MANAGEMENT OF MASTICATOR SPACE INFECTION

Abstract
The masticator space is a distinct deep facial space, bounded by the superficial layer of deep cervical fascia and containing the four muscles of mastication and the ramus and posterior body of the mandible. Trismus is the most significant characteristic of masticator space infection. A combination of surgical drainage and medical treatment was the main mode of treatment.

Introduction
Odontogenic infections tend to spread to soft tissues via planes of least resistance to adjacent potential spaces and must perforate bone before spreading to the deeper fascial spaces. The most common spaces involved in mandibular odontogenic infection include the submandibular, sublingual and masticator space.

The masticator space is described as a fascial compartment containing the temporal, masseter, lateral and medial pterygoid muscles, the temporomandibular joint, the ramus of the mandible, the corpus adiposum buccae, and certain neurovascular structures. It is limited by the upward extension of the superficial lamina of the cervical fascia which attaches to the lower border of the mandible, the corpus adiposum buccae, and certain neurovascular structures. It is limited by the upward extension of the superficial lamina of the cervical fascia which attaches to the lower border of the mandible. From this attachment a deep plane passes upward on the inside of the medial pterygoid muscle, (i.e., medial pterygoid fascia), to attach to the skull. A superficial sheet covers the masseter muscle (masseteric fascia), to attach to the lower border of the zygomatic arch. From the upper border of the zygomatic arch a plane continues superiorly, covering the temporal muscle (temporal fascia or temporal aponeurosis of Batson, '53) and attaches to the superior temporal line. Posteriorly the superficial and deep laminae attach to the rear edge of the ramus of the mandible.

The temporal space is posterior and superior to the masseteric and pterygomandibular spaces. Bounded laterally by the temporalis fascia and medially by the skull, it is divided into two portions by the temporalis muscle. The two sections are known as the deep and superficial temporal pouches. They are secondarily involved only rarely, in serious overwhelming infections. Swelling is evident over the temporal area, posterior from the lateral aspect of the lateral orbital rim. Trismus is always a feature of this infection, caused by involvement of the temporalis muscle. These three spaces are collectively known as the masticator space, since they are bounded by the muscles of mastication: masseter, medial pterygoid, and temporalis. The three individual spaces communicate freely with one another, so one rarely sees any single space involved alone. Thus the term masticator space does have some clinical usefulness, even if it lacks specific designation.

Case report
A 35 year old male patient reported to our department with a chief complaint of swelling over the right half of the face and limited mouth opening. The patient developed pain in the lower right back tooth region, 15 days ago. He developed fever and swelling in the right side of the face from past 10 days. The mouth opening was progressively reduced over a period of one week. The patient presented no relevant medical history. On examination, a solitary, dumb-bell shaped swelling of about 9 cm × 5 cm was observed in the right temporal region extending into the upper half of the face (figure 1).

There was localised rise in temperature and the area was tender on palpation. The patient exhibited mouth opening of just 10 mm. Intra oral examination revealed that his general periodontal condition was poor and the upper and lower right third molars were decayed and tender on percussion. On radiological examination it was confirmed that the teeth in question have been responsible for the spread of infection from the oral cavity to the masticator space (figure 2).
Fig 2 - OPG

Under antibiotic coverage, extraction of the offending teeth and incision and drainage of the temporal space infection was performed. An incision was made just medial to the upper extent of the anterior border of ramus of mandible and access is gained to the anterior border of the ramus and the coronoid process. A hemostat is passed superiorly along the lateral aspect of the coronoid process to enter the superficial temporal space and it is also passed superiorly along the medial aspect to enter the deep temporal space and upon application of pressure extraorally over the temporal region, the pus was evacuated. A sample of it was sent for culture and sensitivity. A drain was sutured into place (figure 3).

The patient was hospitalized for 5 days and intravenous antibiotic therapy lasted for 5 days and then it was continued with oral antibiotics for a week. His mouth opening showed signs of improvement from the 1st post operative day itself and the swelling over the temporal region reduced dramatically over 2 days time and hair loss was also observed over that region (figure 4).

Discussion
The masticator space lies lateral and anterior to the lateral pharyngeal space and contains masseter muscle, mandibular ramus, pterygoid muscles, tendon of temporalis muscle and the inferior alveolar vessels and nerves. The two distinct compartments are the medial or deep space known as the pterygoid space and the lateral or superficial space known as the masseteric space. Anteriorly and posteriorly they come together around the border of the mandible to which they are attached. Superiorly, deep to the zygoma the spaces are in communication with the space superficial and deep to the temporalis muscle and tendon - the temporal space. The space is limited superficially by the attachment of the thick outer temporal fascia to the temporal ridge and zygoma. There is a communication between the superficial temporal space and the temporalis space, while the deep temporal space communicates with the pterygoid space. Infection of the masticator space occurs most frequently from molar teeth especially the wisdom teeth, though non-odontogenic pathology should also be considered. The massetric, pterygoid and temporal spaces are all well differentiated but communicate with each other as well as with the buccal, submandibular and parapharyngeal spaces. Infection may be confined to one of these compartments or spread to involve them all.

The basic principles in treating any space infection are antibiotic therapy, removal of the source of infection and incision and drainage of the infected space.

The temporal space, although accessible through the intra-oral incision, may also be drained extraorally through an incision slightly superior to zygomatic arch. The incision should be made parallel to the zygomatic arch and therefore parallel to the zygomatic branch of the facial nerve rather than perpendicular to it or access to the space can be gained via Gillies temporal approach.

Intra orally, two techniques, the Kruger technique - consists of an incision made in the buccolabial fold lateral to the maxillary third molar. The Laskin technique - the vertical incision is made on the medial to the upper extent of the anterior border of the ramus. The haemostat is passed superiorly along the lateral aspect of the coronoid process to enter the superficial temporal space and along the medial aspect to enter the deep temporal space.

Intraoral approach is preferred over extra oral since intra oral approach provides more dependent drainage over the entire area whereas the extraoral approach does not enter the inferior aspect of the temporal space. It also prevents the fibres of the temporalis muscle from contracting against the drain and affecting the flow of the pus from the deep temporal space.

Conclusion
Timely intervention prevented the spread of infection into the deep spaces of the neck. Early detection and aggressive management are done in order to evade dreaded complications.

Reference