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Review Article

Etiology and management of disorders of temporomandibular joint: A literarure review

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ABSTRACT

Temporomandibular disorders usually represented as a group of painful as well as altered conditions involving the muscles of mastication and the muscles around the temporomandibular joint. Usually the patient are un aware of the condition. Temporomandibular joint disorders affects twenty five percent of the population. Temporomandibular disorders represent with musculoskeletal degenerative conditions of the joint which results in functional as well as morphological deformities of the temporomandibular joint. As temporomandibular disorders cases are complex with unique nature with respect to each case, so the diagnosis and treatment modality is quite different for each type of case.

1. Introduction

The temporomandibular joint disorders are classified as sub groups of pain disorders of craniofacial, which involves pain in the temporomandibular joint area along with physiological and morphological dysfunction of the joint. Temporomandibular disorders are the most common cause of non dental pain in the oral and the facial region.[1] Patient that suffer from the temporomandibular joint disorders often comlpaints of pain during chewing , mastication, pain or sound of clicking at the temporomandibular joint area while opening the mouth, dysfunction in the movement of the temporomandibular joint along with associating symptoms of referred pain to the ear, head ache, tinnitus and some time patient also complaints of dizziness.[2–5] In temporomandibular disorders the pain is due to chronic inflammation of the muscles associated with the joint, or may be due to micro trauma to the temporomandibular muscles.

Basically temporomandibular joint is a diarthroidal joint. Temporomandibular joint composed by mandibular condyles, glenoid fossa and with the articular eminence. Temporomandibular joint helps in guiding the mandibular movements during various tasks like chewing, swallowing and in mastication process. The disorders of temporomandibular joint consists of intra articular discal position, along with dysfunction of associated muscles.[6] literature stated that twenty-five percent of the population shows the symptoms of temporomandibular joint out of this only few patients required treatment for the disorder.[7] Temporomandibular disorders have high prevalence with respect to female as compared to male with a ratio of 2:1 to 8:1. Most of the patient suffering from temporomandibular disorder are from 20 to 50 years of age group.[8–12]

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1.1. Causes of temporomandibular disorders

Temporomandibular disorder occur due to trauma, due to direct injuries to the temporomandibular joint like fracture of the condyles of the mandible, direct fall on the ground, by forcep injury during the time of the birth, arthritis, which is immune mediated, disturbances related to the growth, tumors. Many para functional habits like clenching of teeth, bruxism may result in muscular dystrophy of the joint and may lead to derangement of the internal disk. Habit of chronic Para functional clenching may result in acute temporomandibular disorder in human beings.[13] the other possible causes of temporomandibular disorders could be due to wide opening of mouth for long period of time, stretching the mouth for wide opening may result in stretching the muscles of mastication or the associated muscles of temporomandibular joint.

Literature revealed some other causes of temporomandibular disorders as orthognathic surgeries, prosthodontics rehabilitation of the mouth, and fractures of the mandible are also associated with morphological as well as physiological derangement of the temporomandibular joint.[14,15] Literature revealed that pain regulatory system central disorders are associated with patient suffering from temporomandibular disorders.[16,17] A variety of physical factors as well as psychological factors are responsible for the chronic pain of temporomandibular disorder.

1.2. Diagnosis of temporomandibular disorder

It consists of proper and adequate history taking of the patient, physical examination of the temporomandibular joint, and psychological assessment of the patient.

History taking should include history of pain, intensity of pain, whether the pain is localized to the specific area, or generalized or is it the referred pain. Thorough information regarding the pain like what provokes the pain and how the pain subside. Measurements of the function of the jaw should be done accurately, like how much is the opening of the jaw, how much the movement of the jaw, opening and the closing pattern of the joint should be looked carefully. In physical examination most importantly one should look for any type of sound from the temporomandibular joint while opening and closing of the jaw. Radiographic examination is of very much importance in the diagnosis of any temporomandibulaar disorder, like panaromic radiography is of very much importance and basic for the diagnosis of any disorder related to the joint. Other advancement in the field of radiography for the diagnostic purpose are use of cone beam computed tomography for three dimensional view of the temporomandibular joint cavity, magnetic resonance imaging can also be used for the diagnostic purpose in derangement in hard as well as soft tissue.[18,19]

Literature revealed that thirty three percent of the human shows the sound of clicking while opening or closing of the jaw that too without any pain sensation, this revealed that this type of clicking sound may be of normal variant rather than a disorder of the temporomandibular joint.[20–22]

1.3. Treatment of the temporomandibular joint

Treatment plan of the temporomandibular joint disorder vary from individual to individual and depend on the intensity of pain, movement of the joint, physiological derangement of the muscle accompanying the joint. Dentist plays a major role in the cure of the temporomandibular disorder. Treatment of the temporomandibular joint sound is not indicated until and unless it was associated with pain or discomfort of the joint. The primary step in the treatment of the temporomandibular disorder is to give occlusal splint to the maxillary or the mandibular arch of the patient covering the occlusal morphology of the teeth completely. This occlusal splint act as healing aid rather than permanent solution to the treatment of the temporomandibular disorder.[23,24] Occlusal splints helps in relieving any para functional habit of the oral cavity like clenching of the teeth, bruxism, and also provide proprioception to the teeth. Other treatment like occlusal adjustment, occlusal restoration, orthodontic treatment are also helpful in relieving the temporomandibular disorder.

Non invasive technique used of exercise to the motion of the temporomandibular joint, and pharmacological measure to get relief from pain and discomfort. Electrophysical modalities also helped in the treatment of temporomandibular disorder, which include lasers, ultrasound, trans cutaneous electric nerve stimulation, these modalities helped in reducing the inflammation of the muscles and also helped in increasing the blood flow at the local site of the muscle and also helped in relaxation of the muscle. On pharmacological behalf most commonly used pharmacological agent are non steroidal anti inflammatory drugs, these drugs are helpful in reducing the inflammation of the muscles. Muscle relaxants are commonly used along with the non steroidal anti inflammatory drugs to cause the relaxation of the muscle along with relief from pain.[25,26]

When non invasive methods are not useful in the treatment of temporomandibular disorder, one should move for the invasive method, which include open surgery of joint i.e. discectomy, reshaping of the surface of the articular disc, implantation of auto or allograft in the joint space, and in extreme cases total joint replacement can be done, when the pain threshold can not be tolerated by the patient or when there is little or no movement of the joint.[27] Replacement of the diseased structure of the temporomandibular joint through engineering of the tissue provides permanent solution with respect to pain and helps in increasing the movement of the joint. Tissue engineering provides the native geometry, bio chemical as well as bio

mechanical properties of the healthier joint.

1.4. The surgery of the temporomandibular joint is only prescribed when

1. The source of the pain and the dysfunction is the temporomandibular joint itself.
2. When all the non invasive management to the patient was totally unsuccessful.
3. When the pain is localized to the temporomandibular joint itself, like pain on opening of the jaw, pain on movement of the jaw.
4. When patient is only willing for surgical approach.
5. When the patient is healthy and there is no medical or psychological contraindication to the surgery.

2. Conclusion

The treatment of the temporomandibular disorder is a multi-disciplinary approach, which includes proper knowledge of the joint, its morphology and most importantly etiology based treatment.

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4. Conflicts of Interest

There are no conflicts of interest.

References

1. Okeson JP, de Leeuw R. Differential Diagnosis of Temporomandibular Disorders and Other Orofacial Pain Disorders. *Dent Clin N Am* . 2011;55(1):105–20. doi:10.1016/j.cden.2010.08.007.
2. Luther F. TMD and occlusion part I. Damned if we do? Occlusion: the interface of dentistry and orthodontics. *Br Dent J*. 2007;202(1):E2. doi:10.1038/bdj.2006.122.
3. Scrivani SJ, Keith DA, Kaban LB. Temporomandibular Disorders. *N Engl J Med*. 2008;359(25):2693–705. doi:10.1056/nejmra0802472.
4. John MT, Reissmann DR, Schierz O. Oral health-related quality of life in patients with temporomandibular disorders. *J Orofac Pain*. 2007;21(1):46–54.
5. Dahlstrom L, Carlsson GE. Temporomandibular disorders and oral health-related quality of life. A systematic review. *Acta Odontol Scand*. 2010;68(2):80–5.
6. Tanaka E, Detamore MS, Mercuri LG. Degenerative Disorders of the Temporomandibular Joint: Etiology, Diagnosis, and Treatment. *J Dent Res*. 2008;87(4):296–307. doi:10.1177/154405910808700406.
7. Solberg WK, Woo MW, Houston JB. Prevalence of mandibular dysfunction in young adults. *J Am Dent Assoc*. 1979;98(1):25–34. doi:10.14219/jada.archive.1979.0008.
8. Martins-Junior RL, Palma AG, Marquardt EJ, de Barros Gondin T, de Carvalho Kerber F. Temporomandibular Disorders: A Report of 124 Patients. *J Contemp Dent Pract*. 2010;11(5):71–8. doi:10.5005/jcdp-11-5-71.
9. Goncalves DA, Fabbro ALD, Campos JA, Bigal ME, Speciali JG. Symptoms of temporomandibular disorders in the population: an epidemiological study. *J Orofac Pain*. 2010;24:270–8.
10. Wilkes CH. Internal Derangements of the Temporomandibular Joint: Pathological Variations. *Arch Otolaryngol Head Neck Surg*. 1989;115(4):469–77. doi:10.1001/archotol.1989.01860280067019.
11. Warren MP, Fried JL. Temporomandibular Disorders and Hormones in Women. *Cells Tissues Organs*. 2001;169(3):187–92. doi:10.1159/000047881.
12. van Loon J, de Bont L, Stegenga B, Spijkervet FKL, Verkerke GJ. Groningen temporomandibular joint prosthesis. Development and first clinical application. *Int J Oral Maxillofac Surg*. 2002;31(1):44–52. doi:10.1054/ijom.2001.0175.
13. Glaros AG, Tabacchi KN, Glass EG. Effect of parafunctional clenching on TMD pain. *J Orofac Pain*. 1998;12:145–52.
14. Arnett GW, Milam SB, Gottesman L. Progressive mandibular retrusion—Idiopathic condylar resorption. Part I. *Am J Orthod Dentofac Orthop* . 1996;110(1):8–15. doi:10.1016/s0889-5406(96)70081-1.
15. Arnett GW, Milam SB, Gottesman L. Progressive mandibular retrusion—idiopathic condylar resorption. Part II. *Am J Orthod Dentofac Orthop* . 1996;110(2):117–27. doi:10.1016/s0889-5406(96)70099-9.
16. Maixner W, Fillingim R, Booker D, Sigurdsson A. Sensitivity of patients with painful temporomandibular disorders to experimentally evoked pain. *Pain*. 1995;63(3):341–51. doi:10.1016/0304-3959(95)00068-2.
17. Maixner W, Fillingim R, Kincaid S, Sigurdsson A, Harris MB. Relationship Between Pain Sensitivity and Resting Arterial Blood Pressure in Patients With Painful Temporomandibular Disorders. *Psychosomatic Med*. 1997;59(5):503–11. doi:10.1097/00006842-199709000-00007.
18. Brooks SL, Brand JW, Gibbs SJ, Hollender L, Lurie AG, Omnell K, et al. Imaging of the temporomandibular joint. *Oral Surg, Oral Med, Oral Pathol, Oral Radiol, Endodontol*. 1997;83:609–18. doi:10.1016/s1079-2104(97)90128-1.
19. Larheim TA. Current trends in temporomandibular joint imaging. *Oral Surg, Oral Med, Oral Pathol, Oral Radiol, Endodontol*. 1995;80:555–76. doi:10.1016/s1079-2104(05)80154-4.
20. Morrow D, Tallents RM, Katzberg RW, Murphy WC, Mart TC. Relationship of other joint problems and anterior disc position in symptomatic TMD patients and in asymptomatic volunteers. *J Orofac Pain*. 1996;10:15–20.
21. Katzberg RW, Westesson PL, Tallents RH, Drake CM. Anatomic disorders of the temporomandibular joint disc in asymptomatic subjects. *J Oral Maxillofac Surg* . 1996;54(2):147–53. doi:10.1016/s0278-2391(96)90435-8.
22. Stohler CS. Phenomenology, epidemiology, and natural progression of the muscular temporomandibular disorders. *Oral Surg, Oral Med, Oral Pathol, Oral Radiol, Endodontol*. 1997;83:77–81. doi:10.1016/s1079-2104(97)90095-0.
23. Dao TT, Lavigne GJ. Oral Splints: the Crutches for Temporomandibular Disorders and Bruxism? *Crit Rev Oral Biol Med* . 1998;9(3):345–61. doi:10.1177/10454411980090030701.
24. Gray RJ, Quayle AA, Hall CA, Schofield MA. Physiotherapy in the treatment of temporomandibular joint disorders: a comparative study of four treatment methods. *Br Dent J*. 1994;176(7):257–61. doi:10.1038/sj.bdj.4808429.
25. Dionne RA. Pharmacologic treatments for temporomandibular disorders. *Oral Surg, Oral Med, Oral Pathol, Oral Radiol, Endodontol*. 1997;83:134–42. doi:10.1016/s1079-2104(97)90104-9.
26. Dimitroulis G, Gremillion HA, Dolwick MF, Walter JH. Temporomandibular disorders. 2. Non-surgical treatment. *Aust Dent J*. 1995;40(6):372–6. doi:10.1111/j.1834-7819.1995.tb04835.x.
27. Dolwick MF. The role of temporomandibular joint surgery in the treatment of patients with internal derangement. *Oral Surg, Oral Med, Oral Pathol, Oral Radiol, Endodontol*. 1997;83:150–5. doi:10.1016/s1079-2104(97)90106-2.

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