California Dental Association
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"TMD Management in 2010:
Science or Smoke and Mirrors"

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"What's new, what's valid, and what should the"general dentist" know about Temporomandibular Disorders in 2010?"

"What we see is determined by what we know, but sometimes, it's what we think we know that keeps us from learning more."

What are TMDs?
Temporomandibular Disorders (TMDs) is a collective term that embraces a number of clinical problems that involve the masticatory muscles, the TMJ, and the associated structures."
"TMDs are considered to be a subclassification of musculoskeletal disorders."
Bell's Orofacial Pain ed.5, by Okeson

TMD - recommended reading references:

- Management of Tempormandibular Disorders and Occlusion *Jeffrey Okeson DMD*
- Orofacial Pain - Guidelines for Assessment, Diagnosis, and Management. *Edited by Reny de Leeuw, DDS, PhD*
- Orofacial Pain: From Basic Science to Clinical Management, *Barry Sessle, Lavigne,Dao Okeson, Quintessence*

Epidemiology: Who do TMDs affect: males to females?
•Gender: TMDs affect women 2X more than men. *LeResche L 1997 Crit Rev Oral Biol Med; 8:291-305; Anastassaki A, Magnusson T 2004 Acta Odontol Scan;62: 183-192*
•USA Pain Clinics - 3:1 to 9:1, females to males
•Gender: *Dao TT Text Orofacial Pain, Sessle B et al Chap.13. Pain and Gender_Thuan T.T. Dao, DMD, MSc, PhD, FRCD(C)*
•*Women had more headaches, clicking, TMJ tenderness and muscle tenderness than men. Levitt,McKinney1994;Centore etal1989; Skeppar,Nilner 1993*

Epidemiology: how often do TMDs occur in non-patient populations?

- 40-75% of "*selected"* adult *populations* have at least one sign of joint dysfunction (eg, movement abnormalities, *joint sounds*, tenderness on palpation, and...

•33% of "*selected" non-patient populations* have at least one symptom of dysfunction, (eg, face pain or joint pain.
•*Schiffman E, et al; DeKanter RJAM 1993 et al; Dworkin SF et al 1990*

What is the significance of TM Joint Sounds?

"Joint sounds appear to be relatively common in healthy populations: joint sounds or deviations on mouth opening occur in approximately 50% of non-patient samples."
REF. Orofacial Pain: Guidelines for Assessment, Diagnosis and Management, American Academy of Orofacial Pain, Reny de Leeuw 2008 Quintessence Publishing Co

TMJ Clicking Studies:

•1. "Only 7% of a patient population with benign TMJ clicking showed progression to bothersome clicking status over a 1- 7.5 year period." *(Randolph,Perry AJO 1990)*

• *"While clicking is fairly common, the progression to a potentially more serious nonreducing disc status is relatively uncommon." Wabake 1994;Huber 1990; magnusson T,Carlsson G 1994;Lundh et al1987*

"Because joint sounds are common, often pain free, and not progressive, it is important to avoid overtreatment of benign chronic reducing and nonreducing disc displacement in the absence of pain and impairment."
AAOP Guidelines 2008- Reny de Leeuw

"The interpretation of signs and symptoms is problematic because the correlation between signs and symptoms is poor."
AAOP Guidelines 2008 Reny de Leeuw

What findings are consistent in the literature?

•1. TMJ pain is reported in approximately 10% of the population older than 18 yrs.

•2. TMJ pain is primarily a condition of young and middle-aged adults.

•3. "TMJ pain is twice as commen in women than men."

• *Refs. LeResche; Anastassaki, Magnusson*

What are other important findings: (from the AAOP Guidelines)

•1. TMDs are often remitting, (having periods of abatement and or exacerbation)
Dorland Medical Dictionar)s

•2. TMDs are self limiting

•3. TMDs fluctuate over time
Refs.Randolph, Perry 1990; Nickerson JW, Boering G 1989

"While knowledge of the natural history or course of TMDs is limited,there is increasing evidence that progression to chronic and disabling intracapsular TMJ disease is uncommon."
De Leeuw, Boering 1993, Nickerson, Boering; Egermark et al

TMDs, pain severity, morphologic irregularities, age, and physical limitation:

•1. Pain severity is the same across all age groups. *Levitt & McKinney 1994*

•*2. Frequency of morphologic irregularities increases with age. Widmam;Pereira;Tanaka*

•*3. "Physical limitations and dysfunction steadily decrease in prevalence and severity with age." Levitt,McKinney; Koidis; Kaunisaho K*

•*4. "Progression to severe pain and dysfunction of the TMJs was rare." Magnisson T,Egermark I, Carlsson G,2000;2005*

What about other clinical signs?

•"Other signs are relatively rare: mouth opening limitations occur in less than 5% of non-patient populations."*DeKantor;Dworkin;Wabeke*
"Despite the large percentages of the population having signs of TMJ dysfunction, the overall prevalence of TMD complaints in a general population is very small."
"Only 3,6% to 7% of these individuals are estimated to be in need of treatment." The annual incidence rate is 2%."
Rugh;Schiffman;DeKanter;Dworkin; Von Korff

Etiology: What causes TMDs? *(AAOP)*

•1. Predisposing factors -"factors that increase the risk of TMDs." (systemic disease RA, *occlusal disorders?)*

•2. Initiating factors - "factors that cause the onset of TMDs." (direct trauma,indirect or microtrauma eg. clenching,bruxing)

•3. Perpetuating factors - "factors that interfere with healing or enhance the progression of TMDs." (systemic disease, auto-immune disorders, disc perforation, C.T. breakdown and cortical thinning with cortical perforations, inflammation)

What about Occlusal Relationships?
" Are occlusal discrepancies between centric relation and intercuspal position the predisposing, initiating, and perpetuating factors for TMDs?"
"The literature and current studies do not strongly support these beliefs."
AAOP Guidelines 2008
Other references:

•*Magnusson T, Carlsson G, et al1994; Verdonck A et al 1994;*

•*McNamara,Seligman,Okeson 1995 J Orofacial pain; Seligman, Pullinger, 1996; JPD 83;p66-75 2000; JPD 83: 76-85 2000.*

•*DeBoever JA C,Carlsson G, Klineberg I., J Oral Rehabil, 2000 27:367-379*

What factors have been studied?
Lost molar support and OA changes?

•1. "Osteoarthritic changes and tooth loss increase with age."

•2. "Studies of living nonpatient populations do not provide evidence of an association between TMDs and lost molar support."
•*Swanljung O,Rantanen T. Community Oral Dent Oral Epidemiology,1979 l7: 177-182*
•*Holmlund A, Axelsson S. Acta Odontol Scand 1994;52:214-218*
•*Witter DJ, et al J Oral Rehabil 1994; 21: 353-366*

Do changes in OVD of 4-6mm lead to TMDs?

•"Moderate changes in the OVD of 4-6mm do not lead to muscle hyperactivity or TMD symptoms." *Rivera-Morales, Mohl, J Prosthet Dent 1991;65: 547-553*

• *"No recent studies with regard to the impact of vertical dimension on TMDs were found in the English-language literature." DeLeeuw 2008*

Etiology: Occlusal factors (overbite)

•**Extensive overbite** - (vertical overlap of the anterior teeth has been associated with TMDs.

•*(2 studies, the best so far, but not thoroughly convincing.)*
*(a review):*Seligman, Pullinger, J Craniomand Disord Facial Oral Pain, 1991;5: 96-106*
** Seligman D, Pullinger A J Prosthet Dent 1988; 58: 483-489*

• *There are an equal number of studies that have found no association.*

Etiology: Occlusal factors (overjet)

•**Extensive overjet** (horizontal overlap of anterior teeth has been associated with TMD symptoms and OA changes.) *Riolo J Orthod 1987; Heloe B Scand 1980.*

There is more convincing evidence that the extensive overjet is the result of developmental and or structural changes of the TM joint structures. Tanaka; Mahan

CR-ICP slides: anterior slides from centric relation to the intercuspal position:

•Occur in over 90% of individuals. *Posselt*

•90% of individuals do not have TMD pain or dysfunction. *Okeson, McNeill, Tanaka, Fricton*

•**Conclusion:**

•**<u>"It is not the degree of the slide, the pain and dysfunction depends upon what the patient does with the slide."</u> Eg, clench and brux.*Tanaka, Okeson***

"The 90% Rule"
"If the patient doesn't parafunction, eg., clench or grind,
they will most likely not experience any pain or dysfunction."

**** 90% of TMDs are "self inflicted" and under the control of the patient."**

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Recommended Management of TMDs:

- **Appropriate diagnosis:** avoid sonography, JVA, EMG and other tests that lack "specificity" and good science.
- **Start with the most conservative irreversible therapy first**. *(see next slide*)
- **Pharmacology:** analgesics, NSAIDs, muscle relaxants
- Stabilizing splints, Physical Pherapy, Chiropractic(Active Release), behavioral therapy may be followed by occlusal therapy.

"Occlusal adjustment in the presence of muscle and or joint pain is not recommended."
"Establish the proper diagnosis first and relieve the pain and dysfunction before proceeding with an irreversible procedure like an occlusal adjustment."

TMD Management: Splint Therapy…

See Saturday CDA Program – "Splint Therapy: What Works, What Doesn't, and Why?"

ABCs of Splint Therapy: "*What works, what doesn't and why? DVD" will be shown in the Saturday program.*

"Thank you for your kind attention!"
Terry T. Tanaka, DDS

for further questions use email ttanaka@usc.edu
Log on to the website TerryTanakaDDS.Com to view QuickTime Video clips of the movies