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Review Article

Conservative Management of Temporomandibular Disorders: A Review

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Abstract

Temporomandibular disorder (TMD) is a very common problem affecting up to 33% of individuals within their lifetime. It is a musculoskeletal disorder within the masticatory system. Many practitioners refer to TMD as a single disorder in spite of the fact that patients have various sub-diagnoses. Many severe TMD/Orofacial patients develop symptoms over many years, often starting with mild non-painful clicking of the jaws or tightness in the jaw/head/neck muscles. The goals of TMD management include decrease in pain, decrease in adverse pressure or loading on the jaw joints, restoration of function of the jaw and normal daily activities. These goals are best achieved by identifying all contributing factors and implementation of a well-defined management program to treat physical and emotional/psychological factors.

Keywords: Temporomandibular Disorders; Temporomandibular Joint; Physical Therapy; Conservative Management

Introduction

- Temporomandibular disorders (TMDs) are characterized by craniofacial pain involving the joint, masticatory muscles, or muscle innervations of the head and neck.
- Most common cause of non-dental pain in the orofacial region.
- Peaks from 20 to 40 years of age.
- F>M
- Affects 10% to 15% of adults, but only 5% seek treatment [1]

Etiology

Figure 1: Multifactorial model of TMDs.

Figure 2: Factors responsible for TMDs.

Two major clinical features

Two major clinical features of most temporomandibular disorders are pain and dysfunction.

As Lund and others have pointed out, the dysfunction usually is a consequence of the pain rather than its cause, so primary therapeutic attention should be directed at the pain. When pain is relieved, improved function can be anticipated.

TMD pain

TMD pain is generally localised in the preauricular region, masseter muscle, or temporalis muscle regions. The most common ways of presentation are as an ache, dull pain and/or pressure. Sometimes it may also present with episodes of sharp pain. These pain episodes are reported to be intensified by factors such as stress, clenching, and eating, whereas they are seen to get relieved by relaxation, applying heat to the painful area, and taking over-the-counter analgesics [2].

Identify the source of pain

- Differential diagnosis of pain involves a sorting-out process that should lead to a correct diagnostic label; some authorities have described this as "figuring out what is happening in which tissue."
- A thorough physical examination includes recording the mandibular range of motion; the normal opening reange being 40mm, 7mm lateral movements, and a 6mm of protrusive movements.
- In cases of restricted mouth opening, the cause in determined as by stretching the mouth wider by the practioner. It is performed by placing the thumb over the incisal edges of the maxillary incisors and the index finger over the incisal edges of the mandibular incisors and pressing the teeth apart. The patient then would feel tightness or pain at the point of concern, and the patient is able to point it out. It is further confirmed by the practitioner palpating that location.
- In the thorough physical exam, the patient's masticatory pain is reproduced and the structures outside the masticatory region are ruled out as sources of pain. It is recommended that the masseter and anterior temporalis muscles and the TMJs be palpated to ensure that this intensifies or reproduces the patient's pain and to determine whether the primary pain source is muscle or TMJ.
- The surrounding structures like the thyroid, carotid arteries, and suboccipital and postural musculature should also be palpated to determine their contribution in the pain complaint; if present, a referral may be advised [3].

Referred pain

Figure 3: Referred pain in maxillofacial region.

If the patient's pain was not intensified or reproduced with the palpatory examination, the practitioner may locate and palpate the myofascial trigger points within the previous structures.

Referred pain patterns are found to be consistent from patient to patient, so the maps (figure 3) may be beneficial in case of orofacial pain when the true source of pain has not been identified [4].

With a different chief complaint..!

When evaluating for pain, first local causes should be evaluated. For example, in case of ear pain, it is best to determine if there is a local cause for this pain. Once that has been ruled out by a physician, TMJ may be examined then [5].

Key points

- Some patients will have two or more problems concurrently (for example, neck ache and TMJ pain); these may or may not be related.
- Some patients will have significant craniofacial pain (headache, for example) plus a benign TM phenomenon (painless clicking, deviated opening, minor palpation tenderness). Unless a clear functional relationship between these phenomena is either demonstrated or reported by the patient, they should be considered separate— and only the significant one (headache) should be treated.
- Some patients may have pain in the TM region arising from dental pathology, or referred pain from a non-dental problem. The dentist's responsibility is to treat the first type of problem, while referring the second type—but not to treat the TM pain directly.
- Some patients will have TM symptoms as part of a generalized or systemic problem (fibro myalgia, rheumatoid arthritis, gout, lupus or others). While the dentist may become part of the team managing these problems, consultation and collaboration with the appropriate physicians will be required first.

Treatment approaches for TMDS

Multidisciplinary approach

Team consisting of Dentists, orthodontists, psychologists, physical therapists, neurophysiciansand physicians work together to address the condition of the patient with TMD.

Behavioral therapy

First conservative approach

Rationale: parafunctional activity and psychosocial factors play a role in the pathogenesis of musculoskeletal pain.

Objectives

- Reassure the patient
- Explain the nature, aetiology and prognosis of the problem,

- Reduce repetitive strain of masticatory system (e.g. Daytime bruxism),
- Encourage relaxation

It includes

- Patient education
- Self-directed lifestyle changes
- Relaxation techniques
- EMG biofeedback

Patient education

Communicate with the patient. Allay the anxiety of TMD patients, simply by saying to them: Most TM problems are extra- capsular (myofascial) rather than intracapsular (derangement and/or arthritis). Therefore, they can be expected to respond to the same kinds of conservative muscle treatment modalities that are used elsewhere in the body (lower back, sore shoulder and others).

Even when intracapsular changes have occurred (such as displaced disk or degenerative changes), a good response to conservative treatment is likely. For the few patients who require actual treatment inside the joint, there often are simpler measures available today (arthrocentesis, arthroscopy) rather than the traditional open-joint operations.

Self-care instructions

The success of a self-care program is often enough to control an uncomplicated TMD problem. Instruction in a self-care routine should include the following: [6]

- Rest—no gum chewing, soft- consistency diet, limited phone conversations.
- Avoidance—no wide yawning, no vocal strains (voice lessons, choir singing, cheer- leading), no unnecessary clicking manuevers.In acute conditions, they have to avoid hard food, cut hard and tough food in small pieces, chew with back teeth on both sides, and avoid chewing gum.
- Physical therapy—ice for acute pain, heat for more chronic pain; self-massage and jaw manipulation (controlled exercises); hot showers, saunas or steam baths.

Relaxation techniques

- Relaxation—because stress and tension often are associated with musculoskeletal pain, patients should be advised of this and instructed about relaxation procedures that can be practiced at home. In more complex cases, professional help in this area may be required from psychologists or stress management specialists.
- One of the best therapy for an acute TMD is to simply rest the jaw. This means less talking, less chewing and even restricting wide mouth opening during yawning and coughing.
- Advise the patient to avoid sleeping on the affected side of the jaw and to not hold things like telephone between the shoulder and head by bending their neck.
- Advise the patient to rest by sitting in a comfortable chair supporting his head and neck, and involving yourself in some activities like reading, watching television, listening to pleasant music or even quietly meditating.
- Talk less and have soft diet to avoid excess jaw movements.
- Meditate as it rests the jaw while training the mind to modulate the pain response to make one more tolerant and resilient.
- During meditation, focus on breathing should be paid to train the mind to 'play down' the pain signals it is constantly receiving from the nervous system. Mindfulness meditation may be practised for around 20 minutes per day.
- Similary in progressive muscular relaxation, the focus is put on the body in a systematic way instead of focusing on the breath as in meditation. It begins at the feet, by imagining the feet and all its structures relaxing. The same is continued throughout the whole body by staying focused on feeling various parts of the body relaxing and releasing tension.
- While focusing, various sensations in your body should be noticed –feeling of lightness and floating, or if it feels heavy and dull, warm or cool?
- Relaxing the muscles this way relieves the muscle tension and pain in TMJ and makes one more aware of clenching or contracting muscles unnecessarily.

Diaphragmatic breathing

Exhale fully with one hand on the chest and the other on the abdomen and he/she is trained to become aware of the respiratory mechanism by feeling the position and movement of the hands.

Perform for 5 min/day every second hour [7].

Figure 4: Diaphragmatic breathing.

Mandibular rest position

Keep the jaw muscles relaxed by holding the mandible in the postural position (teeth apart), rather than in occlusion.

Mandibular rest position: ask the patient to pronounce several times the letter 'N' and to maintain the tongue behind the upper incisor teeth, with the lips in slight contact [8].

Figure 5: Exercise for maintaining mandibular rest position.

Quitting habit of bruxism

Jaw relaxation trick 1: The Fake Drunk

Slurring the speech as in deep sleep situation.

Jaw relaxation trick 2: The Long Surprise

The patient is advised to calmly stretch his mouth open again, every time he catches himself in the act of clenching. Gradually the habit starts to feel abnormal, and it becomes much easier to keep the jaw relaxed [9].

EMG biofeedback

This method allows the patient to observe his physiologic responses on some form of visual or auditory display.

As he tenses his muscle: numerical increase on a millivoltmeter.

As he relaxes his muscle: value is zero.

Awareness of levels of muscle potential: awareness of what activities result in the lowering of muscle potential.

Evidence on behavioural therapy

- All Systematic Reviews of behavioural therapy concluded that this type of treatment was effective in treating TMD pain.
- Treatment modes were often combined, making it difficult to determine which part of the treatment was most important [10].

Physiotherapy

It includes

- Jaw Exercises
- Electrotherapy
- Ultrasound
- Vapocoolants
- Anesthetic injections
- Acupuncture.
    - Electrotherapy devices produce thermal and physiological changes in the muscles and joints, and
    - Ultrasound produces deep heat to the joints to control pain, treat joint contracture.
    - Fluorimethanevapocoolant spray followed by muscle stretching reduces muscle soreness and tightness and is thought to inactivate myofascial trigger points.
    - Local anesthetic injections and acupuncture have also been shown to be useful for myofascial trigger point management.

Rationale behind physiotherapy

- Simple, reversible and non-invasive
- Low cost
- Easy self-management approach which means that the patient is actively involved in his own treatment, being responsible of his well-being (locus of control).
- Improving the patient's confidence in the care provider, being the basis of a positive coping [11].

Objective

- To control pain and discomfort
- To reduce muscle tone
- To improve TMJ function [12].

Stretching exercises

- Mostly done in patients with the diagnosis of myofascial pain with limited mouth opening.
- Patient is asked to slowly open the mouth until he experiences an initial pain sensation.
- Thereafter, he/she is invited to open the mouth a little bit more positioning thumbs on the upper arch approximately on the premolar area and index fingers on the lower arch always on the premolar area.
- Also can use ice-cream sticks piled together, as a reference for the amount of jaw opening, by positioning the sticks between arches without touching them with teeth; the patient is invited to add one stick a day to verify the increased mouth opening.
- To be performed each day, every 2 h, holding the mandible stretched for 1 min, six times.

Figure 6: jaw stretching exercise.

Coordination exercises

- Opening and closing the mouth slowly 20 times with the index finger on the lateral pole of the TMJs in order to control mandibular movements and maintaining the lower dental midline parallel to a vertical line traced on a small mirror.
- 20 times, Three times daily [13].

Figure 7: TMJ coordination exercise.

Mobilization exercises

In disc displacement with or without reduction cases.

The patient is instructed to perform lateral movements of the mandible in order to recapture the disc if it is possible.

Then perform little movements in protrusion, retrusion [14].

Mandibular rest position

Figure 8: Mandibular rest position.

Posture and TMD!

- The human head sits directly on top of the shoulders.
- When the head moves ahead of the shoulder joint, such as during sedentary activities, the muscles of the TMJ, along with the neck and shoulder muscles, all have to work in overdrive to simply hold the head up and fight gravity.
- How do you ascertain if the position of your head is playing a role in your jaw symptoms?
    - Stand against a wall with heels and hips touching the wall. Does the head easily touches the wall, too? Or is extra effort needed to get the head back? If the latter is true, then maybe your posture needs some work and that the jaw might start feeling better once the posture is corrected.

Massage

- Self-massage is limited to the painful or tense masseter and temporalis muscles because they are both easily accessible.
- Instruct about the anatomic location of the affected muscle and exert an amount of pressure slightly higher than the initial pain sensation; the pressure has to be modulated proportionally to the level of pain experienced [15].

Trigger Points

- Muscle knots
- It is a small band of tightly contracted muscle.
- This small band chokes off its own blood supply: "metabolic crisis" [16].

Trigger point for masseter muscle is at a notch in the cheekbone, about one inch ahead of your ears. The notch is present on the underside of the cheekbone, wherein your thumb will fit into it nicely. When pressed firmly inwards and upwards with the thumb in this area, a sweet ache is elicited.

Figure 9: Trigger point for masseter.

The masseter muscles are massaged by slight rolling movements performed with the index, middle and ring fingers placed extra-orally over the masseter area and the thumb placed intra-orally exerting counter pressure during massage.

The patient is instructed to find the painful area and to knead it for at least one minute; treatment time is related to the speed of adaptation.

Thereafter, he/she has to stretch the muscle by pulling the thumb laterally starting from the origin of the masseter on the zy-

gomatic arch up to the insertion on the mandibular angle. The right masseter muscle is massaged by the left hand and vice-versa.

The temporalis muscles are massaged by slight circular movements performed with the ipsilateral index, middle and ring fingers or by pressing with one finger tip on the painful area for approximately 10min in order to induce adaptation [15].

People with TMJ syndrome not only have more and worse trigger points in their jaw muscles, but in their neck muscles as well [17].

Evidence for massage therapy

In a Cochrane review, Furlan., *et al*. advised massage in combination with exercises and education [15].

Thermal therapy

Cryotherapy and superficial moist heat can be used as palliative therapy.

Heat: 40–50°C (moderately warm): applied bilaterally for 20 min once a day.

Cold pack: apply on painful area until the onset of numbness (approx. 10 min).

- Ice massage compared with control had a statistically beneficial effect on range of motion (ROM), function and strength, whereas cold packs decreased swelling [18].

Electrophysical modalities

- Shortwave diathermy, ultrasound, laser, and TENS.
- Intended to reduce inflammation, promote muscular relaxation, and increase blood flow by altering capillary permeability.
- Treatments performed early in the course of a TMD, are beneficial in reducing symptoms.
- No evidence was found to support the use of any of the electrophysical modalities to reduce pain.
- Benefits reported: increased oral opening and lateral deviation range of motion measures [19].

Tens

- TENS is defined as the application of electrical stimulation to the skin for pain control.
- An electronic device produces pain relief by sending pulsed biphasic electrical waves through the electrodes placed on the skin surface.
- TENS therapy stimulates large, fast, myelinated, non-nociceptive neurons in the painful area, "closing the central gate" for those stimuli generated by pain specific fibers.
- Also associated with the activation of an endogenous opioid system [20].

Laser

- Light amplification by stimulated emission of radiation (LASER): recent treatment modalities in the field of physiotherapy.
- Low-level laser therapy (LLLT): bio-stimulating and analgesic effects through direct irradiation without causing thermal response.
- LASER activates vasodilatation and stimulates healing, which can account for a positive effect in muscle pain, where hypoxia seems to be a potential excitatory factor for nociceptive first-order neurons [21].
- Increased pain threshold through alteration of neuronal stimulation and firing pattern and inhibition of the medullary reflexes are thought to be involved.
- Infrared laser penetrates deeper than ultraviolet laser, and is most effective between the frequency ranges of 700 – 1000 Hz [22].

Acupuncture

- Acupuncture may stimulate the production of endorphins, serotonin, and acetylcholine within the central nervous system, or it may relieve pain by acting as a noxious stimulus.
- Systematic Reviews found evidence that acupuncture is better than no treatment and comparable to other forms of conservative treatment [10].

Evidence on physiotherapy

- Physiotherapy for TMD patients is not based on evidence that comes from systematic reviews or evidence based guidelines.
- A meta-analysis of review articles and controlled clinical trials for TMDs was carried out by Feine and Lund.
    - They concluded that physiotherapy has a good short-term efficacy, whereas the long-term efficacy is similar to placebo, even if any physiotherapy modality is better than no treatment [23].
- One Systematic review found active exercise and postural training to be effective in treatment of TMD pain but no evidence for the effectiveness of various electrical modalities [24].
- RCT to compare the short term efficacy of counselling versus the combination of counselling and the home physiotherapy regime in the treatment of myofascial pain of the jaw muscles.
    - Treatment outcomes not different between both groups.
    - Pain-free maximal jaw opening and a better subjective feeling of recovery found in patients undergoing the home physiotherapy regime [25].

Pharmacotherapy

Use of a drug for chronic orofacial pain should be based on:

- Documented therapeutic efficacy in one or more well-controlled clinical trials,
- An acceptable side-effect liability
- Minimal potential for systemic toxicity with chronic administration.

Pharmacologic intervention in the management of chronic orofacial pain is usually considered adjunctive to definitive treatment on the assumption that more definitive treatments will eventually correct the underlying pathophysiologic process. It is now recognized that many putative dental and surgical therapies for TMDs have not withstood scientific scrutiny, which has led to the use of drugs as the primary intervention for some forms of chronic orofacial pain. The various drugs used are as follows: [26]

Figure 10

Medication	Dosage	Evidence	Study
NSAIDS			
Celecoxib	100mg two times per day	no stat sig reduction in pain	Double blind placebo controlled RCT (n=68)
Diclofenac	50mg three times per day	no stat sig reduction in pain	Double blind placebo controlled RCT (n=32)
Ibuprofen	600mg four times per day	no stat sig reduction in pain, combination of ibuprofen and diazepam was more effective than placebo	Double blind placebo controlled RCT (n=39)
Naproxen	500mg two times per day	Stat sig reduction in pain	Double blind placebo controlled RCT (n=68)
Piroxicam	20mg per day	no stat sig reduction in pain	Double blind placebo controlled RCT (n=41)

Figure 11

Medication	Dosage	Evidence	Study
Muscle relaxant	10mg every night	More effective than clonazepam and placebo for reduction in pain	Double blind placebo controlled RCT (n=39)
Corticosteroid			
Intra articular injection (eg triamcinolone, methylprednisolone)	Injection of 0.5ml local anaesthetic and 5 to 20mg steroid using 23 to 27 guage 0.5 to 1 inch needle	Limited evidence of joint function and reduction in pain. should be reserved for severe cases because of reports of articular cartilage destruction	Systematic review of seven double blind RCTs and two single blinded RCTs
Systemic	Short course (five to seven days, with or without tapering)	Limited evidence, should be reserved for patients with severe joint inflammation associated with autoimmune syndromes	None

Figure 12

Medication	Dosage	Evidence	Study
Benzodiazepines			
Clonazepam	0.25mg every night, increased by 0.25mg each week to a maximum of 1mg per day	Conflicting data showing benefit for reduction in pain	Double blind placebo controlled RCT (n=20)
Diazepam	2.5mg four times per day for one week , then 5mg four times per day for three weeks	Stat sig reduction in pain	Double blind RCT (n=39)
Triazolam	0.125mg every night	Improved sleep function, but no stat sig reduction in symptoms	Double blind RCT , two period crossover study (n=20)
Anticonvulsant			
Gabapentin	300 mg/day, increased by 300mg incrementally	Stat sig reduction in pain	Double blind placebo controlled RCT (n = 44)

Figure 13

Medication	Dosage	Evidence	Study
Hyaluronate	Single dose vial with second injection within two weeks	Inconclusive evidence	Systematic review for seven RCTs
Tricyclic antidepressant			
Amitriptyline	25mg per day	stat sig reduction in pain	Double blind RCT (n=39

Figure 14

Cochrane Conclusion

- Many of the drugs analyzed in this review are commonly used for the management of pain in patients with TMD.
- Currently, there is insufficient evidence to support or not

the effectiveness of the drugs mentioned for the management of pain due to TMD.

- There is a need for more well-conducted RCTs in the management of TMD.

Evidence on pharmacotherapy

- Systematic Reviews indicated that analgesics, antidepressants, diazepam, hyaluronate, and glucocorticoid may be effective in TMD pain.
- Few primary studies were well designed with a relevant follow-up time, hence the results were heterogeneous, and no conclusions could be drawn.

Oral appliances

Rationale

- To provide stabilization of the joint
- Redistribution of forces at the tooth and/or joint level
- Relaxation of the elevator muscles (atleast short term)
- Protection of the teeth from the effects of bruxism.

Hypotheses for efficacy of oral appliances

Figure 15

Materials for fabrication

- Hard acrylic resin OAs: chemically cured or heat/pressure processed.
- Soft or resilient OAs manufactured from plastics or polymers.
- Dual laminated: hard acrylic resin on the occlusal surface and a soft material on the inner aspect (tooth-borne surface).
    - Hard acrylic resin OAs better than soft OAs. The fit of a hard acrylic resin OA - more stable and more retentive.

Flat plane stabilization appliance

- Michigan splint, Muscle relaxation appliance, Gnathologic splint
- Generally fabricated for the maxillary arch.
- Most commonly used type of intraoral appliance.
- The appliance is fabricated so that the opposing dentition occludes uniformly, evenly, and simultaneously with the occluding surface of the appliance.
- Minimal change to the maxillo - mandibular relationship other than that produced by the thickness of the material.
- The intent of this appliance as outlined by the American Academy of Orofacial Pain Guidelines is to:
    - Provide joint stabilization,
    - Protect the teeth,
    - Redistribute the [occlusal] forces,
    - Relax the elevator muscles, and
    - Decrease bruxism.
    - Increases the patient's awareness of jaw habits and helps alter the rest position of the mandible to a more relaxed, open position.
- Least potential for adverse effects to the oral structures.

Anterior repositioning appliance

- Mandibular orthopedic repositioning appliances.
- Purposefully alters the maxillo-mandibular relationship so that the mandible assumes a more anterior position.
- Addition of an acrylic guiding ramp to the anterior one-third of the maxillary appliance which, upon closing, forces the mandible into a more forward position.
- Old concept: used to treat patients with internal derangements (usually anterior disk displacements with reduction): anteriorly displaced disks could be "recaptured," after which the new condyle-disk relationship could be "stabilized" through comprehensive dental or surgical occlusal procedures.
- Currently: used primarily as a temporary therapeutic measure to allow for symptomatic control of painful internal derangements, but not to "permanently" recapture the TMJ disk.
- Long term use: permanent and irreversible occlusal and skeletal changes.
- The mandibular advancement should be no more than 1-2 mm to minimize subsequent irreversible changes in the occlusion.
- Once joint pain is reduced, the appliance should be adjusted to allow positioning of the mandible as close as possible to the original inter-cuspal position.
- Usually worn only during sleep except for episodes of acute pain when they may be worn full time.

Figure 16: Working of anterior repositioning appliance.

Evidence for oral appliances

- One Systematic review evaluated the use of splints in bruxism, which was assessed as number of bruxism episodes per hour [electromyographic (EMG) activity] and episodes with grinding noises. It found no significant differences between occlusal splints, no treatment, and placebo splints.
- Systematic reviews conclude that management of TMD with a stabilisation splint worn at night is likely to lead to short-term improvement when compared with no treatment, but is inconclusive compared with placebo (non-occluding palatinal splint).
- In the short term, stabilisation splints were equally effective in reducing TMD pain compared to other treatment modalities such as physical medicine, behavioural medicine, and acupuncture treatment.
- Two RCTs by Dworkin., *et al*. concluded that addressing both dental and psychologic factors by an intraoral appliance and biofeedback training and stress management resulted in a better long term outcome than either solely [27].

Occlusal therapy

- Costen (1934): deflective occlusal contacts and lack of molar support were directly responsible for the eccentric position of the condyles in the fossa.
- Posselt (1968): occlusal interferences or loss of molar support: hyperactivity in the masticatory muscles. The patients tried to 'remove' the interferences by parafunctional activity. Interferences were thought to be the direct cause of parafunction leading to jaw muscular pain, joint overload and dysfunction

Posselt (1968) listed the following occlusal disharmonies as the most severe:

- Interference with closure, habitual and/or terminal hinge;
- Excursive interference on the non-working (balancing) side;
- Steep cuspal inclines on the working side leading to hypofunction.

He added that even if they are the most severe, they do not necessarily lead to a functional disorder.

- Treatment of the occlusion for a long time was considered most important and most efficient strategy to alleviate the pain and to restore function.
- Change in understanding of aetiological concepts, this strategy has become more and more criticized and doubtful.
- Occlusal therapy and occlusal adjustment as the only treatment modality is rarely defendable;
- Is used in combination with other forms of therapy (counselling, splints, physiotherapy).
- If occlusal adjustment is performed it should be a limited in nature.

Evidence for occlusal therapy

- No Systematic Review found evidence that occlusal adjustments are more or less effective than placebo in the treatment of TMD pain.
- All were restrictive in recommending the use of occlusal adjustments for treatment for TMD pain, especially because this therapy is non-reversible.

Cognitive behavioral intervention

- According to cognitive-behavioral theory, pain-related cognitions and behaviors play important roles in the adjustment of patients with chronic pain.
- Cognitive-behavioral therapies aim to decrease maladaptive, and to increase adaptive, patient cognitions and behaviors.
- Cognitive behavioral therapy helps you to address your reaction to the pain of TMJ and learn new ways to manage it to increase well-being and happiness.
- Studies have shown that 50-70% of TMD patients had experienced a stressful life event in the 6 months before diagnosis, which reinforces this relationship between stress and TMJ.
- Cognitive behavioural therapy helps to relieve stress and deal with the negative thought patterns that can feed the 'anxiety-pain-tension' cycle in order to diminish pain and tension, and improve the symptoms of TMJ contributing to increased feelings of wellbeing and a better quality of life.
- Pain-related beliefs (e.g. Perceived control over pain, belief that one is disabled),
- Catastrophizing (expecting or worrying about major negative consequences from a situation, even one of minor importance), and
- Coping strategies (e.g. Coping self- statements) are associated with pain intensity, psychosocial adjustment, and physical functioning.
- A study of patients referred for TMD treatment found that when controlling for baseline pain intensity, greater confidence in the ability to relieve one's pain was associated with less likelihood of pain 1 year later.

Hypnosis

- Conservative treatments of TMD is helpful for most patients, although it is estimated that approx. 23% of patients do not respond to these treatments at all.
- Treatment of patients with TMD often fails because the behaviors responsible for the maintenance of the pain

symptoms (clenching or grinding) mainly occur at an unconscious level, often during sleep, and most treatments are designed to target (or be received at) the conscious level of awareness.

- Hypnosis as a type of dissociative state—a mental separation of components of experience that would ordinarily be processed together when the unconscious mind is more open to suggestions for positive change.
- This can be thought of as a classical conditioning model in which the body learns to respond to muscle tension in a new manner and hence can begin to stop grinding and clenching even during sleep.
- Hypnotherapy is the clinical use of hypnosis for medical disorders or procedures. During a hypnotic session, patients are encouraged to focus on the hypnotherapist's voice and pleasant images and to fix their gaze in some particular manner. During this induction phase, the patient begins to enter a hypnotic trance. A trance is associated with many physiologic changes to include flattening of facial muscles, decrease in orienting movements, immobility, changes in blinking and swallowing, catalepsy in a limb, autonomous motor behavior, altered breathing and pulse, fixed gaze, faraway look, changed voice quality, time lag in response, literalism, perseveration in response, dissociation, relaxed muscles, amnesia, and time distortion.
- As a patient enters trance, the conscious mind becomes less and less vigilant to the immediate surroundings. When this conscious/unconscious mind dichotomy becomes more salient to the patient, the unconscious mind becomes more amenable to suggestions (congruent with the patient's belief system) for new possibilities from the hypnotherapist. The hypnotherapist serves as a guide, helping transport a patient from the normal awake state of consciousness to a state of hypnotic trance. Patients often describe trance as a pleasant, relaxed, altered state of conscious- ness or a type of reverie. Ideally, with practice, this ability is taught to patients so that they can enter trance on their own and control painful psycho-physiologic symptoms.

Summary

One systematic review reported:

- Most patients with TMD without psychological involvement benefited from simple treatments.
- Patients with TMD pain and major psychological disturbances were in need of a combined therapeutic approach.
- Need for combining the clinical examination with a behavioural assessment to direct the patient to the proper mode of treatment [28].

Conclusion

- There is some evidence that occlusal appliances, acupuncture, behavioural therapy, jaw exercises, postural training, and some pharmacological treatments can be effective in alleviating pain in patients with TMD.
- Evidence is insufficient for the effect of electrophysical modalities and surgery.
- Occlusal adjustment seems to have no effect according to the available evidence.

Knowing how to help these troubled patients by using contemporary basic principles of pain management should make every practicing dentist feel a well- deserved sense of fulfillment.

It is important for practioners to rule out disorders that mimic TMD, to identify non-TMD disorders that may negatively impact the patient's TMD symptoms, and to alter the patient therapies that will provide the most cost-effective long-term symptom relief.

Physical therapists are positioned well to step into the current treatment void and provide comprehensive conservative management. In addition to familiarizing themselves with the content of this series and other sources, physical therapists should seek clinical guidance from colleagues experienced in evaluating and managing TMD.

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