

Two Cases of Rare and Life Threatening Masticator Space Abscess

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ABSTRACT

The masticator space is a deep facial space which is centered on the mandibular ramus and outlined by the superficial layer of the deep cervical fascia. A masticator space abscess commonly represents an advanced stage of an odontogenic infection indicated by facial pain, swelling and trismus. Masticator space abscess may have a life threatening prognosis if they are not diagnosed and treated properly. They are very rarely seen and published infections in the literature, which make their diagnosis more important. Due to difficulty of physical examination of the region, the value of computed tomography or magnetic resonance investigation on diagnosis of masticator space abscess is important. This report describes two cases of masticator abscess who came to the clinic with trismus and facial pain complaints and both were surgically drained and postoperatively administered with antibiotics.

Key words: masticator space, odontogenic infection, abscess, trismus

İKİ VAKALIK ENDER GÖRÜLEN VE HAYATI TEHDİT EDEBİLEN OLGU SUNUMU: MASTİKATÖR APSE

ÖZET

Mastikatör boşluk merkezinde mandibular ramusun bulunduğu derin servikal fasyanın yüzeysel tabakası ile çevrelenmiş derin yüz boşluğudur. Mastikatör boşluklaki apseler genellikle dış kaynaklı infeksiyonların bir komplikasyonudur ve yüz ağrısı, şişlik ve trismus gibi şikayetlere neden olurlar. Mastikatör boşluk apseleri doğru tanı konulmadığı ve uygun tedavi uygulanmadığı durumlarda hayatı tehdit edebilen bir prognoza sahiptirler. Literatürde oldukça az sayıda bildirilmiş olması tanısının konulmasını daha da zor hale getirmiştir. İlgili bölgenin fizik muayenesinin yapılmasının zor olmasından dolayı tanıda bilgisayarlı tomografi ve manyetik rezonans ile inceleme çok yardımcı olmaktadır. Bu çalışmada hastanemiz acil servisine trismus ve yüz ağrısı yakınması ile başvuran ve yapılan incelemelerle mastikatör boşluk apsesi tanısı konulan ardından cerrahi olarak drene edilen iki hastanın sunumu yapılmıştır.

Anahtar kelimeler: mastikatör boşluk, diş infeksiyonu, apse, trismus

Abscess formation in the orofacial region is relatively rare but it usually develops from an odontogenic location. Odontogenic infections are commonly caused by pericoronitis, dental caries, periodontitis or complications from dental procedures. The second and third molars are often the etiological tooth for these odontogenic infections (1). The masticator space is a distinct deep facial space, bounded by the superficial layer of the deep cervical fascia. It contains the ramus and posterior body of the mandible, and the four muscles of mastication, including the medial and lateral

pterygoid muscles, temporal muscle and masseter muscle. Computed tomography (CT) or magnetic resonance (MRI) studies are for definitive diagnosis because tumors and infections may create a mass in deep facial spaces and have similar complaints (2). Treatment of masticator space abscess consists of surgical drainage and antibiotics, anti inflammatory, analgesic and supplementary treatment. As a rarely seen condition and similar complaints with temporomandibular joint disorders (TMJD), in case of misdiagnosis masticator abscess may lead to serious life threatening prognosis (3). In this article our aim is to remind masticator space abscess as a rare but life threatening infection of relevant area.

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Case presentations

Case 1

The first case was a 44 years old female, who administered to emergency room suffering from trismus and left temporomandibular joint pain without swelling or redness with a history of 3 days. She had fever and her general status was moderate. She had no history of dental infection. Her physical examination did not show dental origin of abscess. Her mouth opening range between upper and lower incisor was about 4 mm, intraorally erythematous, swollen soft palate with uvula deviation to contralateral side and enlarged tonsil was determined. Patient was diagnosed as having masticator space abscess after MRI investigation (Figure 1). Abscess was superiorly located in masticator space and vicinity to oral mucosa. She underwent an intraoral incision and drainage of abscess under general anesthesia. Incision was made at the most fluctuant and most prominent inferior- lateral edge of left tonsilla pallatina. Pus was drained from deep lateral tissues. Postoperatively she was treated with intravenous empiric antibiotic for 3 days postoperatively and continued orally for 7 days (Sultamicilin 4x1 gr). Culture antibiogram was not investigated for the patient due to broad spectrum antibiotic treatment. She recovered well and discharged from hospital on the 3rd day of operation. The complete recovery of her trismus took 3 weeks after the treatment.

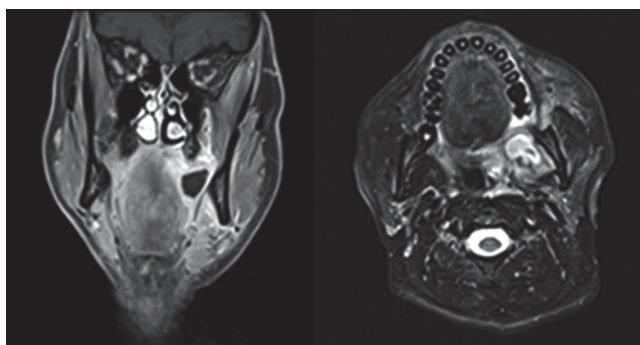


Figure 1. MRI of the case 1 reveals a left masticator space abscess. An axial T1 weighted spin echo image at the level of mandible reveals a low signal mass including the left masticator space. An axial T2 weighted spin echo image reveals a high signal mass.

Case 2

The second case was a 22 years old male having trismus, progressive swelling at chin-neck area, and high fever and pain. He had a history of dental abscess of right maxillary second molar tooth 20 days previously. His complaints worsened even he had administered intramuscular Penicillin treatment for one week, twice in a day. His mouth opening range between upper and lower incisor

was less than 2 mm. CT-scan revealed an abscess in the right masticator space located superficially to the neck (Figure 2). A submandibular external incision and abscess drainage under local anesthesia was performed. Submandibular skin incision was done about 1 cm below the mandibular angle through the medial periostium, pus was drained from medial and superior mandibular ramus and intravenous empiric antibiotic were administered for 3 days postoperatively and continued orally for 7 days (Sultamicilin 4x1 gr). Culture antibiogram was not investigated for the patient due to broad spectrum antibiotic treatment. 3 day after the operation, molar teeth was removed. He was recovered well and discharged from hospital on the 3rd day. The complete recovery of her trismus took 6 weeks after physiotherapy.

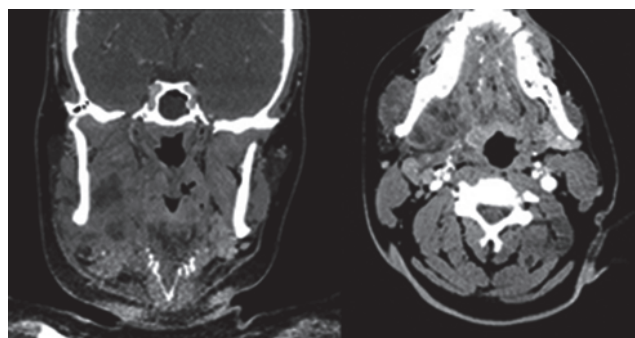


Figure 2. CT of the case-2 at coronal and axial plane CT-scans reveal a left masticator space abscess with a low density mass.

Discussion

The masticator space is centered on the mandibular ramus, which divides it into medial and lateral compartments. It is separated from the adjacent face and neck spaces by a superficial layer of deep cervical fascia except superiorly, where it freely communicates with the external temporal fossa, which we consider an upper extension of the masticator space. Adjacent to the masticator space are the buccal space anteriorly, the parotid space posteriorly, the parapharyngeal space medially, the submandibular and sublingual spaces inferiorly, and the skull base superiorly. The masticator space contains the four muscles of mastication (masseter, medial and lateral pterygoids, and temporalis), the ramus and posterior portion of the body of the mandible, the pterygopalatine node and also contains several important nerves. These nerves, all branches of the mandibular division of the trigeminal nerve, include the masticator nerve, which innervates the muscles of mastication, as well as the buccal, lingual, and inferior alveolar nerves (3).

Masticator space abscess is a serious and life threatening but not a common case for the last 30 years due to globally diffuse antibiotic usage. Therefore it was rarely published in recent medical literature. The articles about masticator space abscess are mostly presented in radiology journals which focused about anatomical relations with surrounding tissues and differential diagnosis of masses in the space. Shuknecht et al (2) reported 30 patients of masticator space abscess pathway of spread with CT and MR investigations. Faye et al (3) reported an article about masticator space anatomy and lesions. Hasegawa et al (4) reported two cases of masticator space abscess which simulates TMJ disorders, then cured after intraoral incision and medical treatment. Both cases have had the same history of odontogenic infection.

Odontogenic abscess is the most common lesion of the masticator space. Infection of the space arises from a dental cause in 80% of cases, and other causes are facial infection, post trauma from foreign bodies and iatrogenic. Most abscesses in the masticator space originate from the mandibular molar periodontal infections. The microbiology of masticator space infections usually reveal mixed aerobic and anaerobic organisms, often with a predominance of oral flora. Both gram-positive and gram-negative organisms may be cultured. Group A beta-hemolytic streptococcal species (*Streptococcus pyogenes*), alpha-hemolytic streptococcal species (*Streptococcus viridans*, *Streptococcus pneumoniae*), *Staphylococcus aureus*, *Fusobacterium nucleatum*, *Bacteroides melaninogenicus*, *Bacteroides oralis*, and *Spirochaeta*, *Peptostreptococcus*, and *Neisseria* species often are found together in various combinations. *Pseudomonas* species, *Escherichia coli*, and *Haemophilus influenzae* are occasionally encountered (5).

Masticator space lesions are often discovered only at a late stage either because there are no clinical signs or, if they do occur, they are so common as to be overlooked. Patients complain of facial pain with swelling and especially trismus. Diffuse swelling of the overlying masseter or myositis explains the symptom of trismus. Trismus is the initial symptom and may prevent adequate clinic examination, which explains why imaging is so important in this pathology. Other detected complaints are fever, malaise, severe sore throat, dysphagia, otalgia, swollen soft palate, hemifacial edema, cervical lymphadenitis.

The value of the imaging studies as CT scan or MRI in the evaluation of infections of the face and neck or any mass

is indisputable; however, use of the imaging investigations should only follow a thorough clinical examination. Regrettably clinical examination of the masticator space is difficult because it is deeplying and not easily accessible. When abscess formation is not superficial and fluctuant, and overlying tissues are edematous, or when the potential abscess is deep to anatomic structures such as muscle and bone, the CT scan or MRI may be a significant diagnostic adjunct. Patients complain of facial pain with swelling and trismus which, in themselves, often complicate evaluation of the masticator space (6).

CT scan is particularly useful for guiding treatment in emergency cases: if it reveals only inflammatory changes (cellulitis) then antibiotic therapy should be started. Fluid collections must be treated surgically by intra or extraoral drainage. CT can also reveal signs of osteomyelitis (lytic changes with mandible cortical disruption, thickening and abnormal enhancement of the muscles of mastication), which require subperiosteal drainage. Sometimes, CT is not able to diagnose osteomyelitis in which case, MRI may show loss of the normal signal void of cortical bone with obliteration of the normal signal from medullary fat on T1-weighted images, and hyperintense signals from within the medullary part of the mandible on T2-weighted images. The masticator muscles are hyperintense on T2 with significant enhancement after contrast administration. In the cases of an abscess in the vestibular, buccal, pterygomandibular and canine space abscess, an intraoral incision at the appropriate time can prevent cutaneous scar formation. A submental or submandibular abscess requires an extraoral incision and drainage (7).

In our first case abscess was medially located to the medial pterygoid muscles so left tonsilla pallatina was moved to medially. An intraoral approach was performed with an intraoral incision at the most prominent and fluctuant point of abscess seen from oral cavity which was located to inferior-laterally to tonsilla pallatina. The second case abscess was laterally located to the lateral pterygoid muscle, an external approach through a 1 cm long submandibular incision was made at the mandibular angle.

Precise imaging information, and may be necessary for making the diagnosis. In addition, imaging data can help to differentiate infection from tumor lesions, and (rare) primary tumors from secondary tumors. Primary tumors are mostly vascular and neural origin and metastasis lesions originate from lung, kidney and breast.

The use of antibiotics has changed the presentation and clinical course of these abscesses, partial treatment with antibiotics may contribute to the chronic nature of the condition by amelioration of systemic symptoms (ie, local infection may persist, unrecognized in a protected site, and progress to a chronic phase without surgical drainage). Such partial treatment may account for the typical absence of systemic signs and symptoms at the time of clinical presentation. Also inappropriate antibiotic selection can mask the symptoms and resulting in secondary infection by resistant organisms. Therefore, selection of appropriate antibiotics (effective on causative pathogens) is important, but surgical intervention remains the cornerstone of treatment (5). In our both cases empiric antibiotics treatment, which were broad-spectrum and effective on causative pathogens listed above, were administered.

An incision to the premature abscess disrupts the normal physiologic barriers and can cause further extension

of the infection, whereas spontaneous abscess rupture through the skin damages the subcutaneous tissues and causes hypertrophic scars. Therefore timing for abscess drainage is so important.

Conclusion

In this report we wanted to take attention and give information about 2 masticator space abscess which are very rarely seen situation in emergency room or ENT clinic for recent years. As similar with all kind of abscesses, masticator space abscess has the same importance due to possible serious complications and prognosis. Accurate diagnosis and appropriate treatment is so crucial to prevent bad prognosis. Typical complaints and physical examination leads for questioning masticator space abscess, MRI and CT investigations help for certain diagnosis. Medical support, hospitalization, IV hydration, antibiotic administration and surgical drainage are the corner stone of the masticator space abscess treatment.

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