Sublingual Hematoma Secondary to Mandibular Trauma Mimicking Ludwig's Angina: A Clinical Conundrum

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Abstract

Background

Sublingual haematoma, or pseudo-Ludwig's angina, is a rare but potentially life-threatening condition that mimics Ludwig's angina. Prompt differentiation between hemorrhagic and infectious etiologies of floor of mouth swelling is crucial for appropriate airway and therapeutic management (Baharloo et al., 2020; Cheng et al., 2021; Marin et al., 2020).

Case Report

We report the case of a 19-year-old male who sustained mandibular trauma in a motor vehicle accident. He presented with progressive submental swelling, muffled voice, and elevation of the tongue, raising suspicion for Ludwig's angina. Imaging revealed mandibular symphysis and condylar fractures with sublingual hematoma, but no evidence of abscess or gas formation. Flexible endoscopy showed posterior tongue displacement without laryngeal involvement. The patient was managed conservatively with corticosteroids, antifibrinolytics, and antibiotics. Airway intervention was not required. Definitive surgical fixation of mandibular fractures was performed after clinical stabilization. The hematoma resolved completely without complication.

Discussion

This case highlights the diagnostic challenge in distinguishing pseudo-Ludwig's angina from true deep neck infections. While both conditions may present with similar clinical findings, imaging and endoscopy play vital roles in guiding management (Alamoudi & Hariri, 2022; Brotfain et al., 2012). Unlike Ludwig's angina, sublingual hematomas often respond to conservative therapy and rarely necessitate surgical airway intervention unless rapidly expanding or causing obstruction (Lovallo et al., 2013).

Conclusion

Sublingual hematoma secondary to mandibular trauma should be considered in the differential diagnosis of floor-of-mouth swelling. Early imaging and interdisciplinary evaluation are essential to avoid misdiagnosis and unnecessary invasive procedures.

Introduction

Sublingual haematoma, often referred to as pseudo-Ludwig's angina, is an uncommon but clinically significant entity characterized by hemorrhagic accumulation in the sublingual space (Marin et al., 2020). This condition may arise secondary to facial trauma, anticoagulant use, or underlying coagulopathy, leading to rapid onset of floor-of-mouth swelling, impaired articulation, and potential airway compromise (Alamoudi & Hariri, 2022; Cheng et al., 2021). The anatomical confinement of the sublingual and submandibular spaces predisposes even small hematomas to produce marked elevation of the tongue, mimicking the life-threatening presentation of Ludwig's angina (Baharloo et al., 2020).

Ludwig's angina is traditionally defined as a bilateral cellulitis of the submandibular space, often odontogenic in origin, with rapid spread across fascial planes. It is associated with induration, dysphagia, and floor-of-mouth elevation, frequently requiring airway intervention and intravenous antibiotic therapy (Kruse et al., 2009; Nisa et al., 2021). In contrast, pseudo-Ludwig's angina

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lacks an infectious etiology, though its mass effect can produce comparable clinical urgency (Lovallo et al., 2013). The distinction between these conditions is critical, as their pathophysiology and management diverge significantly.

Although rare, recognition of sublingual hematoma is crucial in otolaryngology head and neck surgery (OTOHNS), oral and maxillofacial surgery (OMFS), trauma surgery, plastic surgery, and anesthesia (Alamoudi & Hariri, 2022) In comparison, Ludwig's angina is relatively common, with odontogenic sources accounting for 70-90% of cases. Prior to the antibiotic era, mortality exceeded 50%, but with early imaging, airway intervention, and broad-spectrum antibiotics, current mortality has fallen below 10% (Kruse et al., 2009; Osunde et al., 2023).

Herein, we present a case of sublingual hematoma secondary to mandibular fracture following motor vehicle trauma, underscoring its diagnostic challenges and therapeutic implications.

Case Report

Figure 1. Submental and bilateral submandibular swelling following mandibular trauma

Figure 2. Elevation of the floor of the mouth showing the 'double tongue' sign

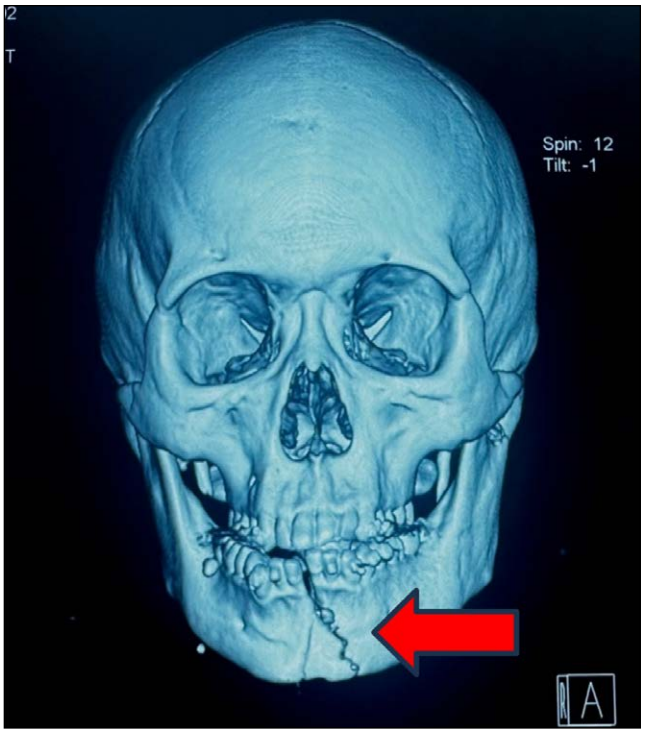

Figure 3. Computed tomography (CT) scan showing mandibular symphysis fracture

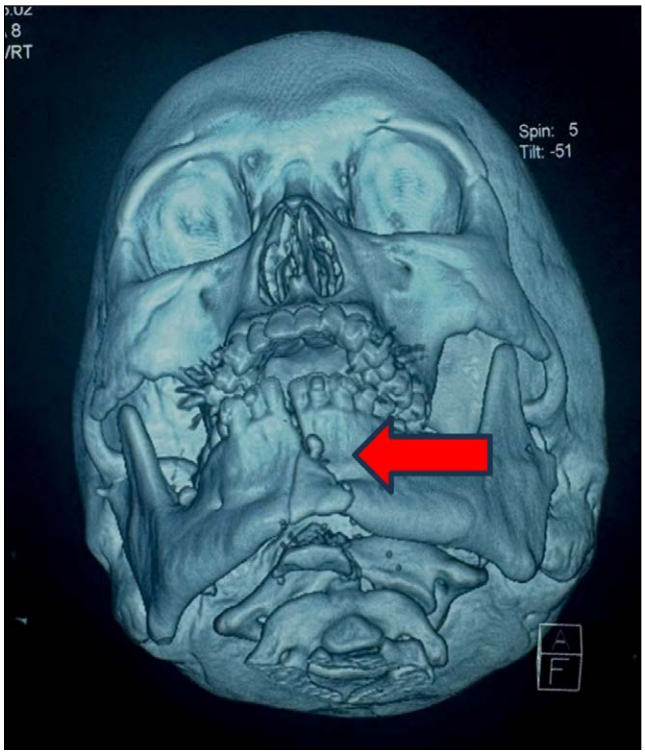

Figure 4. Three-dimensional CT reconstruction of mandibular fracture

A 19-year-old male presented with progressive submental swelling following a motorbike accident. He reported transient loss of consciousness, retrograde amnesia, and sustained a laceration over the chin. On arrival, he was hemodynamically stable without stridor or dyspnea.

Initial evaluation and management were undertaken by the neurosurgical and OMFS teams for mild traumatic brain injury and facial soft tissue injury, respectively. The chin laceration was sutured; however, progressive swelling in the submental and bilateral submandibular regions raised clinical concern and prompted referral to the OTOHNS team.

Upon OTOHNS assessment, the patient was alert with a Glasgow Coma Scale (GCS) of 15/15, but exhibited mild tachypnea and a muffled voice. Clinical examination revealed a 10×8 cm tender, erythematous, and firm lesion extending from the submental to bilateral submandibular areas (Figure 1). Intraoral evaluation showed marked elevation of the floor of the mouth with the characteristic 'double tongue' sign (Figure 2). Flexible nasopharyngolaryngoscopy (FNPLS) demonstrated no evidence of laryngeal edema. However, posterior displacement of the tongue partially obscured the vallecula. The vocal cords were mobile and symmetrical.

Contrast-enhanced computed tomography of the brain and neck revealed mandibular fractures involving the symphysis and right condylar regions (Figure 3, Figure 4). The patient was admitted for close monitoring and commenced on intravenous dexamethasone (8 mg three times daily), metronidazole (750 mg three times daily), and tranexamic acid (1 g three times daily) for three days.

He demonstrated notable clinical improvement under a multidisciplinary management approach, which included initial conservative treatment and subsequent definitive surgical intervention. Corticosteroids and antifibrinolytic agents were utilised to mitigate mucosal edema and stabilize the hematoma, effectively averting the need for immediate airway intervention. Empirical antibiotic coverage was provided to prevent secondary infection, although there was no clinical or radiological evidence of an underlying infective process.

Radiographic studies confirmed bilateral mandibular fractures without signs of abscess or gas formation, supporting a hemorrhagic rather than infectious etiology. The exclusion of Ludwig's angina via imaging and endoscopic evaluation prevented unnecessary airway manipulation, thereby reducing potential morbidity associated with misdiagnosis.

Definitive management was achieved through open reduction and internal fixation of the mandibular fractures by the OMFS team. The sublingual hematoma regressed gradually without further complications such as rebleeding, infection, or airway compromise. The patient was discharged on postoperative day three with full resolution of oropharyngeal symptoms and was scheduled for regular outpatient follow-up.

Discussion

Pseudo-Ludwig's angina, first described in the literature in the context of spontaneous bleeding due to anticoagulant therapy, continues to pose diagnostic uncertainty due to its close resemblance to infectious sublingual and submandibular space involvement (Baharloo et al., 2020). Trauma-induced sublingual hematoma, though rare, may present acutely with submental fullness, trismus, dysphonia, and, in severe cases, impending airway obstruction (Cheng et al., 2021; Marin et al., 2020). Hemorrhage within the constrained compartments of the floor-of-mouth can rapidly distort local anatomy, pushing the tongue superiorly and posteriorly (Brotfain et al., 2012).

In Ludwig's angina, the mechanism of airway compromise arises from diffuse cellulitis and edema extending into the pharyngeal and laryngeal spaces, often necessitating early airway management and intravenous broad-spectrum antibiotics (Kruse et al., 2009; Nisa et al., 2021). Conversely, in sublingual hematoma, airway obstruction results primarily from mechanical displacement rather than inflammation. This key difference should guide the clinical decision-making (Lovallo et al., 2013).

Anatomical Considerations

The sublingual and submandibular spaces are bounded by the mylohyoid, hyoglossus, and mandible, creating confined compartments. Even small hemorrhages may elevate the tongue and compromise the airway. Potential bleeding sources include branches of the lingual artery, venous plexus, and trauma to floor-of-mouth musculature or glands (Alamoudi & Hariri, 2022). This pathophysiology explains the acute airway threat observed in trauma patients (Brotfain et al., 2012).

Management strategies for sublingual hematoma are not standardized due to its low incidence. In patients without respiratory distress, close observation and conservative approaches, including antifibrinolytic agents (e.g., tranexamic acid) and corticosteroids to reduce mucosal edema are often successful (Cheng et al., 2021; Marin et al., 2020). In contrast, Ludwig's angina typically mandates surgical drainage and aggressive antimicrobial therapy (Kruse et al., 2009; Osunde et al., 2023). Airway security remains paramount in both conditions, and elective tracheostomy may be indicated when intubation is deemed high risk (Baharloo et al., 2020).

Most hematomas resolve within days once the inciting cause is addressed, particularly in trauma-related cases without ongoing bleeding. Escalation options include surgical evacuation or selective embolization for expanding hematomas, although these are rarely required (Brotfain et al., 2012).

Conclusion

This case highlights the diagnostic and therapeutic challenges in managing sublingual hematomas that clinically resemble Ludwig's angina. In trauma patients presenting with rapid floor-of-mouth swelling, distinguishing between hemorrhagic and infectious etiologies is imperative to avoid unnecessary airway interventions. Through timely imaging, endoscopic assessment,

and interdisciplinary collaboration, invasive approaches can often be avoided in favor of conservative and definitive surgical management. Recognition of pseudo-Ludwig's angina ensures optimal patient outcomes and minimizes morbidity.

Author Contributions

- Dr. Fatin Aisya Ahmad Shukri: Conceptualization, data curation, investigation, writing—original draft, and writing—review & editing.
- Dr. Adam Mohammad: Supervision, validation, and visualisation.
- Dr. Ahmad Hafizuddin Johari: Supervision and validation.

Consent Statment

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

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