

# Prolonged Dyspnea and Voice Hoarseness Months After Interscalene Catheter Removal

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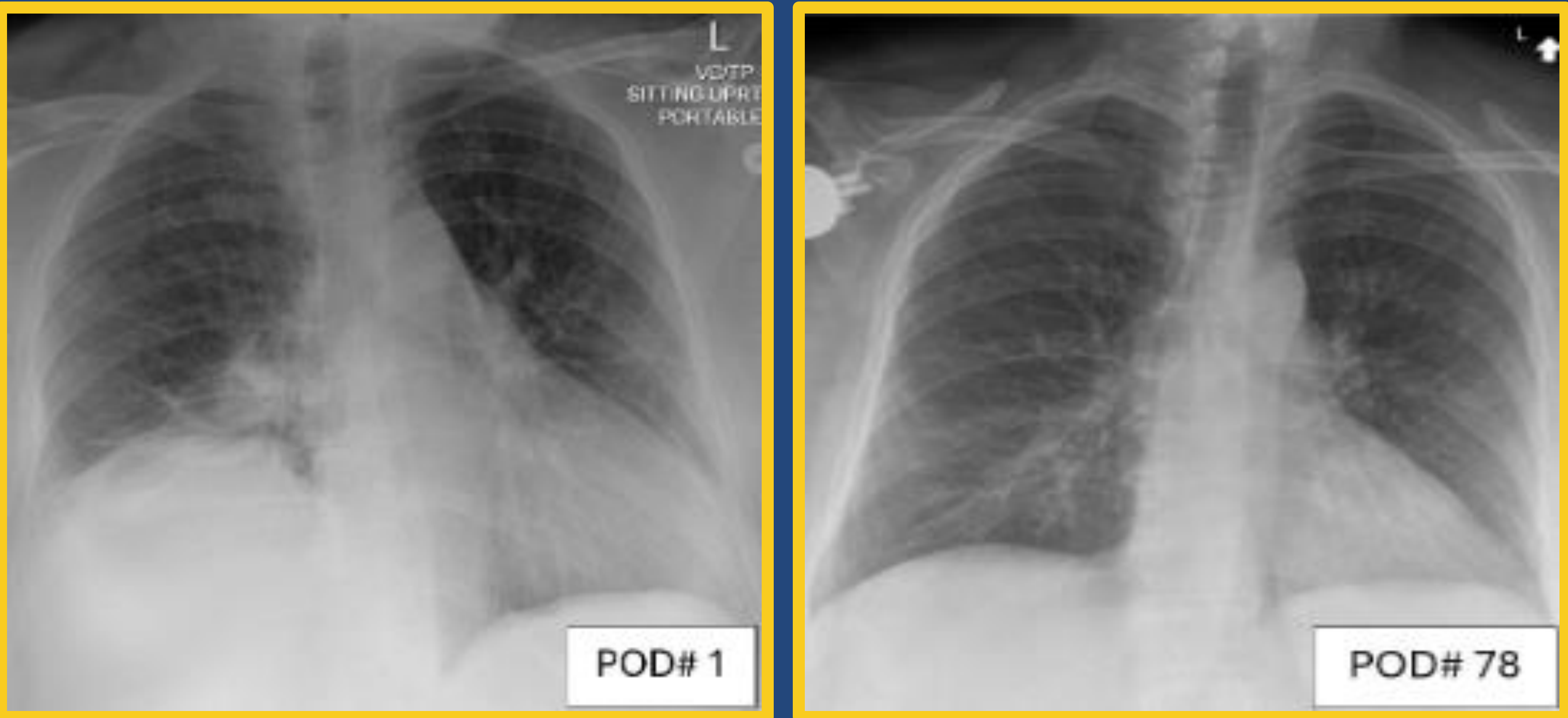
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## Background

- Phrenic nerve palsy and voice hoarseness are common complications of interscalene blockades, but usually resolve when the local anesthetic dissipates
- Although the incidence of complications is as low as 5.24% [1], these symptoms could persist much longer after single shot blocks and removal of interscalene catheters in 0.048% of cases [2]
- This case presentation describes the symptomology and workup for persistent dyspnea and voice hoarseness months after removal of an interscalene catheter.

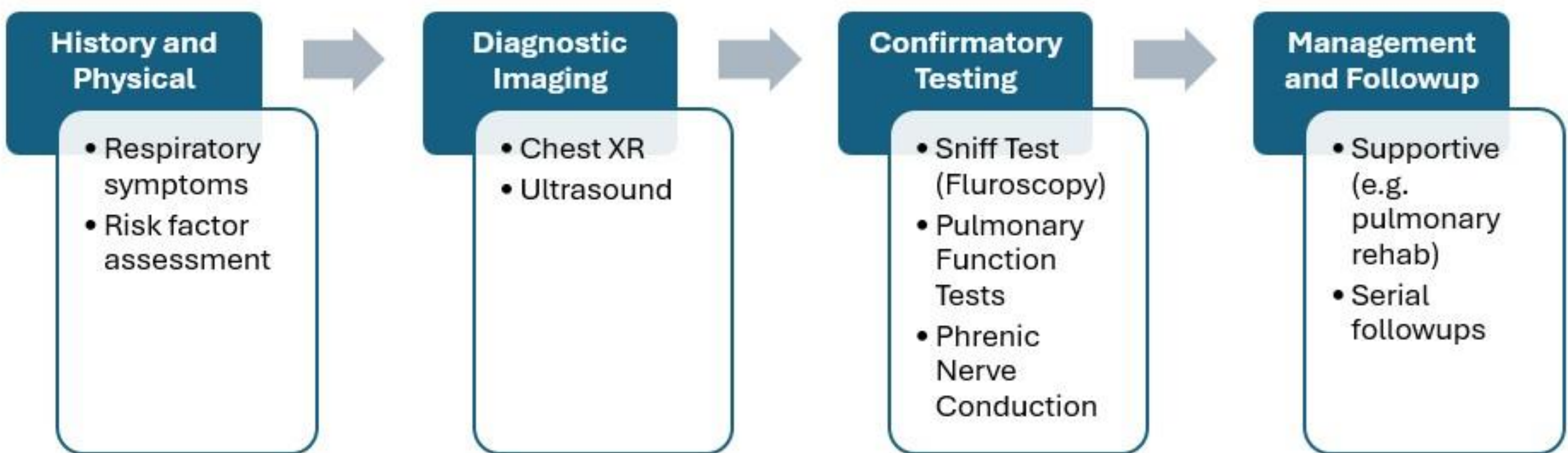
## Case Presentation

- A 62 year old female with a history of mild asthma presented for right shoulder arthroplasty; an interscalene catheter was placed for postop pain control
- Pain was well controlled on postop day zero, the patient reported dyspnea requiring supplemental oxygen. CXR revealed right sided elevated hemidiaphragm (Fig 1)
- The catheter was removed five days after initial placement
- The patient reported residual dyspnea and hoarseness of voice a month after catheter removal
- Thoracic surgery was consulted to perform a “sniff” test which yielded normal findings and resolution of right elevated hemidiaphragm
- ENT was then consulted who performed direct vocal cord visualization with normal findings
- Pulmonology was consulted and placed the patient on respiratory inhalers and ordered pulmonary function testing and immune testing (which were unremarkable)
- Due to negative workup, no active treatment was done for the patient other than follow up
- Respiratory function and voice returned to near baseline approximately six months after interscalene catheter removal

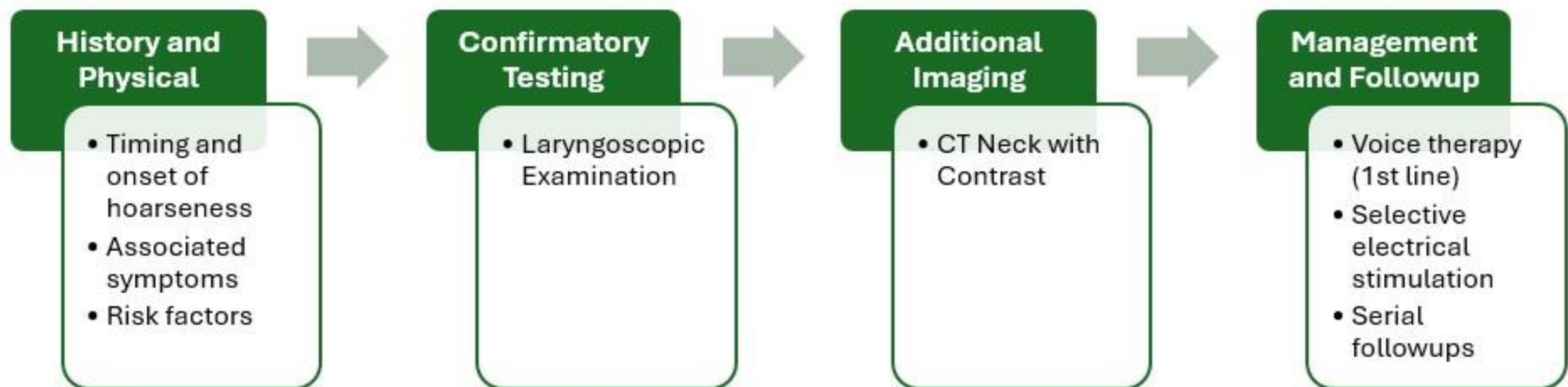


**Figure 1:** Comparison of chest x-ray from postop day (POD) 1 with right hemidiaphragmatic paralysis and normalization at POD 78.

## Phrenic Nerve Palsy Evaluation and Workup



## Voice Hoarseness Evaluation and Workup



**Figure 2:** Flow chart describing workup of persistent phrenic nerve palsy following interscalene blockade (top) and flow chart describing workup of persistent voice hoarseness following interscalene blockade (bottom).

## Discussion

- Persistent phrenic nerve palsy and voice hoarseness following interscalene catheters are rare
- Workup for phrenic nerve palsy includes chest x-ray, ultrasound, “sniff” fluoroscopy test, pulmonary function tests, and phrenic nerve stimulation tests (Figure 2); management is supportive
- For voice hoarseness, direct visualization with ENT is first-line [3], and a CT neck is used to visualize the recurrent laryngeal nerve (Figure 2). Management is primarily voice therapy with followup.
- To date the etiology of prolonged symptoms is unelucidated
- Highly irregular to have symptoms in the setting of normal workup
- The cause of the residual symptoms is likely multifactorial, not just simply due to side effects from the interscalene catheter

## Conclusions

- Prolonged dyspnea and voice hoarseness are rare, but possible side effects after interscalene blocks
- For each of the above symptoms, there are different workups including the diagnostic imaging and confirmatory testing
- In the setting of normal testing, etiology of prolonged symptoms are likely multifactorial, and may not be solely secondary to interscalene blockade

## References

1. Holbrook HS, Parker BR. Peripheral Nerve Injury Following Interscalene Blocks: A Systematic Review to Guide Orthopedic Surgeons. *Orthopedics*. 2018;41(5):e598-e606. doi:10.3928/01477447-20180815-04
2. Chiaghana CO, Awoniya CA. Delayed onset and long-lasting hemidiaphragmatic paralysis and cranial nerve deficit after interscalene nerve block for rotator cuff repair in beach chair position. *J Clin Anesth*. 2016;34:571-576. doi:10.1016/j.jclinane.2016.06.026
3. Stachler RJ, Francis DO, Schwartz SR, et al. Clinical Practice Guideline: Hoarseness (Dysphonia) (Update) Executive Summary. *Otolaryngology–Head and Neck Surgery*. 2018; 158: 409-426. <https://doi.org/10.1177/0194599817751031>