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Surgical management of parapharyngeal space infections

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Parapharyngeal space (PPS) infections often arise from pharyngeal or dental infections and, if left untreated, can result in serious complications such as mediastinitis, Lemierre syndrome, and death. The PPS is an inverted triangle spanning the skull base to the greater cornu of the hyoid, the inferior constrictor medially, and the ramus of the mandible laterally with many vital structures contained within. Treatment begins with assessing the airway, considering the need for computed tomography or magnetic resonance imaging with intravenous contrast and broad-spectrum antibiotics. With evidence that a PPS infections has resulted in an abscess or there is failure of conservative management with 24-48 hours of intravenous antibiotics or in severe cases, surgical drainage is performed. This is done via the traditional transcervical route or, if the abscess is medial to the great vessels, a transoral approach. Complications of surgery are rare, and resolution of symptoms with prompt antibiosis and surgical treatment prevents the possibility of infectious spread and its dangerous sequelae.

Introduction

Parapharyngeal space infections (PPSIs) are a serious, though rare, complication of many types of oral cavity or oropharyngeal infections, such as tonsillitis and dental abscesses.[1] Untreated infections may ultimately result in abscess formation that can travel along deep fascial planes of the neck resulting in life-threatening sequelae including mediastinitis, pericarditis, meningitis, Lemierre syndrome, septic shock, internal carotid artery rupture or aneurysm, airway obstruction, empyema, Horner syndrome, and death.[2-4]

The extent and severity of the complications associated with untreated PPSI accent the importance of the anatomical structures contained within the space. The PPS, historically referred to as pharyngomaxillary or lateral pharyngeal space, is commonly described as an inverted pyramid spanning the distance between the skull base and the greater cornu of the hyoid bone[5] (Figure 1A). In the lateral border of the space, from posterior to anterior, are the deep lobe of the parotid gland and the ramus of the mandible covered with the medial pterygoid muscle and more inferiorly, by the fascia of the posterior belly of the digastrics muscle. Medially, it is bounded by the superior pharyngeal constrictor (pharynx) and abuts the retropharyngeal space. Anteriorly, the space is limited by the pterygomandibular raphae and posteriorly by the prevertebral fascia, carotid sheath, and retropharyngeal space. Traditionally, the space is divided into anterior and posterior compartments divided by the styloid process and fascial condensation called the aponeurosis of Zuckerkandl and Testut and joining the styloid process to the tensor veli palatine muscle, referred to as the prestyloid and poststyloid spaces.[6] The prestyloid space contains parapharyngeal fat, lymph nodes, and the

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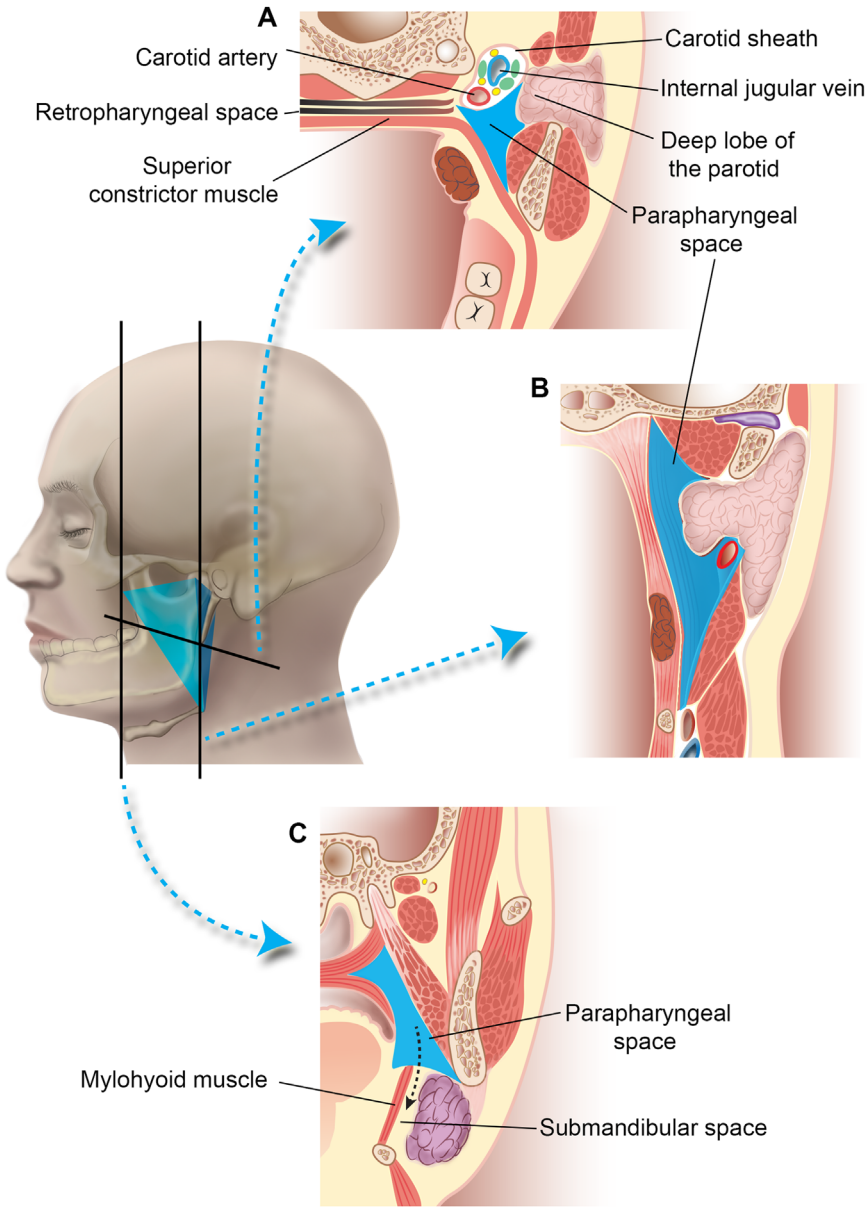

Figure 1 (A) Axial section through the oral pharynx demonstrating the contents of the parapharyngeal space. The prestyloid space contains the deep lobe of the parotid, fat, and lymph nodes. The poststyloid compartment contains the internal jugular vein; internal carotid artery; cranial nerves IX, X, XI, and XII; sympathetic trunk and superior sympathetic ganglion; ascending pharyngeal artery; and lymph nodes. Note its proximity and continuity with the peritonsillar and retropharyngeal spaces. (B) Coronal section through the oropharynx showing the vertical extent of the parapharyngeal space. (C) Coronal section sliced more anterior demonstrating the continuity of the parapharyngeal and submandibular spaces. (Color version of figure is available online.)

deep lobe of the parotid gland. The poststyloid space contains the internal jugular vein, internal carotid artery, cranial nerves IX, X, XI, and XII, sympathetic trunk and superior sympathetic ganglion, ascending pharyngeal artery, and lymph nodes[7,8] (Figure 1B). In addition to the vital structures contained within this space, it communicates directly with other deep neck spaces including the retropharyngeal space, parotid space, submandibular space, and carotid sheath[3] (Figure 1C).

The origin of PPSIs is often unclear as the offending primary infections may have resolved at presentation. Several studies have shown tonsillitis and pharyngitis as the predominant nidus in children, whereas dental infections are more common in adults. Although deep neck infections are rare, up to 50% occur in or communicate with the PPS, making it the second most common deep neck space infection following retropharyngeal infections in children and peritonsillar abscesses overall.[2,9] The most common presenting symptoms are dysphagia, sore throat, painful cervical mass, swelling, trismus, lymphadenopathy, pyrexia, odynophagia, and medial displacement of the lateral pharyngeal wall.[1,2] The average age at presentation depends on the population, with pediatric reviews demonstrating an average age of 5 years with decreasing incidence with increasing age,[10,11] and the average age for adults is between 32 and 35.8 years[2-12] with a male predominance.