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Review Article

Can surgery be the last resort? A non surgical approach to temporo-mandibular joint disorders in children and adolescents: a review

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ABSTRACT

Temporo-mandibular joint disorder, also known as temporo-mandibular disorder, or simply TMD is a major taxing condition for the children or the adolescent. It not only elicits physical pain and discomfort but also has a very deep psychological impact on the child. But is the surgical treatment any less frustrating and nerve wrecking? The answer is ruefully no. But yes, the entire treatment can be less traumatic to the patient. Here we put forward the various treatment options for TMDs besides surgery.

Keywords: Temporo mandibular joint, Temporo mandibular disorder, Non-surgical therapy

INTRODUCTION

Children being unaware often do not seek treatment for TMJ disorders. But the prompt awareness of the peers and the clinician towards the early sign and symptoms can prevent progression at a very early stage. The lack of the same leads to the advancement to the temporo-mandibular joint (TMJ) dysfunction. Surgical correction then remains as the only treatment option for the child. This can be stressful and disturbing for both the child as well as the parent. This review article is an attempt to bring forth those non surgical treatment plans that can be used and applied at an early stage to prevent or at least reduce the progression of TMJ disorders also known as TMDs (temporo mandibular disorders).

According to the guidelines by the American academy of pediatric dentistry, very comprehensive dental history, examination and treatment should include a thorough TMJ history including questions regarding previous orofacial trauma and mandibular dysfunctions.[1] The non surgical management protocol can broadly be classified into two major categories, i.e. self care remedies and the other one being the treatment by the clinician.[2]

SELF CARE REMEDIES

Self care remedies are; patient and the parent education, behavioral and Psychological therapy and physical therapy.

TREATMENT PLANNING BY THE CLINICIAN

Treatment strategies are; physiotherapy, orthodontic appliances and pharmacological management.

EDUCATING PATIENT AS WELL AS THE PARENT

This is the first and the most important approach in treating the patient. The parents or the patient might not be aware of the in growing defect within them but the clinician can detect at a very early stage. It becomes his or her responsibility to caution the patient and parents in a very clear and simplified language regarding the nature, initiating and predisposing factors, treatment modalities and the prognosis of the treatment.

BEHAVIOURAL AND PSYCHOLOGICAL THERAPY

Biobehaviour therapy is a reversibly treatment modality which is non invasive in nature that helps greatly in pain relief and the emotional and functional disability associated with the pain and subsequently with the disability. It includes a diverse range of methods and techniques encompassing of hypnosis, training of coping skills, progressive relaxation and other behaviour therapy.[3] Relaxation training emphasizes on controlling physiological response to stressful conditions. These are done my meditation, listening to pleasant soothing music and muscle relaxation therapy. However, literature has established that this technique is less effective than orthodontic appliances.[4] Another technique known as cognitive behaviour therapy emphasizes on application of coping skills and trying to divert the mind such as trying not to think about the pain and focusing on something else. The specific theory is that this therapy acts by activating the frontal limbic attention system to inhibit or restrict transmission of pain impulse to the tertiary neurons thereby blocking pain reception to the conscious level. Another methodology which uses auditory and visual signals to provide continuous feedback to the patient is the biofeedback therapy.

PHYSICAL THERAPY

There are various types of physical therapies that can be done at home by the patient himself/herself or their peers. Massage, therapeutic exercises, manual manipulation and coolant therapy. Massage and manual manipulation is done by gently rubbing the fingers with light pressure over the affected area, mostly the TMJ area. Controlled soft tissue manipulation and slight TMJ mobilization can also be performed by the peers, provided they should have prior and sufficient knowledge from the clinician beforehand. Stretching exercises also have proven to be helpful in providing relief in pain. When the same technique is used in combination with a vapocoolant spray, it is known as spray therapy. Spray therapy when conjugated with isometric jaw exercises such as training of opening and closing of mouth, it is known as stretch and spray therapy.[7]These therapies have shown to have positive and promising responses, although there are few literature in regards to pediatric population.[8]

PHYSIOTHERAPY

Ultrasound therapy is an excellent option which is used for the treatment of not only TMDs but also other musculoskeletal pains which may or may not be associated with TMDs such as back and cervical pains. The mechanism of action of the ultrasound therapy is there is stimulation of cellular pathways as a result of the ultrasound waves produced by the high frequency oscillations of the ultrasound system. This reduces pain and inflammation and enhances growth and repair.[9]Another technique is to carry ions of drugs through tissue barrier. A weak current is applied which assists in the medication transport directly from the skin towards deeper tissues. This technique in known as ionophoresis.[10] A therapeutic treatment modality known as low level laser therapy (LLLT) involves the use of either near infrared light or visible red of a single wavelength, exposure to which results in photochemical reactions within the cells. This light energy is absorbed within the cells by cellular photoreceptors called cytochromophores. This technique is also known as photobiomodulation or photobiostimulation.[11] Furthermore, TENS (transcutaneous electrical nerve stimulation) therapy which uses lo ampere and low voltage biphasic current with alternation and varying frequency can also be used as an adjunctive therapy. It has shown to be effective in reducing pain and improving motion range with patients with TMDs.[12]

USE OF ORTHODONTIC APPLIANCES

These are custom made fabricated by acrylic made to fit to either single or both jaws.[13] Mostly available design is known as the stabilization appliance. The occluding surfaces of these devices are routinely fabricated flat and adjusted in such a way that a stable mandible posture is created and in the process all the high points are sufficiently reduced but not to the extent of creating a gap between the appliance and the opposing teeth. Thus these devices have the least potential of bringing out any adverse effects to the oral structures.[14]Of late, a new kind of material for fabrication of the same have been reported. They have an hard outer shell with a soft inner lining. This seems to be more comfortable and acceptable to the patients as they act as shock absorbers even during hard chewing. But the drawback is that they are difficult to repair and adjust.[15]Another technique to guide the mandible into its protrusive position is achieved by afull-coverage appliance are with verseanterior ramp. This appliance is termed as MORA (mandibular orthopaedic repositioning appliance) also known as anterior repositioning appliance. The disadvantage of this appliance is that there is no contact of the maxillary and mandibular posterior teeth due to which there can be supraeruption of the molars, especially in children and young adults. Hence this appliance is advised for short term usage.[14] Additionally, another appliance known as anterior bite appliance which has an anterior ramp for occlusal contact but cover only the anterior tooth only are

also used. However, they have been associated with a greater degree of supra eruption of posterior teeth than the MORA appliance.[16] Current literature supports the fact that soft material devices, such as soft stabilization appliance can be used for short period of time, with bilateral stable contacts with the opposite dentition in addition to prevent or at the least minimize to quite an extent adverse tooth movements in children and young adults.[17]

PHARMACOLOGICAL MANAGEMENT

Pharmacologic therapy is planned to alleviate pain and promote improvement in function and quality of life. However, there is very limited data available on the use of medications in case of TMDs in children. Hence data from the adult population needs to be understood and the same can be applied for the pediatric community. The various pharmacological classes of drugs to relieve pain in TMDs are NSAIDs (Non Steroidal Anti Inflammatory Drugs), opioid analgesics, corticosteroids, acetaminophen and hyaluronic acid. In addition, adjunctive therapy such as benzodiazapine, muscle relaxant and anti depressants can also be prescribed.[2]

Latest AAPD guidelines and recommendations in relation to acquired temporo-mandibular disorders in infants, children, and adolescents.

As mentioned, every dental history for children, adolescents and even for adults should include TMD history. In case, a positive history and/or signs and symptoms of TMD are found, a through clinical examination is to be done which includes palpation of masticatory and associated muscles and the TMJ's, assessment of range of mandibular movements, occlusal analysis, joint sounds documentation. Joint imaging may be advised in some cases.[18,19]

CONCLUSION

It is always better to 'nip it in the bud' as they say. Once the disease or the disorder is identified in the growing or the early stage, it is easy to rectify at that very moment. Same goes for temporomandibular Joints Disorders. Just as the etiologies of TMDs are multifactorial, so is the treatment plan for the same. It is always beneficial to look out for TMDs at the developing stage. Then there is a sea of treatment options available for the clinician. It is then upon the clinician to juggle between the right options for the prevention of TMDs. This stage crossed and TMDs detected in the advanced stage during adulthood, surgery becomes the only and the final resort towards correction of TMDs.

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