

# EM CASE OF THE WEEK.

BROWARD HEALTH MEDICAL CENTER  
DEPARTMENT OF EMERGENCY MEDICINE



Care Warriors

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## Ludwig's Angina

A 32-year-old male with no past medical history is transferred to the ED from another hospital with worsening submandibular pain for 2 days. He was recently involved in an MVA where he was thrown forward and his jaw hit the steering wheel. Further review of the patient's records show that he has bilateral submandibular fractures on CT, and diffuse cellulitis of the jaw which was treated with Clindamycin. He admits to decreased ROM in the jaw. Patient's temperature is 100.8F and vitals are within normal limits. On physical exam, patient is drooling with his mouth open and has difficulty speaking. There is a tender submandibular anterior midline mass. Which of the following is the most appropriate initial treatment for this patient's condition?

- A. Airway management
- B. Consult ENT for evaluation
- C. Start IV Antibiotics with Ampicillin-Sulbactam, Penicillin G + Metronidazole, or Clindamycin
- D. Observe in the ED and discharge with antibiotics
- E. Immediate surgical decompression



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Patient with Ludwig's Angina

Ludwig's Angina characterized by rapidly progressing gangrenous cellulitis of the soft tissues of the neck and floor of the mouth. Associated with fever, drooling, neck swelling, trismus and pain.

Submandibular space affected in Ludwig's Angina.

*EM Case of the Week is a weekly "pop quiz" for ED staff.*

The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.

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# Warriors

The correct answer is C. Early Ludwig's Angina can be resolved by starting aggressive IV antibiotics and management in an Intensive Care Unit.

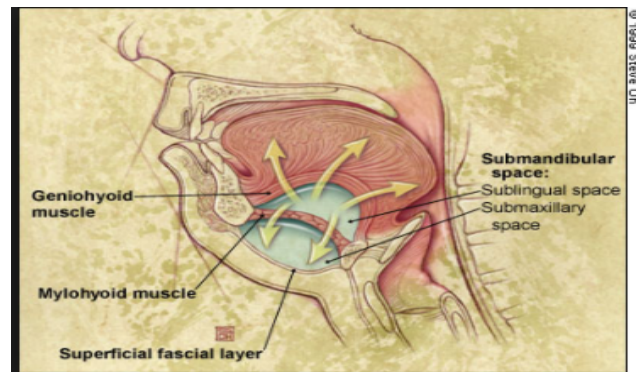
Ludwig's Angina is a rapidly expanding, life-threatening inflammation of the submandibular and submental spaces, usually occurring in young adults. Symptoms include severe neck pain, swelling, fever and dysphagia. Causative organisms include gram negative and anaerobic bacteria along with staphylococci and streptococci. Stridor suggests impending airway compromise in the later stages, and airway maintenance should be given special consideration along with surgical decompression under antibiotic coverage.

## Discussion

The submandibular space is primarily affected in Ludwig's Angina. It is further subdivided by the mylohyoid muscle into the superior sublingual space and the inferior submaxillary space. The majority of cases are primarily odontogenic, resulting from infections of the third and fourth molars. The roots of these teeth penetrate the mylohyoid ridge where the development of any abscess or dental infection has direct access to the submaxillary space. Any infection can then spread contiguously to the sublingual space, and may involve the pharyngomaxillary and retropharyngeal spaces that leads to airway compromise.

Most cases of Ludwig's Angina occur in healthy people with no comorbid conditions. However, the incidence of it occurring is increased with the presence of DM, alcoholism, acute glomerulonephritis, SLE, aplastic anemia, neutropenia and dermatomyositis.

The most life-threatening complication of Ludwig's Angina is airway obstruction. Mortality for Ludwig's Angina exceeded 50% prior to the development of antibiotics. The mortality rate currently averages 8% with antibiotics, aggressive surgical intervention and dental care.



(via <http://www.aafp.org/afp/1999/0701/p109.html>)

## Treatment

Treatment includes assessment and protection of the airway, use of intravenous antibiotics, surgical evaluation and operative decompression (if necessary). Recommended initial antibiotics are high-dose Penicillin G, sometimes used in conjunction with an anti-staphylococcal drug or metronidazole. Clindamycin Hydrochloride is an option used for patients with penicillin allergies.

Other antibiotic choices include Cefoxitin sodium (Cefoxil) or combination drugs such as Ticarcillin-clavulanate (Timentin), Piperacillin-tazobactam (Zosyn) or Amoxicillin-clavulanate (Augmentin). IV Dexamethasone has been shown to be beneficial in reducing edema—enhancing antibiotic penetration and maintaining airway integrity, if given for 48 hours.

Surgical intervention may be needed if no signs of improvement are seen within 24 hours. Airway patency remains a major concern because it can be easily compromised with little warning.

For a list of educational lectures, grand rounds, workshops, and didactics please visit [BrowardER.com](http://BrowardER.com) and click on the **"Conference"** link.

*All are welcome to attend!*

## Differentials and Management for Complicated Upper Airway Infections

**Table 1-2**  
 COMPLICATED UPPER AIRWAY INFECTIONS

	CLINICAL PRESENTATION	DIAGNOSIS	TREATMENT
Epiglottitis	Sudden onset of fever, drooling, tachypneic, stridor, toxic appearing	Lateral cervical radiograph (thumb-printing sign)	Urgent ENT (ear, nose, throat) consultation for airway management Helium-O <sub>2</sub> mixture Cefuroxime antibiotic therapy
Retropharyngeal abscess	Usually child or if adult (trauma) Fever, sore throat, stiff neck, no trismus	Lateral cervical radiograph or CT imaging	Stabilize airway Surgical drainage Antibiotics (penicillin and metronidazole)
Ludwig's angina	Submaxillary, sublingual, or submental mass with elevation of tongue, jaw swelling, fever, chills, trismus	Lateral cervical radiograph or CT imaging	Stabilize airway Drain abscess Antibiotics (penicillin and metronidazole)
Peritonsillar abscess	Swelling in the peritonsillar region with uvula pushed aside, fever, sore throat, dysphagia, trismus	Cervical radiograph or CT imaging Aspiration of the region with pus	Abscess drainage Antibiotic therapy (penicillin and metronidazole)

(via <http://books.mcgrawhill.com/hill.com/accessmedicine/cases/emergencymedicine/case01/display.php?p=correlation.htm>)

## Take Home Points

- Airway management is the foundation of treatment for Ludwig's Angina. The decision to secure an airway relies on clinical judgement and experience. There are no current guidelines for airway control in patient's with Ludwig's Angina.
- Broad-spectrum antibiotics should be started as soon as possible. Penicillin + Metronidazole, Clindamycin or Ampicillin-Sulbactam are the typical combinations used.
- Up to 65% of patients with Ludwig's Angina will develop complications that require surgical intervention.
- Physical examination alone is insufficient in determining the extent of infection in patients. Thus, imaging is indicated once patient's have been started on antibiotics



### ABOUT THE AUTHOR

This month's case was written by Arisha Marie A. Carreon. Arisha is a 4<sup>th</sup> year medical student from NSU-COM. She did her emergency medicine rotation at BHMIC in July 2017.

### REFERENCES

Journal of Natural Science, Biology and Medicine: J Nat Sci Biol Med. 2012 Jul-Dec; 3(2): 206-208.  
 doi: 10.4103/0976-9668.101932

Medscape: Evidence Based Diagnosis and Management of ENT Emergencies Feb 16, 2007

AFP: Richard W. Hartmann, JR., M.D., Halifax Medical Center, Daytona Beach, Florida  
*Am Fam Physician*. 1999 Jul 1;60(1):109-112.