

PROCEDURAL

C O L U M N

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Recognizing a Peritonsillar Abscess in Pediatric Patients

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ABSTRACT

A peritonsillar abscess (PTA) is a localized collection of pus in the peritonsillar space, between the palatine tonsillar capsule and the superior pharyngeal constrictor muscle (G. Gupta & R. McDowell, 2022). It is the most commonly occurring abscess in the head and neck region. Patient presentation usually includes odynophagia, unilateral otalgia, trismus, and voice changes. Managing a pediatric patient may be challenging, as children may not be able to describe their history of illness and symptoms. The management of a PTA can also differ between pediatric and adult patients (S. Ahmed Ali et al., 2018). It is important for practitioners to consider all aspects when providing treatment. This article describes the encounter and individualized treatment plan of an 11-year-old nonverbal autistic child who presented with fever, decreased oral intake, and left neck swelling. It also provides a general overview of PTAs and procedural steps to perform drainage through needle aspiration and incision and drainage. **Key words:** epiglottitis, pediatric peritonsillar abscess, peritonsillar abscess, PTA, retropharyngeal abscess, sore throat

AN 11-YEAR-OLD MINIMALLY verbal autistic male child presented with his mother and father for worsening decreased oral intake, decreased urine output, fever, and fatigue for the past 3 weeks. The patient's parents had been increasingly concerned when a few days prior to

presentation, the left side of their child's neck started swelling and he began having difficulty turning his head toward the swollen side.

This case presented some difficulty in obtaining a full symptom history because the patient was minimally verbal and could not express the severity of his symptoms. In addition, he was uncooperative with the physical examination, not unusual for a child with autism. His parents were very involved in his daily care and proved to be trustworthy historians. His parents denied that the patient had a cough, nasal congestion, post-nasal drainage, difficulty breathing, wheezing, vomiting, diarrhea, or rash. Excluding the COVID 19 vaccine, his immunizations were up-to-date. He had no known drug or environmental allergies.

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PHYSICAL EXAMINATION

The patient was alert and in moderate distress due to discomfort. He was ill appearing and fatigued. Per his parents, the patient's mental status was at baseline as a minimally verbal autistic child. His vital signs were as follows—temperature: 39.4 °C (102.9 °F), heart rate: 94, respiratory rate: 22, blood pressure: 109/76, and oxygen saturation: 98% on room air. His height was 56 in., and his weight was 92 lb. (41.8 kg). Conjunctiva and sclera were clear without discharge or tearing. Pupils were equally round and reactive to light. Ear canals were patent without erythema, swelling, or discharge. Tympanic membranes were bilaterally visualized, pearly gray and intact, and with good light reflex. Trachea was midline. There was swelling present on the left side of his neck (see Figure 1). His range of motion was decreased to the left side. There was significant cervical lymphadenopathy present, left side greater than right side. Rhinorrhea was present. Lips and mucous membranes were dry and his oropharynx was grossly erythematous. The superior aspect of the left tonsil in the anterior tonsillar pillar region had increased erythema and edema. The left tonsil was +3 and the right tonsil was +1 with right-sided uvula deviation. The tongue was without swelling or lesion. Teeth were intact, and there was no gumline swelling, necrosis, or evidence



Figure 1. Photograph of the patient's external neck swelling on initial presentation.

of abscess. Respirations were even and unlabored. There was no stridor, increased work of breathing, intercostal retractions, or accessory muscle use noted. Bilateral breath sounds were clear to auscultation. Heart sounds, S1 and S2, were present without murmur, rub, or gallop auscultated. Abdomen was soft and nontender without guarding or rigidity. Skin was warm and dry and no lesions, rashes, cyanosis, or pallor noted. The patient moved all extremities evenly. His peripheral pulses were intact. Per parents, the patient was at baseline neurologically. He was alert and active, without focal neurological deficits. Glasgow Coma Scale score was 15.

MAKING THE DIAGNOSIS

Following a thorough history and physical examination, differentials considered were pharyngitis, peritonsillar abscess (PTA), retropharyngeal abscess, and epiglottitis. The patient did not have a cough or respiratory symptoms, so it was unlikely that the etiology was due to an upper respiratory tract infection or lung infection. The patient had no tongue protrusion, tongue swelling, drooling, stridor, or tripodding which made epiglottitis and a retropharyngeal abscess less likely.

A soft tissue lateral neck radiograph was obtained, and there was no evidence of widening of the retropharyngeal space or enlarged or protruding epiglottis, making both retropharyngeal abscess and epiglottitis unlikely. The HEENT examination was supportive of a left PTA due to the left tonsillar swelling, right uvula deviation, and significant left cervical lymphadenopathy. This was confirmed through a point-of-care transcervical ultrasonogram, which depicted an abscess approximately 1 cm × 2 cm in size in the left peritonsillar space (see Figure 2).

COURSE OF TREATMENT

The patient received the following treatment plan:

Day 1: Clindamycin 300 mg iv and ceftriaxone 1,000 mg iv. Solumedrol 62.5 mg iv,

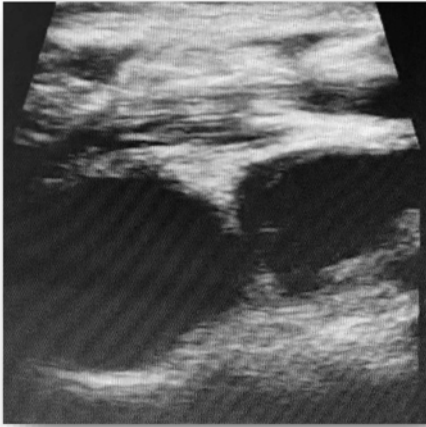


Figure 2. Bedside transcervical ultrasonogram. Abscess detected, approximately 1 cm × 2 cm in size in the left peritonsillar space.

Toradol 15 mg iv, normal saline bolus 500 ml over 1 hr. The patient was stable and discharged home with close monitoring and strict return precautions.

Day 2: Clindamycin 300 mg im and ceftriaxone 250 mg im. The patient was still stable and appeared less fatigued. No change in oropharynx or PTA size.

Day 3: Clindamycin 300 mg im and penicillin G 2.4 mill U/4 ml im. The patient had improvement in overall appearance, remained afebrile, and PTA has decreased in size. The patient had an increase in oral intake and able to take liquid ibuprofen as needed.

Day 4: Clindamycin 300 mg im. The patient has continued to improve.

Day 5: By Day 5, the patient had significant improvement. The PTA was down 90% in size in comparison with Day 1, and the patient's parents stated that he was back to his normal self, with baseline oral intake and energy level.

One of the main bacterial culprits that cause PTAs is *Streptococcus pyogenes* (Slouka et al., 2020). Clindamycin was chosen in this patient's case because it is a lincosamide antibiotic that covers anaerobic, streptococcal, and staphylococcal infections (Woo &

Robinson, 2020). Ceftriaxone was chosen as a second agent because it is a third-generation cephalosporin that covers gram-negative bacilli (Woo & Robinson, 2020). The patient received penicillin G benzathine instead of ceftriaxone on Day 3 because it is longer acting than ceftriaxone and also covers Group A *Streptococcus*. The patient had already showed improvement and this selection allowed the child to have one fewer intramuscular injection on Day 4. This treatment plan covered the most likely pathogens associated with PTAs and worked very well in this pediatric patient.

PTA IN REVIEW

A PTA is a localized collection of pus in the peritonsillar space, located between the tonsillar capsule medially and the superior constrictor muscle laterally (Tintinalli, 2020). This space is unfortunately susceptible to abscess formation, likely due to it primarily being made up of connective tissue. Peritonsillar abscesses usually occur following acute pharyngitis or tonsillitis. The exact pathophysiology of the abscess formation is unknown, but it is thought to be from a tonsillar infection that spreads beyond the confines of the tonsillar capsule, causing peritonsillitis, which progresses to an abscess (Gupta & McDowell, 2022). Another possible mechanism is that infectious material obstructs the minor salivary glands in the peritonsillar space, also progressing to abscess formation (Gupta & McDowell, 2022).

Peritonsillar abscesses are the most common deep space infection of the head and the neck with the incidence in pediatrics being approximately 14–20 cases per 100,000 children per year, reflecting the rates of the adult population (Ahmed Ali et al., 2018). They are rarely seen below 5 years of age or above 59 years of age. Risk factors include chronic tonsillitis, multiple trials of antibiotics, previous PTA, smoking tobacco, and periodontal disease (Tintinalli, 2020). In addition, patients who are immunocompromised

are generally at a higher risk for infections and complications.

Diagnosing a PTA is vastly based on the history and clinical assessment. Patients typically present with fever, progressive odynophagia, unilateral otalgia, trismus, muffled or “hot potato” like voice, malodorous breath, and cervical lymphadenopathy. Classically, on examination the patient will have unilateral peritonsillar swelling with uvula deviation to the contralateral side (see Figure 3; Tintinalli, 2020). Obtaining a soft-tissue lateral neck radiograph before the oral examination in a young child should be done if there is suspicion for a retropharyngeal abscess or epiglottitis. To confirm a PTA and its exact location and size, a bedside intraoral or transcervical ultrasonography can be performed. These bedside ultrasonographies are safe, cost-effective, and a highly accurate modality to confirm and help stratify patients into severity level (Huang, Vintzileos, Gordish-Dressman, Bandarker, & Reilly, 2017).

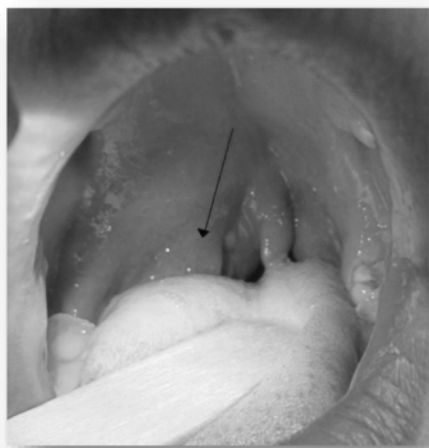


Figure 3. A right-sided peritonsillar abscess depicting unilateral right-sided bulging with uvula deviation to the contralateral side. Arrow is pointing to the abscess. From Peritonsillar Abscess (digital image), by J. Heilman, 2011, May 13. Retrieved and reprinted from <https://commons.wikimedia.org/wiki/File:PeritonsillarAbsess.jpg>.

PATIENT MANAGEMENT

Antibiotic coverage and needle aspiration or incision and drainage have been the mainstay management for PTAs. The decision between surgical therapy and medical therapy alone is one that should be made by the provider and the patient together, taking into consideration overall patient assessment, illness severity, risks, and benefits. General contraindications and relative contraindications include severe trismus, findings concerning for carotid artery aneurysm, coagulopathy, and an uncooperative patient (Campo & Lafferty, 2022).

Adult management typically involves the administration of antibiotics and bedside expression of abscess fluid, if the setting is appropriate and the provider has sufficient training. This type of procedure can be more difficult in the pediatric population due to variability in patient cooperation (Ahmed Ali et al., 2018).

Peritonsillar abscesses are known to be polymicrobial in nature with the most common organisms being group A *Streptococcus* and *Fusobacterium* (Battaglia et al., 2018). The authors of several studies have reported penicillin-resistant infections in up to 58% of cases, making broad-spectrum antibiotic therapy the safer route of treatment. There is no one correct course of action and the decision is multifactorial. Using ceftriaxone and clindamycin, like in the case study mentioned previously, provides broad-spectrum activity, covering gram-negative organisms, gram-positive organisms, and anaerobes (Battaglia et al., 2018). Adjunct therapy with a single high-dose steroid administration may assist in improving symptoms. Intravenous fluids should also be considered as these patients may present in a dehydrated state due to painful swallowing decreasing their oral intake.

Most patients with a PTA can be treated as outpatient. If the patient is dehydrated and unable to manage fluids, has airway concerns, has poor medication compliance, or has comorbid conditions, such as

immunosuppression, diabetes mellitus, or prolonged corticosteroid use, consider inpatient treatment (Galioto, 2017). If a patient has failed outpatient management and is not showing improvement in symptoms within 48–72 hr, consider inpatient treatment.

Based on the patient's history, a referral to otolaryngology may be appropriate. The American Academy of Otolaryngology-Head and Neck Surgery Guidelines currently recommend assessment for possible tonsillectomy in patients who have had more than one PTA (Mitchell et al., 2019). A tonsillectomy can also be performed as a form of definitive treatment for a patient presenting with a PTA.

DRAINAGE

If drainage of the abscess is the course of treatment selected, a needle aspiration or an incision and drainage can be performed. The literature comparing these two methods indicates that both are equally effective and essentially interchangeable from a success and risk standpoint (Galioto, 2017). With both procedures, start with the following steps:

- Ensure that the patient is a good candidate for this procedure. Contraindications include intractable trismus, coagulopathy, poor patient cooperation, or uncertainty of the diagnosis.
- Ensure that setting is suitable for managing airway complications, there is adequate lighting, and suction is available and ready for use.
- Position the patient sitting upright, slightly leaning forward and at eye level of the provider.
- If not using ultrasonography to assist in locating the abscess, gently palpate the area to localize the fluctuant space.
- Have the patient gargle with viscous lidocaine, if tolerated, for up to 1 min and repeat two to three times.
- Apply a topical anesthetic spray to fluctuant area.

- Use taped double-tongue blades, the bottom half of a speculum, or a laryngoscope to assist in visualization of the oropharynx and abscess.
- Use a 25- to 27-gauge 1.5-in. needle to inject 1%–2% lidocaine with epinephrine into the mucosa overlying the fluctuant area. Typically, 0.5–1 ml of anesthetic is sufficient.

Technique for Needle Aspiration

- Attach a long (spinal needle if available) 16- to 20-gauge to a 10-ml syringe. Remove the needle cover and cut off the distal portion. If ultrasonography was used to assess size, cut off the amount needed to penetrate the center of the abscess cavity. Otherwise, limit the exposed portion of the needle to 8 mm. The internal carotid artery is approximately 2-cm posterior and lateral to the tonsillar pillar, and this will assist in avoiding overpenetration of the needle (Galioto, 2017).
- Insert the needle into the most prominent area of fluctuance along the sagittal plane. This is usually at the site of the superior pole (see Figure 4). If first insertion is negative for pus, withdraw the needle and redirect it slightly inferior into the medial pole and then into the inferior pole. Do not angle laterally toward the carotid artery or into the tonsil itself.
- Aspirate and remove as much purulent fluid as possible from the abscess cavity.

Technique for Incision and Drainage

- Tape all but the distal 1-cm end of a No. 11 blade scalpel to avoid overpenetration.
- Inform the patients that they may notice a flow of pus or blood in their mouth and to do their best to expectorate it and not swallow.
- Ensure that an assistant is at bedside and able to hold the suction tip in the patient's mouth to help with the drainage.
- Incise 0.5 cm of mucosa in a posterior to anterior direction. Medial and superior incisions are safer to avoid the carotid artery.

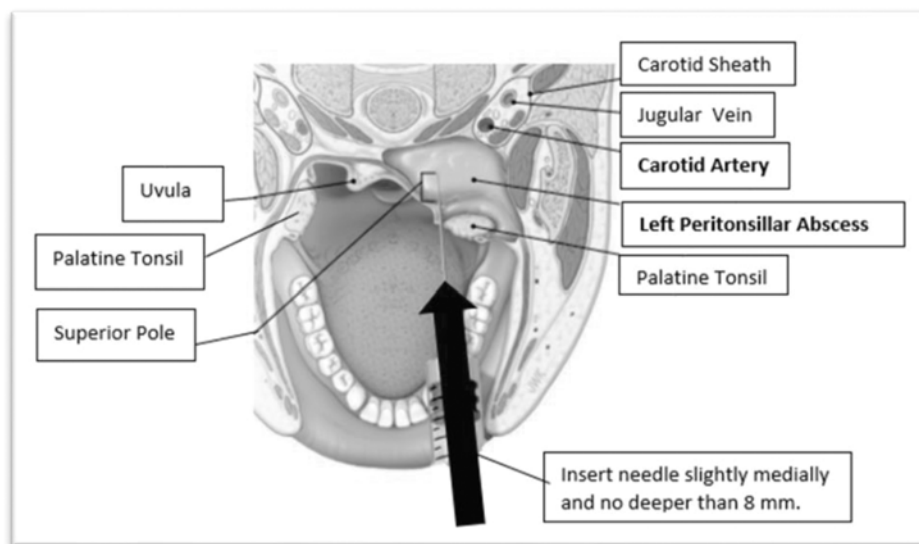


Figure 4. Anatomy of oral pharyngeal area with corresponding vascular structures, important potential spaces, and palatine tonsils.

A stab incision with the scalpel blade is also acceptable.

- Insert a closed Kelly clamp or hemostat into the opening and gently open the clamp, disrupting any loculations.

Postprocedure Considerations

- Observe the patient postprocedure for bleeding and reaccumulating fluid in the abscess space.
- Ensure that the patient can tolerate oral fluids before discharging home.

Complications

Complications of PTAs include airway distress, laryngeal edema leading to airway compromise, parapharyngeal or retropharyngeal abscess, necrotizing fasciitis, mediastinitis, erosion of the internal carotid artery, brain abscess, and streptococcal toxic shock syndrome, and although rare, sepsis (Klug, 2017). In addition, poststreptococcal sequelae are possible when the infection is caused by Group A *Streptococcus*, such as glomerulonephritis and rheumatic fever. There are also complications of performing a needle aspiration or incision and drainage must

be taken into consideration. These include bleeding, airway obstruction, possible puncture of the carotid artery, and aspiration of abscess fluid leading to pneumonia.

PATIENT-CENTERED CARE

The first priority in patients with a PTA is to maintain a patent airway. In this case, the patient had no signs of total or near-total airway obstruction. Needle aspiration of the abscess with intravenous (IV) antibiotics versus IV antibiotics alone was considered as treatment option and discussed with the parents. Because of the patient's young age and confounding high spectrum autism, the parents worried that a needle aspiration would be physically and emotionally difficult for their child. They did not want him to undergo a transfer to an emergency department for procedural sedation. Risks versus benefits were assessed and discussed, and the parents chose for their child to receive IV antibiotics in the urgent care and forgo the needle aspiration. They agreed to and were committed to closely watching their child overnight and to return to the urgent care for at least the following 3 days for repeat antibiotics.

They verbalized clear understanding of strict return precautions, which included if the patients had any worsening of symptoms to include worsening swelling, drooling, abnormal breath sounds, or difficulty breathing, they were to go straight to the emergency department.

IMPLICATIONS FOR ADVANCED PRACTICE REGISTERED NURSES

It is essential for the advanced practice registered nurse (APRN) to consider a PTA as a differential diagnosis every time a patient presents with a sore throat. If unsure of the presence of a PTA, bedside ultrasonography is a quick and cost-effective tool that can be used to rule out or to confirm and assess size and severity of the abscess. Performing an aspiration or incision and drainage of a PTA is a multifactorial decision and should involve the patient. The APRNs should consider performing this procedure only if they are well trained and experienced in the skill and the setting is appropriate. Take into consideration patient presentation, severity, risk factors, and level of confidence in the patient's ability to remain diligent and compliant with discharge instructions, return precautions, and follow-up. If the patient is a child or uncooperative, consulting otolaryngology for possible procedural sedation should be considered. If the disease process is early enough, intravenous antibiotics with close return precautions and follow-up can be considered. Early antibiotics and patient ability to hydrate are two key factors of treatment; however, a patent airway is always first priority.

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