case of a 61-year-old woman with steroid-resistant systemic sarcoidosis who initially presented with unilateral vocal fold paralysis (UVFP) and underwent type I thyroplasty using a Gore-Tex implant. Disease progression led to bilateral vocal fold paralysis (BVFP), necessitating tracheostomy and multiple surgical interventions, including posterior cordectomy, medial arytenoidectomy, and implant removal. The post-operative outcomes demonstrated improved airway patency and functional status. This case highlights the dynamic and unpredictable nature of sarcoidosis-related airway dysfunction. Airway interventions must be tailored according to the disease stage and functional needs.

Keywords: Airway obstruction, prostheses and implants, sarcoidosis, vocal fold paralysis, vocal fold surgery

Introduction

Vocal fold paralysis is a multifaceted condition with diverse etiologies ranging from iatrogenic causes to systemic diseases such as sarcoidosis. Sarcoidosis, a granulomatous disorder with potential multiorgan involvement, is a rare but documented cause of vocal fold paralysis.[1] It may present as a unilateral or bilateral vocal fold paralysis. Management often requires a tailored approach to address both the functional and anatomical impairments. In cases where poor recovery is expected, laryngeal surgery has been shown to improve vocal or functional outcomes in the long term.[2] Herein, a case of unilateral vocal fold paralysis (UVFP) that later progressed to bilateral vocal fold paralysis (BVFP) in a patient with steroid-resistant sarcoidosis is described. In addition, this report highlights the clinical presentation and airway management, which are rarely discussed in the literature.

Case Presentation

Written informed consent was obtained from the patient for the publication of this patient report and accompanying images. A 61-year-old Malay female first presented to the institution with hoarseness and aspiration symptoms for 7 months, for which she was later diagnosed with right UVFP. Computed tomography (CT) revealed multiple mediastinal lymphadenopathy, including the right superior paratracheal nodes involvement. She showed a poor response to initial empirical anti-tuberculosis treatment and steroids. This led to the diagnosis of steroid-resistant sarcoidosis, for which the patient was started on life-long azathioprine. She successfully underwent right type I medialization thyroplasty using a Gore-Tex implant with satisfactory voice improvement. However, 3 years later, she developed BVFP due to the progression of sarcoidosis, necessitating an emergency tracheostomy due to upper airway obstruction. Following 5 years with negligible

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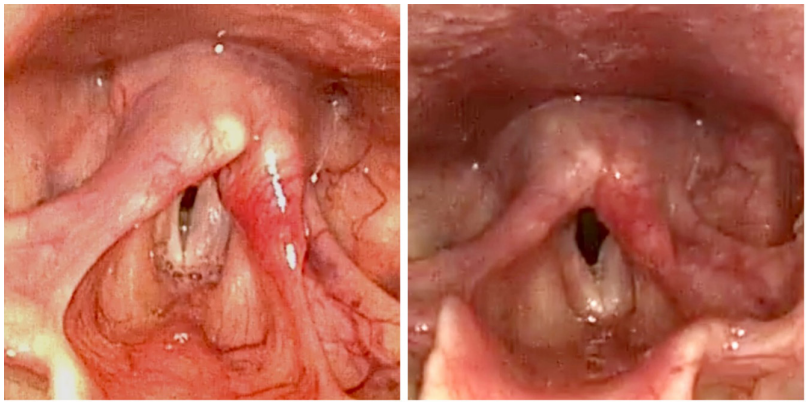

Figure 1. Flexible laryngoscopy (left) preoperative image showing bilateral vocal fold paralysis in the paramedian position with evidence of left posterior cordectomy and medial arytenoidectomy. (Right) post-operative image 3 months after the right cordectomy and Gore-Tex removal, showing improvement in airway.

improvement in vocal fold mobility, the patient underwent a left posterior cordectomy and medial arytenoidectomy. Decannulation of the tracheostomy was performed 3 months after the surgery, which was complicated by a persistent tracheocutaneous fistula.

The patient underwent surgical closure owing to a persistent tracheocutaneous fistula. Since then, she has developed worsening effort tolerance even during mild tasks such as ambulation or ablution compared to when the fistula was present. She had persistent hoarseness since the cordectomy surgery, but no other symptoms of upper airway obstruction.

Clinically, the patient had grade III dysphonia characterized by roughness and a reduced maximum phonation time (MPT) of 6 s. Otherwise, the patient had no signs of respiratory distress. Flexible nasolaryngoscopy showed immobile bilateral vocal folds in the paramedian position, with left fold skewing due to previous surgery, and bowing of the right fold with arytenoid prolapse (Figure 1A). A well-healed scar, measuring 5 cm, was observed on the neck. The other findings were unremarkable.

Given the worsening effort tolerance, the patient underwent right posterior cordectomy, medial arytenoidectomy, and removal of the previous Gore-Tex implant under general anesthesia (Figure 2). The implant was endoscopically removed in 2 pieces through 2 right vertical cordotomy incisions. Right posterior cordectomy and medial arytenoidectomy were performed using an endolaryngeal laser. The patient's post-operative course was unremarkable, and she was discharged. Assessment 2 months post-operatively showed improvement in her effort tolerance, quality of life, MPT (8 s) and glottic airway via endoscopic examination (Figure 1B). Otherwise, her voice has remained the same and had no significant aspiration symptoms.

Main Points

- Sarcoidosis-related vocal fold paralysis is dynamic and unpredictable, with unilateral vocal fold paralysis (UVFP) potentially progressing to bilateral involvement and life-threatening airway compromise, necessitating long-term surveillance and flexible management strategies.
- Removal of a long-standing medialization implant, such as Gore-Tex, can be safely performed endoscopically and may be necessary when implant-related airway resistance contributes to functional deterioration.
- Successful long-term airway management often requires reassessment and revision surgery, with treatment decisions guided by not only anatomical findings but also the functional status of the patient.

Discussion

Sarcoidosis is a rare but important etiology of vocal fold paralysis. It can occur via neurosarcoidosis, direct invasion of the vocal folds by granulomatous tissue, or compression of the recurrent laryngeal nerves by the enlarged mediastinal lymph nodes.[1] The latter is more common, particularly in cases of left UVFP. Isolated right UVFP secondary to mediastinal compression, such as in the patient, is exceedingly rare due to the anatomical course of the right recurrent laryngeal nerve (RLN). However, this has been reported in a case of right superior paratracheal lymph nodes compression.[3] Additional investigation, such as magnetic resonance imaging (MRI), would further help to identify the cause of vocal fold paralysis however was not done in this case. Treatment for UVFP aims to improve voice and swallowing outcomes, which can be achieved with short-term injection laryngoplasty or medialization surgery using implants, such as Gore-Tex. Ultimately, this leads to adequate glottal closure and symptom improvement. In contrast, BVFP is rare in patients with sarcoidosis, with only 8 reported cases in the literature.[4-10] A major difference in terms of clinical presentation is that BVFP may cause airway compromise and require tracheostomy.[9]

The patient initially presented with right UVFP and underwent type I medialization thyroplasty with Gore-Tex, which resulted in satisfactory voice improvement. However, as her sarcoidosis progressed, she developed BVFP, leading to acute upper airway obstruction requiring emergency tracheostomy. Although exceedingly rare, Wu et al reported 2 patients with dynamic neurosarcoidosis who initially presented with UVFP that progressed to BVFP.[4] Flexible laryngoscopy showed that the bilateral vocal folds were in a cadaveric position in both patients. In contrast, the patient developed BVFP in the

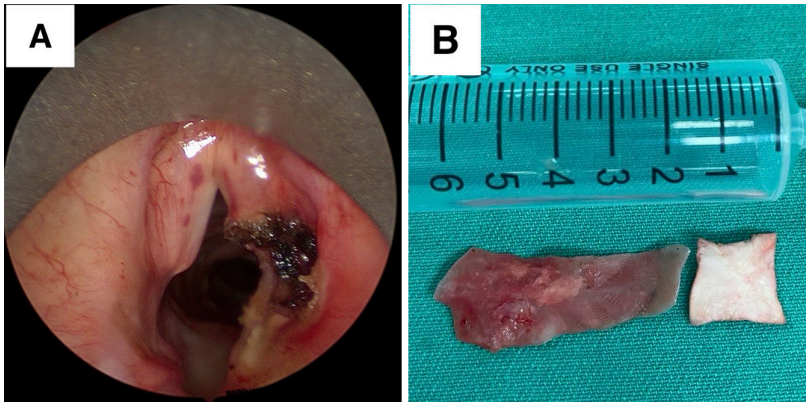

Figure 2. Intraoperative pictures. (A) Post right laser cordectomy and Gore-Tex removal. (B) The removed Gore-Tex in 2 pieces.

median position, with a slit-like airway requiring emergency tracheostomy.

Minimal improvement was observed after 5 years, and the patient was keen for decannulation. In the first airway intervention, a left posterior cordectomy and medial arytenoidectomy were undertaken, while preserving the right Gore-Tex implant. The decision to leave the implant in situ is based on several factors. Removing the Gore-Tex implant, which has been in place for 3 years, carries a high risk of fibrosis and difficult dissection, potentially complicating both dissection and wound healing. Given that BVFP secondary to sarcoidosis can show variable progression, a less extensive surgical approach was initially chosen to avoid unnecessary morbidities. Furthermore, implant removal might cause excessive glottic insufficiency, further compromising voice outcomes and increasing the risk of aspiration.

Despite successful decannulation, the patient developed a persistent tracheocutaneous fistula (TCF) that required surgical closure. Interestingly, the patient reported worsening effort tolerance following TCF closure. This observation suggests that the persistent fistula may have acted as a secondary airway, reducing airway resistance and compensating for limited glottic opening. Its closure may have increased airway resistance, contributing to perceived breathing difficulty. Given her worsening condition, the patient underwent a contralateral right posterior cordectomy, medial arytenoidectomy, and endoscopic removal of the Gore-Tex implant. After 3 months, the patient remained stable with an adequate airway. A study by Mawaddah et al[3] reported that 60% of patients with tracheostomy who underwent unilateral cordectomy required revision surgery due to an inadequate airway. It was postulated that the previous Gore-Tex implant also contributed to the increased airway resistance and required surgical removal. This is an atypical indication for removal, as in most studies, the common indications for removal are implant extrusion or implant migration.[11] The removal of a Gore-Tex implant can be performed either endoscopically or via an external surgical approach. In this case, the Gore-Tex was located medially; thus, endoscopic removal via cordotomy was performed.[11] Despite similar voice outcomes post removal, the patient had improved airway function as evidenced by her symptoms and endoscopic examination.

In summary, sarcoidosis-related vocal fold paralysis is unpredictable and may require multiple staged interventions to balance airway, voice, and swallowing functions. Management should be individualized according to the patient's functional priorities and anticipated disease course. In the patient, restoration of a stable airway and successful decannulation were prioritized over voice quality. This case also highlights the importance of careful patient selection when considering permanent medialization procedures in patients with progressive disorders, as UVFP may later progress to bilateral paralysis, necessitating revision surgery or implant removal. In such cases, newer adjustable implant systems (e.g., APrevent® VOIS implant) that allow postoperative fine-tuning of medialization degree may offer greater flexibility without requiring full revision surgery and reduce the need for implant removal.[12]

Data Availability Statement: The data that support the findings of this study are available on request from the corresponding author.

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References

1. Raja MHR, Javed MA, Zubairi ABS. Sarcoidosis presenting as vocal cord palsy: an unusual presentation and literature review. *Respirol Case Rep*. 2020;9(2):e00705. [CrossRef]

2. Mawaddah A, Marina MB, Halimuddin S, et al. A ten-year Kuala Lumpur Review on Laser Posterior Cordectomy for bilateral Vocal fold Immobility. *Malays J Med Sci*. 2016;23(4):65-70. [CrossRef]
3. Boyd M, Malaisamy S, Ie S, et al. Right vocal cord paralysis and mediastinal lymphadenopathy. *Thorax*. 2011;66(3):211, 231. [CrossRef]
4. Wu TJ, Lewis SM, Woo P. Neurosarcoidosis presenting initially as idiopathic vocal cord paralysis. *Ann Otol Rhinol Laryngol*. 2018;128(2):157-161. [CrossRef]
5. Yamasue M, Nureki SI, Ushijima R, et al. Sarcoidosis presenting as bilateral vocal cord paralysis due to bilateral vagal nerve involvement. *Intern Med*. 2016;55(9):1229-1233. [CrossRef]
6. Lop Gros J, García Lorenzo J, Quer Agustí M, et al. Sarcoidosis y parálisis de cuerdas vocales: a propósito de 2 casos y revisión de la literatura. *Acta Otorrinolaringol Esp*. 2013;65(6):378-380. [CrossRef]
7. Coffey CS, Vallejo SL, Farrar EK, et al. Sarcoidosis presenting as bilateral vocal cord paralysis from bilateral compression of the recurrent laryngeal nerves from thoracic adenopathy. *J Voice*. 2008;23(5):631-634. [CrossRef]
8. Witt RL. Sarcoidosis presenting as bilateral vocal fold paralysis. *J Voice*. 2003;17(2):265-268. [CrossRef]
9. Hintze JM, Gnagi SH, Lott DG. Sarcoidosis presenting as bilateral vocal fold immobility. *J Voice*. 2017;32(3):359-362. [CrossRef]
10. Rupanagudi VA, Kanagarajan K, Jayawardena S, et al. Persistent hoarseness of voice in a sarcoid patient: a clue to laryngeal sarcoidosis; a potential cause of upper airway obstruction. *Chest*. 2005;128(4):465S. [CrossRef]
11. Frost A, Mirza N. Gore-Tex implant extrusion following revision medialization thyroplasty: case report and review of the literature. *World J Otorhinolaryngol Head Neck Surg*. 2020;8(3):213-216. [CrossRef]
12. Huang PK, Chen CK, Yu YH, et al. Long-term voice outcomes of medialization thyroplasty with adjustable implant for unilateral vocal fold paralysis. *Eur Arch Otorhinolaryngol*. 2024;281(3):1371-1378. [CrossRef]