

X-ray Quiz: lower jaw swelling

X 光照片猜謎：下顎腫脹

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Case

A 58-year-old lady with good past health attended our emergency department complaining of left jaw swelling for three days. She had dental filling done by a private dentist five days ago. She consulted a private practitioner one day before our consultation and was diagnosed to have sialadenitis. She had been prescribed oral antibiotics but without improvement. The initial vital signs on arrival were blood pressure 151/82 mm Hg, pulse rate 121/min, respiratory rate 18/min, temperature 38°C, and oxygen saturation 97% on room air. The physical examination showed markedly tender swelling of the left submandibular region. No significant swelling was noted inside the oral cavity. A lateral X-ray of the neck was taken (Figure 1).

Questions

1. What is the diagnosis?
2. What is the most important aspect in management?



Figure 1.

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Progress

The X-ray neck showed soft tissue swelling with subcutaneous gas below the chin. The epiglottis was enlarged and the vallecula was not clearly seen. A diagnosis of Ludwig's angina was suggested.

The patient was admitted into the hospital and urgent computed tomogram revealed a 2-cm abscess near the right angle of the mandible extending to the right submandibular space. Multiple gas loculi were noted in the submental space, and extending from the left submandibular space to the left carotid space. The left paralaryngeal space was swollen with mild narrowing of the airway (Figure 2). She received emergent incision and drainage and endotracheal intubation to protect the airway. However recollection of pus occurred, which required a second surgical drainage. The pus culture yielded *Bacteroides fragilis* and coagulase-negative staphylococci. She responded well to broad-spectrum antibiotics afterwards and was discharged about two weeks later.

Discussion

Ludwig's angina is a rapidly progressing cellulitis involving the floor of the mouth. It was first described by Wilhelm Frederick von Ludwig in 1836.¹ Before the era of antibiotics, the mortality rate was up to 50%. With prompt airway management, surgical drainage and antibiotic treatment, it is now far below 5%.^{2,3} Most of the patients presented with fever, tongue elevation, neck and bilateral submandibular swelling.⁴⁻⁶

Odontogenic infections, especially those involving the posterior molars, are the commonest causes for Ludwig's angina.^{2,5,6} About 80% of the patients have a history of recent dental procedures or toothache. The usual organisms involved are those found in other infections of the oral cavity, e.g. streptococcus, staphylococcus and anaerobes including *Bacteroides*.

Airway management is of the utmost importance in reducing the mortality of Ludwig's angina.⁷ However, endotracheal intubation can be difficult due to nuchal

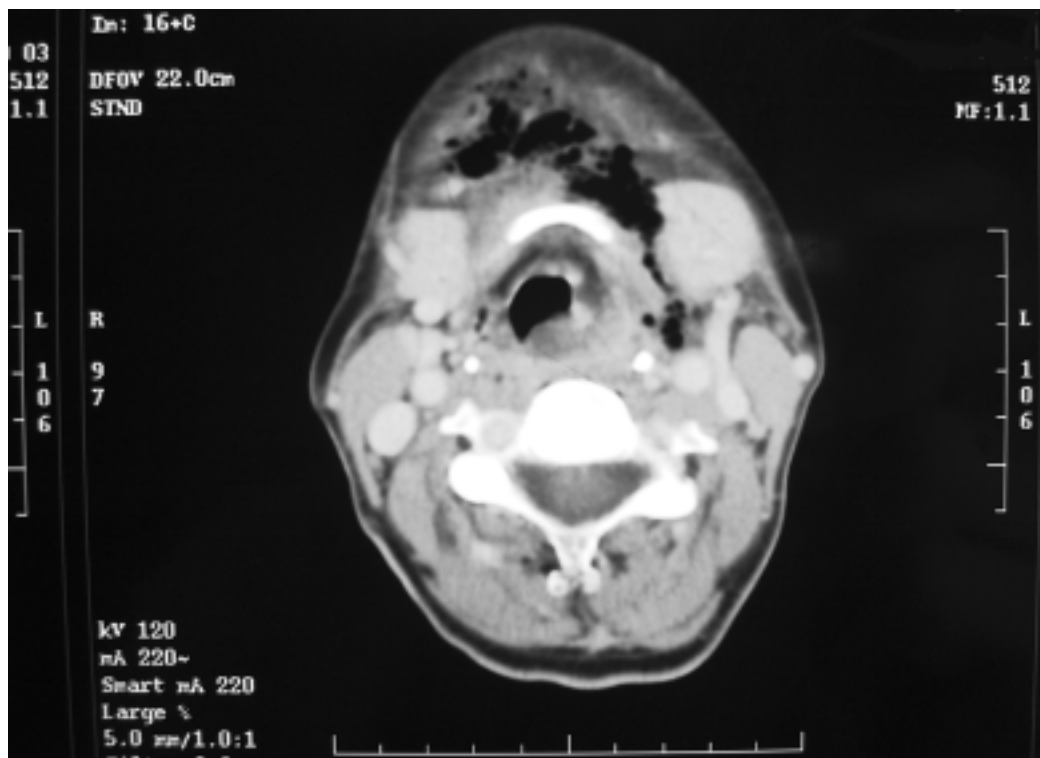


Figure 2. Multiple gas loculi in the floor of the mouth, and extending from the left submandibular space to the left carotid space. The left paralaryngeal space is swollen with mild narrowing of the airway.

rigidity, trismus, elevation of tongue, swelling of the floor of the mouth and pooling of secretion or pus. Therefore, equipment for surgical airway should be ready before endotracheal intubation. The other available options of airway management include awake intubation with the aids of fiberoptic laryngoscopy, awake tracheostomy under local anaesthesia and intubation with gaseous induction. After the establishment of a secure airway, the soft tissue infection should be managed by appropriate antibiotics and surgical drainage. Some authors suggested the conservative approach of airway observation as an alternative option. Patients with good past health and in the early stage of the disease had been observed in an intensive care setting to receive antibiotic treatment.⁸ Patients with signs of impending airway obstruction, such as stridor, anxiety, cyanosis or profuse secretion from the mouth were excluded. It was reported successful in diminishing the morbidity associated with the invasive procedures and in shortening the hospital stay.

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