



# Inhalation Injury Presenting as Aphonia Following a House Fire: A Case Report

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## INTRODUCTION

- Inhalational burn injury is associated with high mortality and remains a critical challenge in critical care.
- Classic signs and symptoms, frequently include facial burns, soot, singed nasal hair or hoarseness.
- Presentation can vary and when classic signs are absent, inhalation injuries are often under diagnosed.

## CASE DESCRIPTION

- 71-year-old female was found unconscious in a house fire and intubated on scene.
- Past medical history:
  - COPD
  - Atrial Fibrillation
  - Type II Diabetes
  - Left subclavian steal syndrome with carotid axillary bypass
  - Hypertension
  - GERD
- On arrival in hospital, patient was found to have no visible burns injury and a normal carboxyhemoglobin.
- Initial bronchoscopy showed mild soot at the carina and the right lower lobe, no visible thermal injuries noted.
- Despite successful spontaneous breathing trials patient was failed extubated next day.

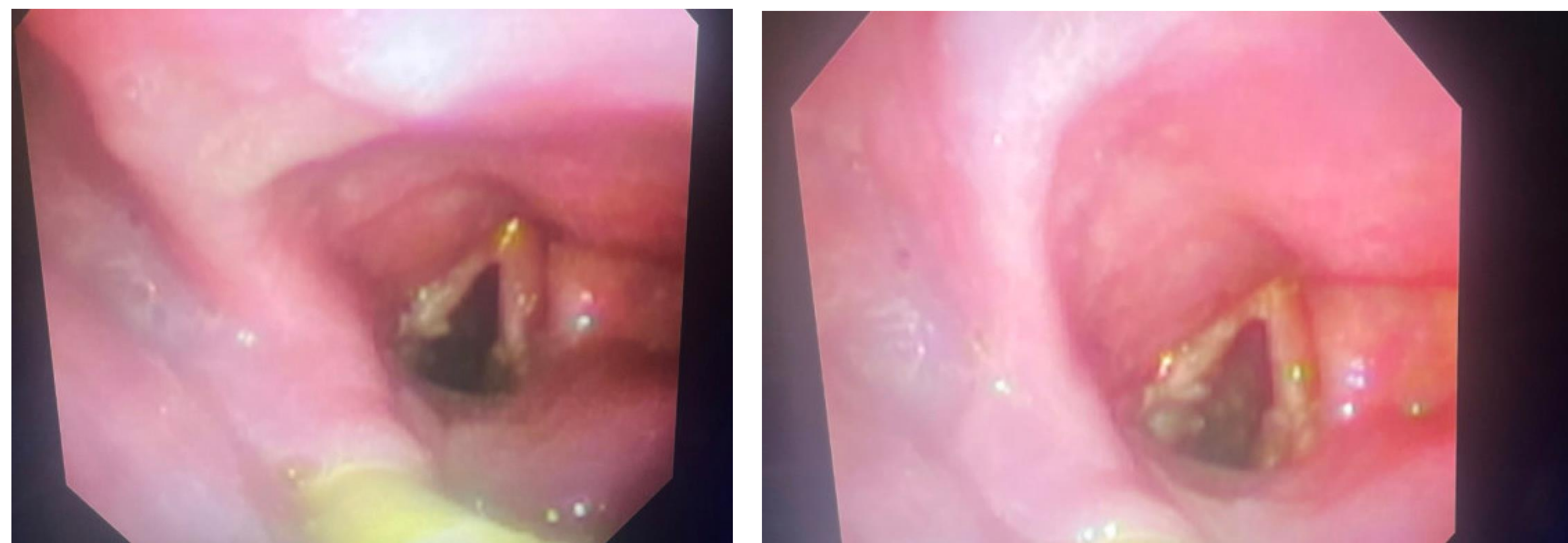
## CASE DESCRIPTION (CONTINUED)

### Reintubation and Aphonia

- Initial extubation to Bipap but due to poor cough effort, the patient was reintubated.
- Repeat bronchoscopy revealed minimal soot and minimal thin secretions and no evidence of thermal injuries.
- In view of leukocytosis, a COPD exacerbation was suspected and treated with a five-day course of steroids and azithromycin.
- Patient successfully extubated three days later but unable to speak.
- Initial differential diagnosis was either thermal burn versus direct trauma from multiple repeat intubations.
- ENT was consulted and performed a flexible fiberoptic laryngoscopy (FFL) demonstrating minimal vocal cord abduction, thick fibrinous exudate on true vocal folds and narrowing of the glottis, evidence of posterior glottic stenosis.

## MANAGEMENT

- Re-intubated and underwent microsuspension laryngoscopy, lysis of posterior glottic stenosis, tracheal dilation and steroid injection.
- Continued Ciprodex BID and extubated two days later.
- Repeat FFL demonstrates improved bilateral true vocal fold mobility with persistent subglottic and infraglottic carbonaceous secretions.



**Figures 1 and 2. (left and right)** Repeat bronchoscopy after successful microsuspension laryngoscopy, tracheal dilation and steroid treatment. Images reveals mild exudate on bilateral true vocal cords but no significant subglottic or supraglottic edema appreciated.

## CONCLUSION

- This case presents an atypical inhalation injury in a patient without external burns and minimal bronchoscopic findings
- These findings underscore the importance of evaluating the entire airway, particularly in patients with voice changes or stridor after extubation.
- Bronchoscopy is the gold standard for diagnosis but clinical findings alone may be nonspecific.

## REFERENCES

1. Sheridan RL. Fire-Related Inhalation Injury. N Engl J Med. 2016 Aug 4;375(5):464-9. doi: 10.1056/NEJMra1601128.
2. Amarasekera NN, Jha A, Charles WN, Dutt A, Milton-Jones H, Kumana E, Eliahoo J, Dunn K, Singh S. Evaluating the association between bronchoscopic severity of burns-related smoke inhalation injury and clinical outcomes: A systematic review and meta-analysis. Burns. 2025 Oct 1;51(9):107721. doi: 10.1016/j.burns.2025.107721

