

# Airway Chaos: Bleeding Control - Double-Edged Sword

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## ABSTRACT

**Objective:** To report a rare case of upper airway obstruction secondary to sublingual hematoma in a patient on warfarin therapy

**Background:** Sublingual hematoma is a rare but potentially catastrophic complication of warfarin therapy, which can lead to upper airway obstruction. Emergency tracheostomies are performed for acute upper airway obstruction.

**Case Report:** We present a case of 67 /F on Warfarin therapy who presented with a spontaneous sublingual hematoma, causing upper airway obstruction with an INR value of 15. Emergency tracheostomy was performed to secure the airway. Infused with cryoprecipitate, FFP, and whole blood. INR corrected to 1.12. Swelling decreased, and the patient was discharged on post-operative day 13.

**Conclusion:** Upper airway obstruction is a rare but potentially serious complication of warfarin therapy. Reversal of anticoagulation with a low threshold for artificial airway placement in the event of airway compromise leads to a favorable outcome

**Keywords:** Airway Obstruction, Hematoma, Anticoagulation, Warfarin, Tracheostomy

\*See End Note for complete author details

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## INTRODUCTION

Warfarin sodium, a widely used anticoagulant, can lead to severe complications, including spontaneous bleeding. Sublingual hematoma secondary to warfarin therapy is a rare but potentially life-threatening condition that can lead to upper airway obstruction. A sublingual hematoma can be confused with infectious processes such as Ludwig's angina. Spontaneous bleeding into the sublingual and submaxillary spaces creates a "pseudo-Ludwig's" phenomenon with elevation of the tongue and floor of the mouth and subsequent airway compromise.<sup>1</sup>

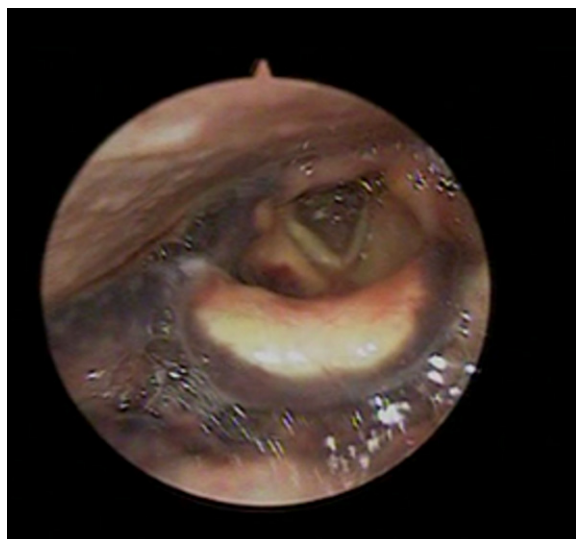
## CASE REPORT

A 67-year-old female k/c/o COPD, Hypertension, CVA, and Rheumatic heart disease (status post mitral valve replacement) presented to the emergency department with a painful swelling on the floor of her mouth and neck (**Figure 1**) noticed spontaneously in the morning after getting up from bed. She experienced

difficulty swallowing, drooling, and restricted mouth opening. She developed severe respiratory distress and underwent emergency tracheostomy. Examination revealed a uniformly swollen, reddish tongue and diffuse swelling in the left submandibular area. Lab



**Figure 1.** Warfarin-induced spontaneous sublingual hematoma



**Figure 2.** Follow up Video laryngoscopic image

results showed severely deranged PT/INR values ( $>120$  and  $>15$ , respectively). The patient received blood products (cryoprecipitate, fresh frozen plasma, and whole blood) to correct coagulopathy, which normalized her INR to 1.12. After securing her airway, she was managed supportively. During her hospital stay, she developed a subconjunctival hemorrhage, which was managed conservatively. Follow-up examinations showed gradual resolution of swelling, and video laryngoscopy revealed ecchymosis in the oropharynx and hypopharynx (**figure 2**). Symptoms were gradually resolved (**figure 3**). Tracheostomy stoma strapping was done on POD 11. The patient was eventually discharged on POD 13.

## DISCUSSION

Upper airway hematomas are rare in the absence of a history of trauma but need to be urgently assessed due to their life-threatening potential. Clinicians should be aware of the possibility of hematomas involving the upper airway in patients on anticoagulant therapy, particularly if complaining of red flag symptoms such as acute onset dysphonia, odynophagia, or airway/breathing difficulties.<sup>2</sup> Warfarin acts as a vitamin K antagonist by binding with the vitamin K 2, 3-epoxide reductase in the hepatic microsome and blocking the action of vitamin K-dependent factors II, VII, IX, X, protein C, and protein S. It is commonly used for chronic anticoagulation in patients with atrial fibrillation (AF), venous thromboembolism (VTE), and artificial heart



**Figure 3.** Resolution of sublingual hematoma after treatment

valves. Warfarin levels are monitored with regular INR, with a target of 2 to 3 in AF and VTE and 2.5 to 3.5 in patients with mechanical heart valves.<sup>4</sup> The internal or external bleeding risk is related to INR in a log-linear fashion. Securing the airway should be a priority, and immediate reversal of anticoagulation with close monitoring is required.<sup>6</sup> Although it had an overall good outcome with the time to resolution of hematoma being within 1 week, significant morbidity and even sudden death were reported if concomitant respiratory compromise was present. Most complications are bleeding in the structures like gastrointestinal tracts, skin, central nervous system, nose, genitourinary tract, and retroperitoneum. Major bleeding, which includes intracranial hemorrhage and bleeding leading to death or hospitalization, has been reported in 1.2%–8.1% of patients during each year of long-term warfarin therapy. The risk of bleeding, internal or external, is related to INR in a log-linear fashion and is known to be higher with INR levels  $>4.5$ .<sup>8</sup> When a patient with warfarin treatment presents with symptoms related to the upper airway, physicians must consider the possibility of this complication. If the airway is compromised, emergent airway management and rapid correction of the coagulopathy are required.<sup>7</sup> In the majority of the previously reported cases, the management of warfarin-induced sublingual hematoma was largely conservative. The main modalities of treatment were, a reversal of the coagulopathy by the administration of vitamin K and either fresh frozen plasma (FFP), or coagulation-factor concentrates. Prothrombin

complex concentrate is relatively expensive and not easily available in developing countries like Nepal. So, frequently FFP is used. Active vitamin K-dependent coagulation factors are predominantly in FFP. FFP reverses oral anticoagulant-induced coagulopathy in most patients. Approximately 15 ml/kg of FFP should be adequate to reverse any coagulopathy. Both invasive (cricothyroidotomy or tracheostomy) and noninvasive (oro-tracheal intubation) techniques were performed for definitive airway stabilization.<sup>8</sup> The process of weaning from tracheostomy to maintenance of spontaneous respiration and/or airway protection is termed “decannulation”. This apparently simple step requires a near perfect coordination of brain, swallowing, coughing, phonation and respiratory muscles.<sup>9</sup>

## CONCLUSION

Upper airway obstruction secondary to bleeding resulting from warfarin therapy is rare. It is more common in the elderly population with supratherapeutic INR. Overall, it has a good prognosis with significant morbidity present only if concomitant respiratory compromise is present. Reversal of anticoagulation with a low threshold for artificial airway placement in the event of airway compromise leads to a favorable outcome in most cases.

## END NOTE

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