

A 4-year-old boy is brought to the physician with fever and neck pain. He has had rhinorrhea, nasal congestion, and sore throat for the past week and developed fever and neck pain over the past day. The child refuses to eat or drink because of the throat pain and has been drooling due to pain in swallowing his saliva. He has no past medical history and his vaccinations are up to date. His temperature is 39.7 C (103.5 F), pulse is 120/min, and respirations are 24/min. Pulse oximetry is 99% on room air. On examination, the child appears tired and uncomfortable. He has bilateral tender cervical lymphadenopathy and is unable to extend his neck. However, he is able to flex and laterally rotate his neck. The child's voice sounds muffled and hoarse. He is unable to open his mouth fully, but bilateral tonsillar erythema and exudates are seen. A **lateral neck radiograph** shows widened prevertebral space but no other abnormalities. Which of the following is the most likely diagnosis?

- ☐ A. Epiglottitis
- ☐ B. Infectious mononucleosis
- ☐ C. Laryngeal diphtheria
- ☐ D. Meningitis
- ☐ E. Osteomyelitis of the cervical spine
- ☐ F. Retropharyngeal abscess

Media Exhibit

1 of 1

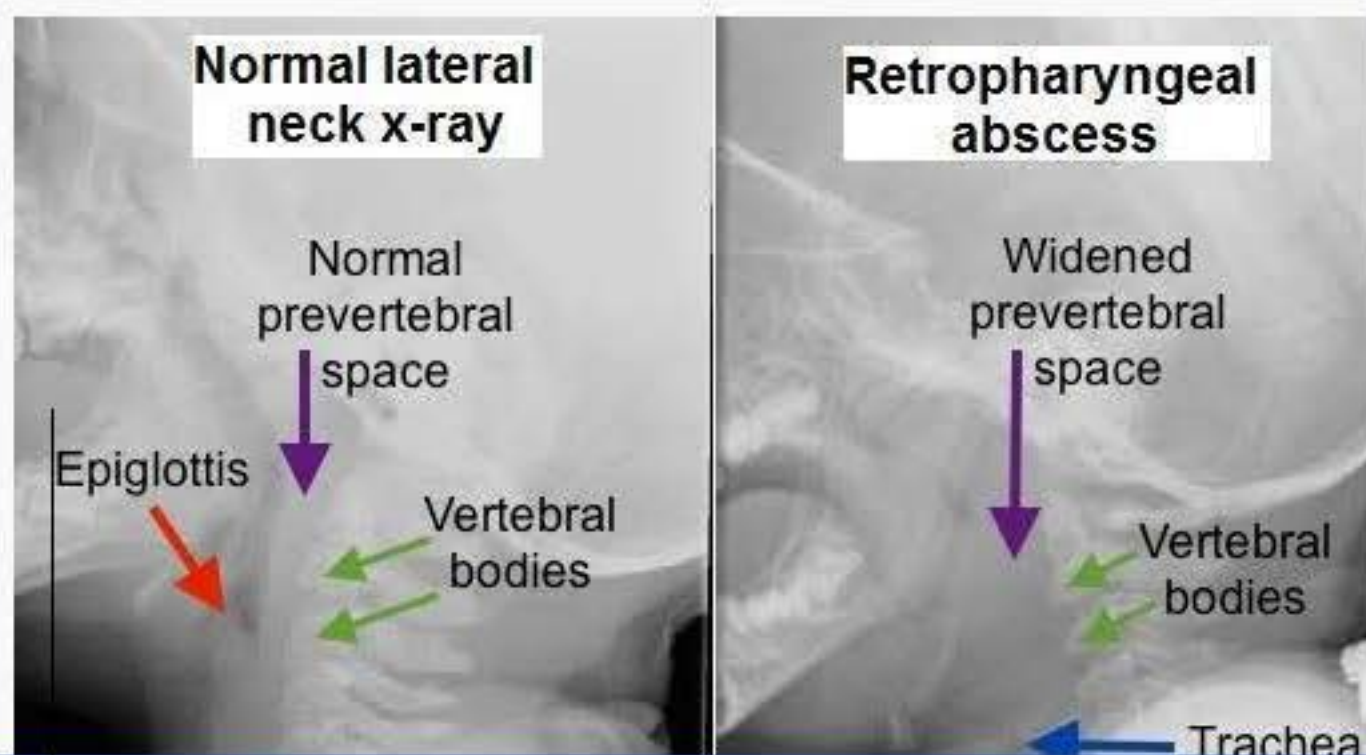


A 4-year-old boy is brought to the physician with fever and neck pain. He has had rhinorrhea, nasal congestion, and sore throat for the past week and developed fever and neck pain over the past day. The child refuses to eat or drink because of the throat pain and has been drooling due to pain in swallowing his saliva. He has no past medical history and his vaccinations are up to date. His temperature is 39.7 C (103.5 F), pulse is 120/min, and respirations are 24/min. Pulse oximetry is 99% on room air. On examination, the child appears tired and uncomfortable. He has bilateral tender cervical lymphadenopathy and is unable to extend his neck. However, he is able to flex and laterally rotate his neck. The child's voice sounds muffled and hoarse. He is unable to open his mouth fully, but bilateral tonsillar erythema and exudates are seen. A **lateral neck radiograph** shows widened prevertebral space but no other abnormalities. Which of the following is the most likely diagnosis?

- ☐ A. Epiglottitis [21%]
- ☐ B. Infectious mononucleosis [2%]
- ☐ C. Laryngeal diphtheria [3%]
- ☐ D. Meningitis [1%]
- ☐ E. Osteomyelitis of the cervical spine [0%]
- ☒ F. **Retropharyngeal abscess** [74%]

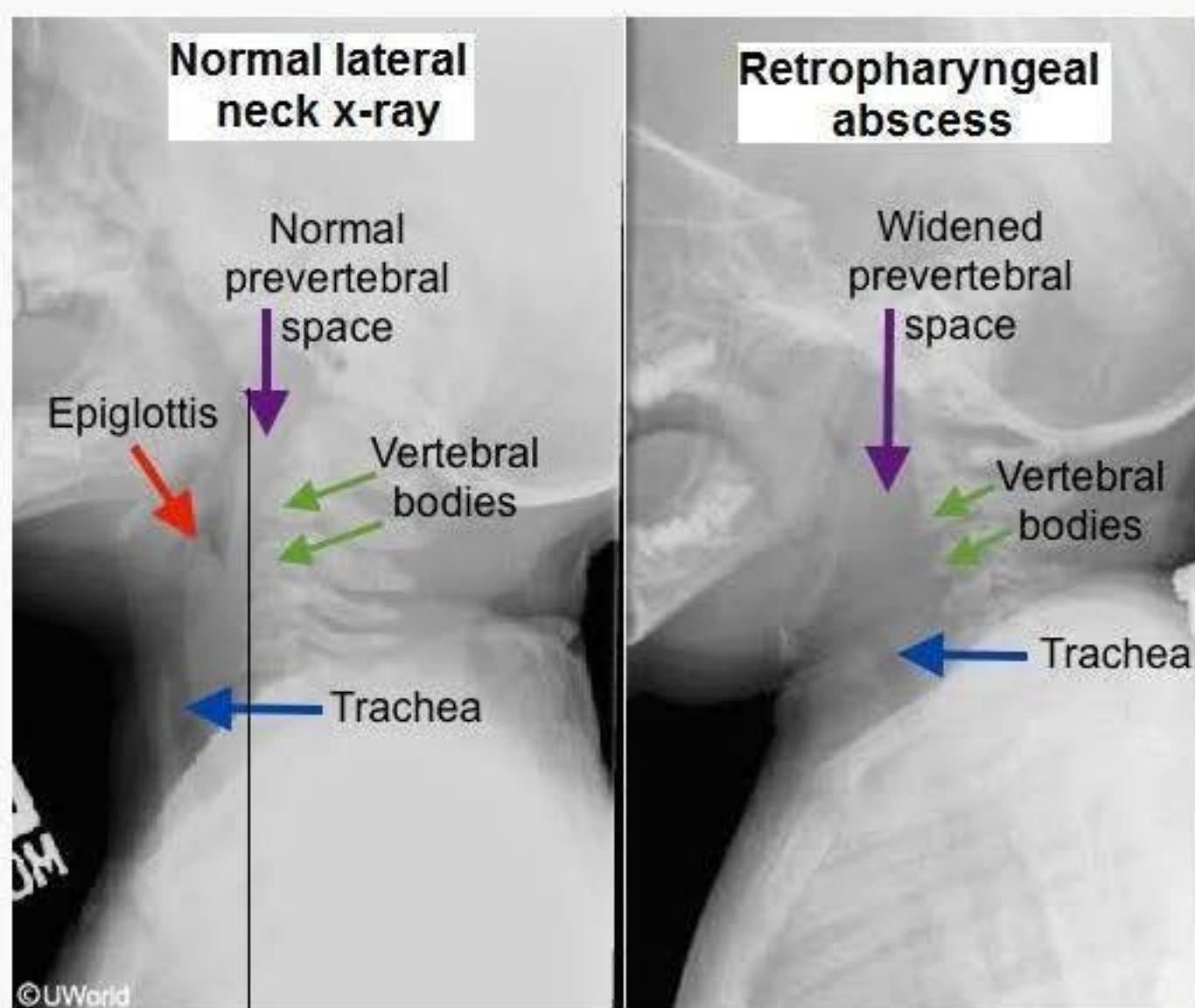
[Proceed to Next Item](#)**Explanation:**

User Id: [REDACTED]



Explanation:

User Id: [REDACTED]



The combination of **fever**, **odynophagia/dysphagia**, drooling, neck stiffness, **muffled voice**, and trismus (inability to open the mouth completely) is very concerning for infection of the larynx, pharynx, or deep neck space. Due to the proximity of the airway, spine, and major vascular structures, infections in this region are potentially life-threatening. On normal lateral neck x-ray, the prevertebral soft-tissue space should be narrower than the vertebral bodies. The **inability to extend the neck** and the **widened prevertebral space** suggest a diagnosis of retropharyngeal abscess (RPA). In patients with no signs of respiratory compromise, a **computed tomography scan with contrast** should be performed to confirm the presence and size of the abscess. Early diagnosis and management are essential to prevent rare but potentially fatal complications such as airway compromise, bacteremia, carotid artery rupture, and jugular venous thrombosis.

Most patients with RPA have pre-existing upper respiratory infection (eg, rhinorrhea and nasal congestion). RPA results from direct spread of bacterial infection from pharyngitis, tonsillitis, otitis media, or sinusitis. The abscess is usually **polymicrobial**, involving *Streptococcus pyogenes*, *Staphylococcus aureus*, and anaerobes. It occurs most



The combination of **fever, odynophagia/dysphagia**, drooling, neck stiffness, **muffled voice**, and trismus (inability to open the mouth completely) is very concerning for infection of the larynx, pharynx, or deep neck space. Due to the proximity of the airway, spine, and major vascular structures, infections in this region are potentially life-threatening. On normal lateral neck x-ray, the prevertebral soft-tissue space should be narrower than the vertebral bodies. The **inability to extend the neck** and the **widened prevertebral space** suggest a diagnosis of retropharyngeal abscess (RPA). In patients with no signs of respiratory compromise, a **computed tomography scan with contrast** should be performed to confirm the presence and size of the abscess. Early diagnosis and management are essential to prevent rare but potentially fatal complications such as airway compromise, bacteremia, carotid artery rupture, and jugular venous thrombosis.

Most patients with RPA have pre-existing upper respiratory infection (eg, rhinorrhea and nasal congestion). RPA results from direct spread of bacterial infection from pharyngitis, tonsillitis, otitis media, or sinusitis. The abscess is usually **polymicrobial**, involving *Streptococcus pyogenes*, *Staphylococcus aureus*, and anaerobes. It occurs most commonly in children age 6 months to 6 years. There is a decreased incidence after age 6 years due to a combination of retropharyngeal lymph node regression and fewer viral upper respiratory infections.

(Choice A) Epiglottitis is a potentially lethal condition associated with a high fever and drooling that can progress rapidly to airway obstruction. **Lateral x-ray** would show a swollen epiglottis ("thumb sign"), making this diagnosis unlikely.

(Choice B) Infectious mononucleosis is most commonly caused by the Epstein-Barr virus. Although pharyngitis is a feature of infectious mononucleosis, bacterial rather than viral pharyngitis is responsible for complications such as RPA, making this an unlikely co-existing diagnosis.

(Choice C) Diphtheria is uncommon in developed countries due to widespread vaccination. It is associated with grey-colored pseudomembrane formation, making this diagnosis unlikely.

(Choice D) Meningitis classically presents with the tetrad of fever, neck stiffness/pain, headache, and photophobia. The neck stiffness in meningitis is associated with flexion due to stretching of the meninges. This patient's difficulty with neck extension, rather than flexion, and the absence of headache and photophobia make meningitis unlikely.

(Choice E) Acute retropharyngeal abscess (RPA) is a deep neck space infection characterized by fever and neck

Most patients with RPA have pre-existing upper respiratory infection (eg, rhinorrhea and nasal congestion). RPA results from direct spread of bacterial infection from pharyngitis, tonsillitis, otitis media, or sinusitis. The abscess is usually **polymicrobial**, involving *Streptococcus pyogenes*, *Staphylococcus aureus*, and anaerobes. It occurs most commonly in children age 6 months to 6 years. There is a decreased incidence after age 6 years due to a combination of retropharyngeal lymph node regression and fewer viral upper respiratory infections.

(Choice A) Epiglottitis is a potentially lethal condition associated with a high fever and drooling that can progress rapidly to airway obstruction. **Lateral x-ray** would show a swollen epiglottis ("thumb sign"), making this diagnosis unlikely.

(Choice B) Infectious mononucleosis is most commonly caused by the Epstein-Barr virus. Although pharyngitis is a feature of infectious mononucleosis, bacterial rather than viral pharyngitis is responsible for complications such as RPA, making this an unlikely co-existing diagnosis.

(Choice C) Diphtheria is uncommon in developed countries due to widespread vaccination. It is associated with grey-colored pseudomembrane formation, making this diagnosis unlikely.

(Choice D) Meningitis classically presents with the tetrad of fever, neck stiffness/pain, headache, and photophobia. The neck stiffness in meningitis is associated with flexion due to stretching of the meninges. This patient's difficulty with neck extension, rather than flexion, and the absence of headache and photophobia make meningitis unlikely.

(Choice E) Acute osteomyelitis of the cervical spine can present with fever and neck stiffness and may not appear on initial x-rays. Although it can progress to retropharyngeal abscess, vertebral osteomyelitis is uncommon in healthy toddlers, making this diagnosis unlikely.

Educational objective:

Retropharyngeal abscess should be suspected in children who present with fever, dysphagia, inability to extend the neck, muffled voice, and lateral x-ray showing a widened prevertebral space.

References:

1. **Retropharyngeal abscess in children: clinical presentation, utility of imaging, and current management.**
2. **Clinical features and treatment of retropharyngeal abscess in children.**

Media Exhibit

