



70% of TMD patients have headaches.

"TMJ internal derangement (TMJ ID) is the most frequent type of TMD and is characterized by several stages of dysfunction involving the condyle-disk relationship."

TMJ internal derangement is the basic mechanism leading to TMJ dysfunction.

There are 2 types of TMJ derangements of the condyle-disk complex:

- 1) Anterior disk displacement with reduction
- 2) Anterior disk displacement without reduction

"MRI studies have suggested headaches due to ID of the TMJ appear to be primarily inflammatory in origin due to stretching of the collateral diskal ligaments with subsequent anterior disk displacement."

This study evaluated 42 consecutive patients with MRI for TMJ internal derangement.

## RESULTS

85% of patients with headaches reported TMJ pain.

15% of patients with headaches did not have TMJ pain.

71.4% of patients with headaches showed bruxing behaviour, which was three times higher than the headache free group.

Patients with more severe disc displacement had a higher frequency of joint effusion.

Patients with joint effusion had a higher prevalence of joint pain.

"Patients with headaches exhibited significantly more ID in the MRI than the control group."

"Headaches occurred more frequently in patients with more severe TMJ ID and anterior disk displacement without reduction."

"Joint effusion was more prevalent in headache patients."

"Patients with unexplained headaches should be considered for evaluation of the presence of internal derangement and inflammation of the TMJ."

"TMJ effusion represents an inflammatory response to a dysfunctional diskcondyle relationship," and this is associated with pain.

This study found joint effusion was more frequent in patients with anterior disk displacement without reduction.

TMJ pain and dysfunction may be caused by bruxism, and this is related to headaches.

Abnormal mechanical stresses within the joint result in accumulation of irritating agents in the tissue fluid and inflammatory changes in the synovial membrane leading to subsequent joint effusion.

## CONCLUSION

"The results of this study suggest more severe pathology of the TMJ ID noted by MRI might increase the risk of headache in patients presenting to a dental clinic for the evaluation of TMJ symptoms."

"Temporomandibular joint effusion on MRI may serve as a biological marker of headache associated with TMD."

It appears that the increase in levels of TMJ effusion "leads to a susceptibility to headaches from accumulation of inflammatory mediators within the joint, specifically:

Prostaglandins

Pro-inflammatory cytokines

Nitric oxide

## KEY POINTS FROM DAN MURPHY

- 1) "Temporomandibular disorders (TMD) are frequent and widespread in the general population."
- 2) TMD complaints include:
  - Headache
  - Jaw ache
  - Earache
  - Facial pain
- 3) 70-85% of TMD patients have headaches.
- 4) The most common type of TMJ dysfunction involves alterations of the condyle-disk relationship.
- 5) The most common condyle-disk derangement of the TMJ is anterior disc displacement.
- 6) TMJ disc displacement is associated with TMJ effusion.

- 7) "TMJ effusion represents an inflammatory response to a dysfunctional disk-condyle relationship," and this is associated with pain.
- 8) There is a significant association between TMJ effusion and headache.
- 9) TMJ pain and dysfunction is often caused by bruxism.
- 10) Abnormal mechanical stresses within the joint result in accumulation of irritating agents in the tissue fluid and inflammatory changes in the synovial membrane leading to subsequent joint effusion.
- 11) "Patients with unexplained headaches should be considered for evaluation of the presence of internal derangement and inflammation of the TMJ."

THIS ARTICLE SUGGESTS THE FOLLOWING MODEL:

Abnormal mechanical stresses within the TMJ result in accumulation of irritating agents in the tissue fluid and inflammatory changes in the synovial membrane leading to subsequent joint effusion, TMJ pain, and headache.

Increased levels of TMJ effusion contain increased levels of inflammatory mediators.

Increased inflammatory mediators increase local TMJ pain.

Increased TMJ pain increases headache.

This would suggest that a reasonable approach to management would start with effective treatment of the abnormal mechanical stresses of the TMJ.

ADDITIONALLY:

The 1991 book by Andrew Kaplan and Leon Assael titled Temporomandibular Disorders, Diagnosis and Treatment, shows and discusses how the TMJ anterior disk displacement (as documented in this study) can be manipulated with an inferior/anterior line of drive in an effort at repositioning the disk. This book is the finest book I have read in learning about temporomandibular disorders and their relationship to the neurology and biomechanics of the cervical spine.

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