• Diagnosticians can discern only what is known to them, thus, the diagnosis of TMJ syndrome escapes the examiner too frequently. Misdiagnosis results because of the bizarre symptom-complex that mimics many diseases. Failure to diagnose can lead to erroneous empirical treatment that is ineffective.
Diagnosis and Therapy of Myo-Arthropathy (Costen’s Syndrome)

Source: Laryngorhinootologie; 1990 Jul

- The temporo-mandibular joint (TMJ) syndrome was first described by Costen in 1936. The pain is caused by hypertonia of the masticatory muscles and is projected into various regions of the head and neck.

TMJ Syndrome

- Symptoms can range from diffuse headache and facial pain to strictly localized or even neuralgic pain. Otogenic symptoms may be pain or various noises in the ear. For differential diagnosis, most of the painful diseases of the head area must be considered because of the multiform clinical manifestation of the TMJ syndrome.

Head and Neck Fibromyalgia and Temporomandibular Arthralgia

Source: Otolaryngol-Clin-North-Am; 1989 Dec

- This article has outlined specific components of head and neck pain originating in the masticatory musculoskeletal system. The future will bring us data on long-term treatment efficacy and a better understanding of chronic pain conditions that lack discrete organic lesions.
Tension Headache and Bruxism in the Sleep Disordered Patient

Source: The Journal of Craniomandibular Practice; Apr 1990

- An association exists between bruxism, tension headache, and sleep disorders, particularly sleep apnea, in the craniomandibular dysfunction patient. Current theories regarding bruxism, morning headache, and sleep disorders relate closely to altered muscle activity, altered breathing and fluctuation in oxygen saturation levels, which in turn can contribute to a patient’s complaints of various types of facial pain.

Monocular Accommodative Fluctuations associated with TMJ

Source: Optom-Vis-Sci; 1989 Nov

- A young scientist reported severe headaches emanating from behind one eye with an associated intermittent monocular blur. A subsequent routine visit to a dentist provided a diagnosis of Costen’s temporomandibular joint (TMJ) syndrome, a condition that is commonly misdiagnosed as a variety of neurological and vascular disorders.

Investigation of relation between Anxiety and TMJ Dysfunction in Dental Students

Source: Ankara-Univ-Hekim-Fak-Derg; 1989 Sep

- In this study relation between Temporomandibular Joint Dysfunction (TMJD) and anxiety was investigated. A positive relationship was demonstrated between anxiety and TMJD but statistically significant correlation wasn’t found between age and TMJD. Also, the results didn’t show any correlation between bruxism and anxiety levels.
Temporomandibular Joint

One of the simplest joints in the body!

…but subject to the most complex vector forces (red arrows) due to masticatory muscle parafunction

TMJ Syndrome--is it Compensable?

Source: Rehabil-Nurs; 1991 Jan-Feb;

• Temporomandibular joint (TMJ) syndrome has only recently surfaced as a workers' compensation or auto accident claim in the insurance industry. It usually appears as a secondary problem to cervical injuries.
According to the A.D.A. Symposium on TMJ Disorders

**Epidemiology**

Approximately 46 million Americans suffer with the signs and symptoms of TMJ Disorders

- 70-90% primary complaint “pain on jaw movement”
- 40-60% also have unilateral joint noise
- 15-25% limited range of motion
- 50% pain on masseter palpation
- 100% of masseter pain is unilateral
- 60% habitually clench and grind teeth unknowingly
- 20% oral habits—excessive gum chewing, biting nails, tongue, cheeks, lips
- 70-80% of TMJ disorders suffer masticatory myospasms, attributable to 20% oral habits acute or chronic

**TMJ SYNDROME** (also classified as TMJ Dysfunction, Myofascial Pain Dysfunction Syndrome, Craniofacial-Cervical Dysfunction Syndrome)

- Clinical evidence suggests that pain in the Neck, Shoulders, Arms, Fingers relate to cervical spine disorders which may be associated with TMJ disorders.

**Signs and Symptoms of TMJ Dysfunction**

- Ear symptoms such as tinnitus, vertigo, hearing loss, ear pain and stuffiness in the ear are sometimes seen.
- Capsular inflammation of the lateral aspect of the superior joint space advances to synovial proliferation, with changes in synovial fluid quality, and progresses into an adhesive state with stenosis, reflected functionally as decreased range of motion.
Signs and Symptoms of TMJ Dysfunction

- Of the more than 700 people, 75% said that despite treatment they are still in pain and have functional problems, ranging from merely annoying to completely debilitating.
- Many times, however, symptoms are not related to function. Instead, head or neck symptoms resembling a myriad of other disorders may occur.

Comparison of Clinical Characteristics in Myogenic TMJ Internal Derangement and atypical facial pain patients
Source: Clin-J-Pain; 1990 Mar

- Temporomandibular joint (TMJ) disorders have been collectively grouped as myofascial pain-dysfunction syndrome (MPDS) or temporomandibular joint dysfunction syndrome (TMJDS). Used synonymously to describe a set of clinical signs and symptoms that include pain in the TMJ and muscles of mastication, limited or deviant opening of the mandible, and/or joint sounds.

Treatment of Bell's Palsy By Mechanical Force, Manually Assisted Chiropractic Adjusting and High-Voltage Electrotherapy
Source: Journal of Manipulative & Physiological Therapeutics; 15(9): Nov-Dec, 1992

- Bell's palsy is a relatively common painful unilateral facial paralysis of unknown etiology. This article discusses two cases of Bell’s palsy successfully treated by mechanical force, manually assisted chiropractic adjusting technique combined with high-voltage electrotherapy.
Temporomandibular and Cervical Spine Disorders
Source: Spine; Vol 21, No.14, 1996

- Temporomandibular disorders (TMD) refer to a cluster of disorders characterized by limited or asymmetric mandibular movements.
- Patients with TMD frequently show signs and symptoms related to cervical spine disorders (CSD), and, vice versa, patients with CSD may show signs and symptoms related to TMD.

Proprioceptive Feedback

- **NOTE**: It is estimated that the greatest quantity of proprioceptive fibers are within the TMJ, making the TMJ significant in terms of balance, equilibrium, position and sensitivity.

Peripheral Pain Mediators
Pain over the Condylar Head

- Suggests:
  - Organic Disorder
  - Displaced Disc
  - Disc Ligament Swelling associated with Joint Laxity (chronicity)
  - Capsular Edema
  - Subluxation

Crepitation with Range of Motion

- Suggests:
  - Osteo vs. Rheumatoid Arthritis (rheumatoid arthritis first affects extremities)
  - Deranged disc, condyle or both

- **Empirically 40-60% of the patients who are asymptomatic will have some crepitus.**
**TMJ**

- In the presence of synovitis and articular destruction, the disc is vulnerable to perforation and displacement.

- Temporomandibular joint pain may be present in the absence of significant appendicular joint involvement.

---

**Clinical Case Studies**

---

**ANATOMY OF THE TMJ**

---
Temporomandibular Joint

• ANATOMY

**MYOLOGY.** There are four major muscles of mastication
» Masseter
» Temporalis
» Medial
» Lateral Pterygoids

---

Muscles of Mastication

• Three forceful closers of the mouth:
  1. Masseter
  2. Temporalis
  3. Medial Pterygoid
The lateral pterygoid muscles pull the condyles forward; the masseter and medial pterygoid muscles pull the body of the mandible forward.

The temporalis muscle assists the medial pterygoid and masseter muscles in elevating the mandible; its posterior fibers retract the mandible.

Muscles of Mastication

The Lateral Pterygoid Muscle is Primarily Responsible for Jaw Opening
The TMJ is divided into 2 separate synovial cavities by an articular cartilage.
Temporomandibular Joint

»Anatomy

»Neurovasculatity

• The TMJ is surrounded by many important anatomic structures.

• The parotid gland and upper branches of the facial nerve (cranial nerve #7) lie lateral to the joint.

Important Structures Surrounding the TMJ

• The maxillary artery with its middle meningeal, inferior alveolar branches, the auriculotemporal nerve and the inferior alveolar nerve all run between the sphenomandibular ligament and the neck of the mandibular condyle.

• The maxillary artery passes deep to both heads of the lateral pterygoid.

• The mandibular nerve trunk (of cranial nerve #5) passes through the foramen ovale deep to the lateral pterygoid muscle which is completely surrounded by the pterygoid venous plexus.
Autonomic Nerves in Head

TMJ Evaluation

» Exam
  History
  Palpation
  Ranges of Motion
  Orthopedic examination
  Neurologic Examination

» X-Ray Studies
  AP Open Mouth
  Lateral Cervical
  Oblique Cervical

Observable Findings

» Note edema on affected side
» Restriction of motion
» Multidirectional deviation
» Speech articulation distortions
» Possible dentition problems
Palpable Findings

- Localized pain directly over involved area
- Crepitus on motion
- Asymmetrical space occupying the mastoid and ramus
- Asymmetrical joint motion

TMJ Diagnostic Imaging

- Variations of the lateral transcranial projection were proposed by Lindblom

TMJ Diagnostic Imaging

Kinematics

MRI Sagittal Views

- Neutral
- Open-Mouth Position
- Closed-Mouth Position
Specialized TMJ Study

- Panoramic x-ray
- Transcranial x-ray
- Transpharyngeal x-ray
- CT Scans
- Arthrography

TMJ Diagnostic Imaging

Anterior Band of Meniscus

Posterior Band of Meniscus

Neutral
TMJ Diagnostic Imaging

Anterior Band of Meniscus

Posterior Band of Meniscus

Open-Mouth Position

Closed-Mouth Position

TMJ Kinematics

Anterior Band

Posterior Band

Meniscus

Open Mouth
TMJ Kinematics

Temporomandibular Joint

Closed Mouth

Normal

Closing Click +

CLICKING

Opening Click

F

A

B

C

D

E
Isometric Exercises and a Simple Appliance for TMJ a Case Report

Source: Physical Therapy; 69(6) June, 1989

- Temporomandibular joint pain, jaw clicking and locking, and postural abnormalities were treated with gentle isometric (static) exercises, coordination exercises, and an easily fitted and readily available appliance.
- Post treatment the patient showed reduced TMJ pain, no jaw locking, and improved TMJ mobility. The patient also showed improved postural awareness.

Rehabilitation Stage I

- Proprioceptive neuromuscular facilitation patterning and manual resistive exercises to further strengthening of the masticatory system.
- The primary goal is to maintain mandibular mobility preventing further joint inflammation.
- Secondary goals are to decrease pain and swelling, to maintain muscle function, and to avoid overstretching of healing tissues.
- Perform take-home exercises 20 times each, three times per day.

Rehabilitation Stage II

- The goal is to reestablish functional mobility by performing opening exercises.
  - It is crucial that the patient avoid overstretching so the healing tissues are not compromised, which would create an inflammatory process.
- Stage II take-home exercises include mandibular stretching to increase vertical opening and manually guided lateral and protrusive excursion exercises.
  - five times each, 10 times per day
Rehabilitation Stage III

- Patients incorporate proprioceptive neuromuscular facilitation and movement-awareness activities.
  - Isometric and isotonic exercises are also included.
  - Performed five times each, 3 times per day.

Rehabilitation Stage IV

- Protocol is structured to allow *continued loading of masticatory muscles through progressive manual resistance exercises in all planes of movement.*

MORA’s

- MORA’s come in many varieties and should be worn for only a few months, but are often prescribed inappropriately, adjusted improperly or worn too long. Such misuse misaligns the jaw and wears down the teeth so that expensive corrective dental work or braces may be required.
TAKING THE BITE out of TMJ SYNDROME

American Journal of Nursing

- Dentists create plastic “bite splints” for patients to wear over the teeth. Such splints improve spasm by reducing bruxism and clenching. The splint provides relief for at least 75% of patients with MPD, but is less successful in patients who have joint dysfunction.

Orofacial Pain: Diagnosis and Treatment

Author: Manusov, MAJ, USAF, MC

Orofacial pain can have an inflammatory, neurologic or musculoskeletal cause, inflammatory diseases include dental abscess, sinusitis, temporal arteritis, sialolithiasis and infections of the parotid gland. Neurologic diseases that cause facial pain are trigeminal neuralgia, glossopharyngeal neuralgia, paratrigeminal neuralgia and cluster headaches. Musculoskeletal causes include temporomandibular joint syndrome and myofascial pain dysfunction syndrome.

Temporomandibular Dysfunction Syndrome Associated with Scuba Diving Mouthpieces

Author: R. S. Hobson MDS, FDS, RCPS
Dept of Dental Health, Dundee Dental Hospital, UK

- A number of papers have described disorders of the temporomandibular joint (TMJ) associated with the use of scuba mouthpieces.
- Pinto and Royhouse have suggested that use of a diving mouthpiece can result in local inflammation of the TMJ, which may result in a blockage of the eustachian tube and possibly lead to labyrinthine dysfunction and associated vestibular disturbances, such as vertigo and disorientation.
Attorney-dentist Dr Don Hatfield suggests that in terms of defending oneself against malpractice litigation, trying to determine "standards of care" for diagnosis and treatment of TMJ disorders may miss the point. In a lawsuit, he notes, the relevant issue is always, "Given a patient with characteristics similar to those of the plaintiff, how should a reasonable general dentist or specialist have proceeded in diagnosing and treating such a patient?"

1. Were you competent to diagnose and/or treat TMJ-related conditions at the time in question?
2. What is the basis of your conclusion that you could diagnose and treat this particular TMJ-related condition in this particular patient?
3. What did you tell the patient about his/her condition, the existence of alternate treatments, and the risk related to the treatment you eventually undertook?
4. What treatment did you administer to the patient, and what is your basis for employing this treatment?

Prolotherapy
Total Prosthetic TMJ Replacement

REFERENCES
American Journal of Sports Medicine
American Academy of Orthopaedic Surgeons
Patient Care Communications
Hospital Medicine
Physician in Sports Medicine
The Injured Athlete (Daniel Kulund)
Practical Orthopaedics (Mercer)
American Dental Association

TMJ TECHNIQUE WORKSHOP
Wrap Up
• Become the Leading Expert in your Community
• Learn Dr. Mally’s “Sniper Specific” Techniques of Extremity Adjusting
• How to help patients and exponentially increase your business at the same time

The “Magnificent 7” featuring Dr. Mitch Mally
mrmally@live.com
www.FromTheDeskOfDrMitchMally.com
or find me as Mitch Mally on Facebook

For Dr. Mally’s Seminar Schedule, Speaking Invitations & Product Information

Please contact “PJ” at
563-823-5555 / 309-373-9351
or
e-mail “PJ” Cook,
Executive Director of Corporate Development
pamela_cook@hotmail.com
www.fromthedeskofdrmitchmally.com