Chapter 6: Trismus

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Trismus is a symptom which is the inability to open the mouth. It is often a manifestation of a true ankylosis which is the pathologic involvement of articular structures of the temporomandibular joint. False ankylosis or pseudoankylosis can cause trismus as a result of extraarticular abnormalities which prevent adequate jaw motion. Although there are many causes of trismus, the most common are listed below.

1. Trauma.
2. Dental problems.
3. Infection.
4. Temporomandibular joint syndrome.
5. Arthritis.
6. Tumors.
7. Radiotherapy.
8. Central nervous system lesions.
11. Psychologic causes.

Subjective Complaints

The etiology of trismus can be so varied that a complete history relating to all of the above conditions must be elicited from the patient. Since trismus does limit jaw motion, it can limit the ability to speak, and many questions can be answered only by shaking of the head to indicate yes or no.

Trauma. Traumatic injuries to the jaw and the temporomandibular joint are the most common causes of trismus in patients who present to a physician. A history of injury to the jaw, ear, cheek, or other parts of the head or neck is offered voluntarily, but in marital disputes the injury may be denied. The patient is usually aware if he has been struck by a fist or foreign body, but many times in auto accidents the patient will remember only striking his head against the windshield or dashboard, completely forgetting that his chin was the foremost part of the head in the accident. The patient may have been unconscious, and questions to witnesses or ambulance attendants may be necessary to determine whether the patient was riding in the vehicle in order to reconstruct the manner of injury. History of an ecchymosis or tender spot which now has improved may lead to the diagnosis, and the patient may say that swelling was marked at one point of the jaw but has since resolved. He may state that difficulty in swallowing or shortness of breath accompany his injury but if these are severe, the patient may be very incapacitated from speaking. He may be spitting blood, gurgling, or have severe pain when trying to open his jaw to speak.

Dental Problems. The patient may complain of a lopsided or asymmetrical appearance to the jaw occurring after sleep or yawning. Many patients will state that their teeth do not fit together properly. Some seem to grind their teeth (bruxation), especially when nervous, or during sleep. The spouse may complain that he/she spends the night listening to this annoying
sound. The initial symptom may be pain in the ear due to the proximity of the temporomandibular joint to the adjacent external canal wall. Spasm and pain in the musculature may cause the patient to state that the soreness extends either into the temple or down into the cervical area. One must ascertain whether a new set of dentures has just been fitted or whether major dental work in which the teeth were remodeled, capped, or ground down has taken place. Occasionally, a patient will state that prior to the remodeling of his present dentures the jaw felt normal; but since that time he has had marked difficulty in fully opening his mouth.

A tooth extraction often leads the patient to seek medical help when pain or swelling persists. The most common site is the third molar although any tooth nerve can stimulate a reaction which can lead to trismus. Usually the tooth socket starts hurting on the 2nd or 3rd day and may be accompanied by fever or chills as well as swelling near the site of the tooth removal. Dysphagia may occur with a fairly rapid onset. Chewing may be restricted, especially by any feeling of swelling near the occlusal surface in the posterior part of the mouth. A history of an injection placed in the posterior alveolar surface or near the condyle may cause a pain as well as swelling from either nerve or muscle damage. If a hematoma is developing, the patient will complain of a swelling in the posterior alveolar ridge and trismus will be accompanied by deviation of the jaw to the ipsilateral side due to spasm in the muscle.

**Infection.** Since infections may play a great role in the cause of trismus, a careful history with special attention to contacts with communicable diseases should be elicited. Peritonsillar abscesses may cause trismus in a great number of cases and any history of treatment for a sore throat should be elicited. When this is the case, symptoms of fever, dysphagia and pharyngeal soreness are usually offered spontaneously, but one must determine whether the patient was inadequately treated with antibiotics for any infections of the throat. A sour or bitter taste in the mouth indicating pus is occasionally offered, and again dental abscesses from tooth removal or filling can often be the anticipated cause. History of trauma must be brought out in infected cases since osteomyelitis may be developing and this would manifest itself in marked pain, tenderness, and swelling.

**Tetanus.** Tetanus is a disease which is usually caused by foreign body penetration. Metallic objects are the most common penetrating substances which can cause this fatal disease. Even though tetanus is an uncommon disease in the United States (200 cases per year), it is very common in other parts of the world and over 300,000 cases per year are reported. Careful questioning as to immunization, both recent and in the past, must be done to determine whether the patient would be susceptible to this disease. Although the exotoxin (tetanospsamin) incubates in from 2 up to 56 days, most symptoms occur within the initial 3 weeks of exposure. The patient may complain of trismus associated with neck stiffness, dysphagia, or increasing inability to move the face, as well as respiratory difficulties. As symptoms are progressive, opisthotonos can occur and spasms of the musculature become extremely painful. If cephalic tetanus occurs (trismus and unilateral facial palsy) within 7 days after contamination, then a grave prognosis is present.

**Arthritis.** Rheumatoid arthritis can eventually involve the temporomandibular joint and the patient should be questioned as to whether any other rheumatoid joints have been present. On the other hand, osteoarthritis of the temporomandibular joint is due to chronic irregular
movement or trauma and this can be determined with many of the preceding questions. Pain in the ear is often the main complaint, since the anterior wall of the ear is the posterior joint surface. The patient may state that his pain becomes markedly better with aspirin but not with phenacetin, indicating a joint inflammation problem.

**Tumors.** Tumors of the parotid or the mandibular condyle may impinge into the joint space or the surrounding musculature and cause trismus. One should elicit a history of masses or previous surgery for a tumor. If a patient had a malignancy requiring radiotherapy, significant fibrosis may have occurred in the masticator muscles to create a severe disability opening the jaw.

**Central Nervous System Lesions and Systemic Diseases.** Since these can result in trismus, a general history should be included. Any symptoms of multiple sclerosis, epilepsy, or polio should be attained - since all may create trismus. Headache is often associated with central nervous system lesions which cause trismus, and pain along the distribution of the maxillary or mandibular nerve is sometimes present. Generalized bone disease or muscle tetany can occur, since hypocalcemia and hypomagnesemia both can have associated trismus. Syphilis as well as temporal arteritis may create difficulty in opening the jaw.

**Congenital Causes.** Congenital causes of trismus are quite rare. Usually they are detected very early in life and are associated with syndromes which are very easily diagnosed. The first branchial arch syndrome with maldevelopment of the ear and mandible limits mandible excursions. The Pierre Robin syndrome with an underdeveloped mandible may lead to difficulty in opening the mouth, giving the impression of glossomegaly. A very rare syndrome called pseudocamptodactyly may have marked mouth opening limitations and has been reported only in certain Kentucky-Dutch children. As the jaw develops in some children, the coronoid process may become so long that it impinges upon the zygomatic arch and its musculature, thus creating marked difficulty in jaw movement.

**Psychologic Causes.** If all these questions have failed to stimulate any thoughts toward a specific diagnosis, one must always be aware that conversion reactions and other types of hysterical problems can cause trismus. The patient usually is very inconsistent in giving the history and does not seem appropriate in the description of symptoms. Patients may be showing a lack of reasoning or they may be emotionally distraught while discussing their complaints. One must subsequently go deeper into the cause of anxiety or extreme stress which is causing their particular symptom.

**Objective Findings**

As in any patient with a significant symptom, a physical examination should not be solely confined to the area of complaint. As mentioned before, many systemic and central nervous system diseases can be manifested as trismus and this should be anticipated when examining the patient.

Often, just general observation of the patient will start the physician on the proper road to diagnosis. There may be a history of trauma with ecchymoses, swelling, or lacerations around the jaw or face. When he is speaking, the patient's occlusion may be quite asymmetrical or the jaw may deviate to one side when trying to open the mouth. In severe
injuries or in infections, the patient may be leaning forward with a posture of air hunger. One may observe a hypertrophy of the masseter muscles, although often this cannot be determined until palpation is done.

The palpation of the mandible must be done very gingerly since oftentimes fractures have torn the periosteum and extreme pain can be elicited by touching the tender site. Stepoff deformities of the mandible will tip off the physician to a fracture. Tenderness is usually elicited over a fracture site, even though it may not be displaced. Palpation of the temporomandibular joint in both opened and closed positions will determine whether any joint pathology seems to be present. Examination of the ear canal may reveal a laceration indicating a posterior joint space fracture into the ear canal. Palpation of the muscles around the jaw and the neck may reveal hematomas, fibrotic tissue, or marked spasm. The parotid gland should be carefully palpated for any tumors, swellings, or bony deformities. Fluctuation is often a sign of an abscess.

Intraoral examination can be an extremely difficult procedure in patients with severe trismus. Initially, the dental occlusion should be evaluated in both the open and the closed positions. Two tongue blades can be placed laterally in the buccal space to reveal both sides of the occlusal surfaces. Any premature contact of the cusps may cause blocking or bumping of the joint surfaces and these should be noted. Occasionally, overclosure can occur, especially in patients who have lost posterior teeth. The alveolar ridge and gingiva should be carefully examined for any dry sockets or swelling which may indicate early abscess or infection. Lacerations of the gingiva may be from a mandibular fracture.

Peritonsillar cellulitis, swelling, or edema of the uvula may indicate an impending abscess and may be creating spasm in the occlusal musculature. Retromolar trigone abscesses present in the space between the lower and upper jaw and will more infrequently cause uvular edema.

There are patients in whom trismus may be so severe that adequate examination of the intraoral and posterior pharyngeal areas cannot be accomplished, and various other measures must then be undertaken. Bite blocks can be inserted between the molars to try to wedge them apart, but overactive use of these can cause severe pain and create a severely distressful situation. An oropharyngoscope can be inserted between the slightly opened teeth to visualize the posterior part of the pharynx. This will usually give enough visualization to determine if there is a peritonsillar or retromolar abscess. A fiberoptic pharyngoscope or laryngoscope can also be used in the same manner and these give the advantage of having a flexible light source. The nasopharyngoscope, which is thinner but can be inserted through the nostril along the floor of the nose into the nasopharyngeal space, has its limitations in that the palate often causes an obstructed view of the posterior pharynx. The fiberoptic scope again can be of some value in this situation if it can be manipulated to visualize the lateral pharyngeal spaces.

Assessment

After the history and physical have been completed, the diagnosis is usually apparent. Laboratory studies may be useful and should include a complete blood count (CBC) and urinalysis. In cases of tetany, calcium and magnesium levels should be determined. If rheumatoid arthritis (RA) is suspected, sedimentation rates, RA factors, and antinuclear
antibody (ANA) levels should be run. Syphilis tests will probably be run as a routine on most hospital admissions. If infection is entertained as a diagnosis, a culture of the intraoral surface may be of some help, but more information can be gained if pus is present. Aspiration may be required to obtain a true culture of an abscess or cellulitis. Clostridium tetany is a gram-positive anaerobe and can be cultured from the penetrating wound in cases of tetanus.

The most helpful diagnostic tool in trauma cases is the x-ray. Temporomandibular joint x-rays may demonstrate a dislocated mandible or arthritis of the joint surfaces. Mandibular x-rays are essential in demonstrating fractures of the bone or joint space. Two mandibular fractures are commonly found, one being near the joint on the opposite side of a main fracture of the body or angle of the mandible. The coronoid process should be observed for its relationship to the zygomatic arch in both the open and closed positions. In dental problems or in situations in which a mandibular fracture is suspected but not confirmed, a Panorex should be done. Most oral surgeons and some hospitals have this type of x-ray unit which delineates the whole jaw as a continuous picture. Osteomyelitis and foreign bodies are also better detected with this type of radiologic study. In some patients, posterior pharyngeal and nasopharyngeal x-rays must be taken to see portions of the upper airway that could not be visualized by direct observation.

If a swelling of the parotid gland is present intraorally, a sialogram may be able to demonstrate either a tumor or other disease process which might be in the deep part of the parotid. If central nervous system lesions are present, skull x-rays, CAT scans or brain scans may be indicated.

Plan

Once the diagnosis has been made, further steps can be taken depending upon the proficiency of the physician involved. Almost all fractures should be treated by a specialist who deals with these problems frequently. Immobilization with arch bars, interdental wires, or direct bone fixation can be a difficult technical task and should not be attempted by someone who is not familiar with these particular techniques. Most mandibular fractures are in ambulatory patients who do not require immediate care, but occasionally the primary physician may see a severe traumatic disruption of the bony continuity of the mandible which is causing bleeding into the throat, inability to swallow, and marked difficulty with respiration due to retroposition of the tongue from lack of support of the bony structures. In these acute situations, when transportation of the patient could lead to a respiratory arrest, a tracheostomy often is required to maintain an airway. Trying to intubate these patients is fraught with hazard and is extremely difficult. When the patient is transported by ambulance he should be placed in a prone position with the jaw dependent so that secretions can drain from the oral cavity and the tongue is then in a forward dependent position and does not obstruct the hypopharynx.

Dislocation of the mandible can be repositioned if certain basic steps are followed. Initially, the physician's two thumbs may be placed on the posterior molars, and with a firm but not overexcessive downward pressure the jaw may be relocated. If this is not easily done due to excessive pain, the intraarticular injections of Xylocaine, accompanied by intramuscular or intravenous muscle relaxants, will make the procedure much easier. After the jaw is
If ankylosis of the joint has occurred to a significant degree, an oral surgeon should be consulted, since open surgery of the ramus in which osteotomies with Silastic interposition or even condylectomies may be required. If the coronoid process seems to be abutting against the zygomatic arch, coronoidectomies may have to be done.

Many dental problems causing trismus can be repaired by a competent dentist. If a hematoma or fibrosis has occurred in the jaw musculature, a forced opening of the mandible may be required. This can be done with graduated bite blocks and gentle manipulation, or in more serious instances, as in radiotherapy fibrosis, actual separation of the fibrotic segment may be required under a general anesthetic.

In infectious processes, antibiotics are essential in their total treatment. Cultures will direct the physician toward the appropriate antibiotic, but in most cases wide spectrum antibiotics need to be started immediately and one cannot wait for culture and sensitivities to return from the laboratory 1-2 days after taken. Peritonsillar and retromolar abscesses can be drained by simple incisions and evacuation of the pus when they have localized. If the infection has gone beyond the peritonsillar space and extended into the pterygomandibular space, a full understanding of the deep anatomy is necessary. The abscess may extend into the deep fascial planes and may actually involve the carotid sheath and its contents, causing disastrous consequences if left untreated. Drainage of a deep cervical abscess should be attempted by a head and neck surgeon who is quite familiar with the anatomy of the area so that damage to nerves and major blood vessels is not perpetrated on the patient. The primary physician, if unfamiliar with surgical techniques, can aspirate an abscess intraorally in order to decrease trismus enough so that the mouth can be opened wide enough to admit a knife blade for incision.

If tetanus has been diagnosed, the main treatment is to use tetanus immunoglobulin of human extraction. Since tetanus is diagnosed on clinical grounds, this therapy should be instituted when serious consequences from the disease are suspected. Tetanus toxoid should be given for most wounds if the patient has not been immunized in the last 5 years. Tetracycline and erythromycin may have some effect on this disease but the immunoglobulin treatment is still the primary therapy of choice.

When no physical evidence to determine the etiology of trismus can be found, it must be assumed that an hysterical reaction is occurring. If the patient is using trismus to obtain a secondary gain, then great difficulty in dealing with this problem may occur. Most patients will have relief from their symptoms if assured that no serious problem is occurring, and with supportive help their symptoms usually can be contained. It is rare that trismus can be so severe that psychiatric consultation is necessary, but as in any physical problem, the primary physician must realize his limitations in dealing with the situation and refer the patient on to the appropriate specialist when he feels that the patient would receive better care.