TMJ / TMD Seminar

1st June 2015 - QMUL
Prosthodontics (2011)

8. Management of Temporomandibular Disorders (Tmd)

Objective

Upon completion of the subject the trainee should be able to:

- Diagnose oral parafunction and other factors in the development of dysfunction of mandibular movements and the TMJs.
- Provide behavioural advice for the management of these problems.
- Construct appropriate occlusal appliances for the diagnosis and treatment of these problems.
- Communicate and work with colleagues on the multidisciplinary management of these problems.
- Monitor and evaluate the effectiveness of treatment regimes.
Prosthodontic curriculum

Knowledge

Upon completion of the subject the trainee should be able to:

Describe:

- relevant biology, anatomy, physiology, pathology and radiology in provision of care and advice for TMD
- current and seminal literature on diagnosis and management of these disorders
- different treatments available for TMD and recognise limitations (jaw exercises, interocclusal appliances, registration techniques, occlusal adjustment, conformative and reorganised approaches to oral reconstruction, psychological approaches)

Skills

Upon completion of the subject the trainee should be able to:

- Communicate effectively and emphatically with patients to identify potential aetiological factors and signs and symptoms of TMD
- Show a high degree of skill in the choice and execution of appropriate techniques for treatment in conjunction with other specialists/dental care professionals managing the patient
Skills
Upon completion of the subject the trainee should be able to:
- Communicate effectively and empathetically with patients to identify potential and biological factors and signs and symptoms of TMD
- Show a high degree of skill in the choice and execution of appropriate techniques for treatment in conjunction with other specialists/dental care professionals managing the patient

Attitudes
Upon completion of the subject the trainee should be able to:

Recogles:
- The need for empathy and patient counselling skills
- The relevance of treatment of TMD on overall patient care and long term function and on patient well-being

Teaching and learning methods
- Workplace (clinical) experience with appropriate trainers including attendance at appropriate multidisciplinary clinics and theatre sessions
- Appropriate range of clinical cases for observational and personal treatment
- Attend trainee seminars within department
- Attendance at suitable courses
- Attendance at suitable meetings
- Independent study

Assessment
- ARCP Case reports
- CBD
- DOPS
- Mini-CEX
- MSF/patient survey
- SPECIALTY MEMBERSHIP
Discussion Areas – Diagnosis / Aetiology etc

• Diagnosis (history, examination & special tests) & logical rule out of other potential causes of pain in the area(s)
• Aetiology (Bio-psychological trauma, trauma & para-function)
• Risk factors
• Types of TMD
• Prevalence etc
Be careful of missing an important cause of facial pain

Facial Pain

Organic causes of facial pain

- dental
- periodontal
- pulpal
- cracked tooth
- salivary gland disease
- oral mucosal disease
- maxillary sinusitis
- cancer

neurovascular

primary headache
- tension type headache
- temporal arteritis
- TAC
  - episodic
  - glossopharyngeal neuralgia
  - trigeminal neuralgia
  - postherpetic neuralgia
  - burning mouth

neuropathic pain
- continuous
- central stroke pain
- chronic idiopathic facial pain
- atypical odontalgia

other

musculoskeletal

TMD
- migraine
- neuritis
Chronic Idiopathic Facial Pain

Management of CIFP

- Tricyclic antidepressant – nortriptyline
- Cognitive Behaviour Therapy CBT
- Education – information
Diagnosis of TMD

• The Diagnostic Criteria for TMD (DC/TMD) provide a standard manner to examine the TMD and associated structures

• Use of a simple self complete questionnaire developed in tandem with DC/TMD; when used within a facial pain clinic has: 99% sensitivity and 98% specificity for painful TMDs

• This can be used in general medical and dental practice (Durham et al 2015)
Group of muscular skeletal conditions that involve TM Joints

- Prevalence USA incidence of first painful TMDs 3- per annum
- 12% single pain recurrent episodes 65% persistent 19%
- Slight preponderance towards female
Causes of TMD

• Multi-factorial
• Bio-psychosocial
• Initiating / predisposing and perpetuating factors
• Relation between genotype and phenotype (Durham et al 2015)
4 Main TMD Categories

- Myalgia
- Arthralgia
- Intra-articular disorders
- Headache attributable to TMD (Durham et al 2015)
Risk factors to make things Chronic

- Good evidence for strong links with psychosocial factors as influential in developmental of chronic pain states *(Philips and Clauw, 2011)*
- Certain patients are susceptible to chronic pain
- These patients will commonly have susceptibilities to other problems e.g. IBS, anxiety, musculo-skeletal pain in other anatomic sites etc..
- Strong link between depression of mood and chronic pain susceptibility
Discussion Areas – Diagnosis & Special Tests

• What special tests are indicated for most NPs with suspected diagnosis of TMD?
  • CT?
  • MRI?
Discussion Areas – Conservative Therapy

- NSAIDs – how best administered?
- CBT – what should this be and when suggested?
- Physiotherapy
- Acupuncture
- Occlusal splint therapy: soft bite-guards, hard bite-guards, partial or full coverage, upper or lower jaw?
- Dental Rx: indications for restorative, orthodontic Rxs?
80% of secondary care referrals TMJ disorders can be managed by combination of conservative techniques to include: advice, re-assurance, NSAID medication and bite splints etc (Sidebottom J 2009)
When would you prescribe a bite splint?
Use of local or systemic NSAIDs are first line Rx for joint pain secondary to inflammation. Topical delivery as good as systemic for superficial joint pain (4 times a day based on BMJ meta analysis) 

(Sidebottom J 2009)
Intra Oral Orthopaedic appliances for Rx of TMD

• Hard bite stabilisation splints when adjusted properly have good evidence of modest efficacy for Rx of TMD compared to non occluding appliances (Fricton et al, 2009 – meta analysis of RCTs)

• Other types of appliances to include: repositioning and anterior partial coverage appliances also have some evidence but are prone to adverse effects (Fricton et al, 2009 – meta analysis of RCTs)
Stabilisation splint therapy for temporomandibular pain dysfunction syndrome

M Ziad Al-Ani¹, Stephen J Davies², Robin JM Gray³, Philip Sloan⁴, Anne-Marie Glenny⁵

¹TMD Unit, Prosthodontics, School of Dentistry, The University of Manchester, Manchester, UK. ²Prosthodontics, School of Dentistry, The University of Manchester, Manchester, UK. ³Oral and Maxillofacial Surgery, School of Dentistry, The University of Manchester, Manchester, UK. ⁴Department of Cellular Pathology, Royal Victoria Infirmary, Newcastle upon Tyne, UK. ⁵Cochrane Oral Health Group, MANDEC, School of Dentistry, The University of Manchester, Manchester, UK

Contact address: M Ziad Al-Ani, TMD Unit, Prosthodontics, School of Dentistry, The University of Manchester, Higher Cambridge Street, Manchester, M15 6FH, UK. ziad_alani@hotmail.com.
Main results

Twenty potentially relevant RCTs were identified. Eight trials were excluded leaving 12 RCTs for analysis. Stabilisation splint therapy was compared to: acupuncture, bite plates, biofeedback/stress management, visual feedback, relaxation, jaw exercises, non-occluding appliance and minimal/no treatment.

There was no evidence of a statistically significant difference in the effectiveness of stabilisation splint therapy (SS) in reducing symptoms in patients with pain dysfunction syndrome compared with other active treatments. There is weak evidence to suggest that the use of SS for the treatment of PDS may be beneficial for reducing pain severity, at rest and on palpation, when compared to no treatment.

Authors’ conclusions

There is insufficient evidence either for or against the use of stabilisation splint therapy for the treatment of temporomandibular pain dysfunction syndrome. This review suggests the need for further, well conducted RCTs that pay attention to method of allocation, outcome assessment, large sample size, and enough duration of follow up. A standardisation of the outcomes of the treatment of PDS should be established in the RCTs.
Quality expected of studies used

Quality assessment

Each paper included was quality assessed independently by two review authors. In the case of discrepancies, the authors of the paper were contacted for details of randomisation where necessary. Randomisation and allocation concealment method for each trial has been coded according to the criteria described in the Cochrane Reviewers’ Handbook:

(A) Clearly adequate: if adequate concealment reported.
(B) Possibly adequate: if the random allocation is mentioned but the actual method used to conceal is unclear/not known.
(C) Clearly inadequate: if inadequate concealment mentioned.
(D) Excluded: Allocation concealment not used.

Participants and investigators cannot be blinded to splint therapy. However, it is feasible to blind the outcome assessor and all included studies were assessed for blinding of the outcome assessment (yes or no).

Completeness of the follow up (is there a clear explanation for withdrawals and drop outs in each screening group) was assessed as yes or no.

Uncertainty during the quality assessment phase was to be resolved by contacting the authors when necessary.

Zaid Al-Ani et al (2009)
No Stat difference that SSs any more effective at reducing TMD pain than other active treatments

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Zaid Al-Ani et al (2009)
Outcome measure

- Cured
- Improved
- Same
- Worse

- Should follow a physical re-examination of joint and muscles

Zaid Al-Ani et al (2009)
Stabilisation splint (SS) versus minimal/no treatment (Comparison 1)

There is weak evidence to suggest that SS therapy may be beneficial in comparison to minimal or no treatment in terms of pain (as measured using the Pain Palpation Index (PPI), Pain Severity Scale (PSS) and a visual analogue scale (VAS) and depression (Centre for Epidemiological Studies - Depression (CES-D))).
SS versus non-occluding splints (Comparison 2)

There was no statistically significant difference between SS and non-occluding splints for any of the outcomes measured.

Pain (Outcomes 2.3; 2.4)

No statistically significant difference in palpation score or pain diary score was seen, however, when SS was compared with a non-occluding splint (Rubinoff 1987).

The number of painful muscles on palpation in the SS group in one study (Raphael 2001) did not differ significantly from the number in the palatal splint group after 6 weeks of treatment. One trial (Dao 1994) investigated improvement in unpleasantness and intensity of pain at rest and showed no statistically significant difference between the two groups with a risk ratio (RR) 0.75 (95% CI: 0.41, 1.37) and RR 1.44 (95% CI: 0.81, 2.58) for the improvement in the unpleasantness and intensity of pain respectively.

acupuncture for any of the outcomes measured, with the exception of deviation to the right on mouth opening (Raustia 1986)

Pain (Outcome 3.1)

One study (Raustia 1986) reported the number of patients with pain on palpation 3 months after treatment. There was no statistically significant difference between the two groups with a RR of 0.63 (95% CI: 0.24, 1.65) for the pain on palpation to the right side and RR 2.00 (95% CI: 0.19, 20.67) for pain on palpation to the left side. Similarly, no statistically significant difference was shown for pain on movement (retrusion), RR 0.60 (95% CI: 0.16, 2.25), or movement (opening), (RR 0.86; 95% CI: 0.34, 2.19).

One study (Johansson 1991) assessed change in severity of pain, described by a subjective symptom score (SDS). No statistically significant difference was found in the SDS when comparing SS and acupuncture groups with RR 1.50 (95% CI: 0.29, 7.73), although both groups showed a statistically significant decrease in SDS and VAS scores after treatment.
Zaid Al-Ani et al (2009) - movement

Movement (Outcome 2.1)

There was no statistically significant difference in the increase in maximal opening (mm) between groups receiving SS or a non-occluding splint (WMD 1.45; 95% CI: -1.47, 4.37) (Rubinoff 1987).

Movement (Outcomes 3.2; 3.3)

Raustia 1986 showed a statistically significant difference with regard to deviation to the right side in mouth opening movement after treatment in the SS group when compared with the acupuncture group with a RR 0.55 (95% CI: 0.35, 0.84). Interestingly, the analysis showed no significant difference between these two
AUTHORS’ CONCLUSIONS

Implications for practice

On the basis of our analysis we conclude that the literature seems to suggest that there is insufficient evidence either for or against the use of stabilisation splint (SS) therapy over other active interventions for the treatment of temporomandibular pain dysfunction syndrome (PDS). However, there is weak evidence to suggest that the use of SS for the treatment of PDS may be beneficial for reducing pain severity, at rest and on palpation, when compared to no treatment.

Implications for research

This review suggests the need for further, well conducted randomised controlled trials (RCTs) that pay attention to the method of allocation, outcome assessment, adequate sample size, and with sufficient follow up. A standardisation of the outcomes of the treatment of PDS should be established in the RCTs.
TMJ – Pain management

NSAID provide initial management. Need to distinguish muscular (Myogenic) pain from joint (Arthrogenic) pain – very different (Sidebottom 2009)
Cochrane evidence (Al-Ani et al, 2003) does not suggest any occlusal bite splint is better than any other. Therefore more expensive ones should not be used initially.
Cochrane evidence suggests no evidence for occlusal modification. ‘First do no harm’

(Sidebottom J 2009)
Luther, Layton & McDonald (2010)

- Little evidence to support Orthodontics as a therapeutic Rx option
- Cochrane review identified 55 potential studies from search – this was further reduced to 4 – all of which did not fulfil inclusion criteria
- Therefore no accurate data on the subject
Discussion Areas – Conservative Therapy – Psychogenic Medication Prescription

• Botox- does it have a place – for who and when?
• Psychogenic drug prescription – for who and by who?
Botulinum toxin has been shown to be effective where muscle spasm pain with third of patients gaining long term or much improved relieved. Repeated injections do not get the same improvement.

(Sidebottom 2009)
Management of TMD (Durham et al 2015)

- Studies on Botox are poor with lots of type 2 errors
- Concerns of osteoporosis of joints from repeated botox injections
• Prescription of more complex medication / drugs – neuromodulatory agents for persistent pain (gabapentin, benzodiazepines, amitriptyline and propanolol) for pain of myogenous origin supported by some trials – prescription best from MDT
• Poor studies with likely type 2 errors question usefulness of Botox.
• Some concerned about osteoporosis risk with repeats and most effective first time
Discussion Areas – Invasive therapy

• Role of Max Fac – surgical intervention – Arthroscopy / Arthrocentesis and other surgical procedures of TMJ

• Orthognathic procedures in the presence of TMD and severe occlusal problems
Athroscopy

International literature suggests that 10% of patients go on to have Arthroscopy. Around 70 are cured by this procedure. 10% require open joint surgery. With anchored disc (a young patient with severe restriction suggests this) – 90% cure if performed early

(Sidebottom 2009)
Athroscopy / Arthrocentesis

Majority of restricted opening relates to upper joint space problems anchored disc phenomenon – for which arthrocentesis (injection of LA / Steroid is beneficial) (Sidebottom 2009)
TMJ – acute closed lock

Therapeutic Arthoscopy should be considered early for closed lock. Pain in joint suggest presence of inflammation (Sidebottom J 2009)
Study design

A Comparison of Arthrocentesis, Arthroscopy and Arthroplasty in the Treatment of Temporomandibular Joint Dysfunction (TMJ)

This study has been completed.
Sponsor: Emory University
Information provided by (Responsible Party):
Gary F Bouloux MD, DDS, MDSc, FRACDS, FRACDS, Emory University

ClinicalTrials.gov Identifier:
NCT00636727
First received: February 15, 2008
Last updated: November 19, 2013
Last verified: November 2013

<table>
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<tr>
<th>Arms</th>
<th>Assigned Interventions</th>
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| Active Comparator: 1 arthrocentesis | Procedure: arthrocentesis  
                              | Irrigate the TMJ with lactated ringers          |
| Active Comparator: 2 arthroscopy    | Procedure: arthroscopy  
                              | The TMJ will be inspected with an arthroscope and the joint irrigated with lactated ringers |
| Active Comparator: 3 arthroplasty  | Procedure: arthroplasty  
                              | The disc will be surgically repositioned with open surgery |
Disc Replacement Surgery

- Little evidence for use (Durham et al 2015; Sidebottom 2009)
- Presence of click not an indication for surgery
- Questionable outcome with condylar shave, discectomy, eminoplasty, eminectomy etc
Joint Replacement

• Less than 100 joints a year – end of pathway – degenerative / failing joint

• Guidelines should be very strict (Sidebottom 2008)
Management of TMD (Durham et al 2015)

• First line reversible conservative
• Education
• Self care CBT
• Physiotherapy
• Splints
• Simple NSAIDs (systemic or local)
Questions

• In the light of evidence should we be using Michigan splints to manage TMD?
• Are we happy using SBG for TMD with associated para-function?
• Who should see TMD patients (why?)
• What is the role of a TMD MDT – hoe would patients get on to this clinic
• What is the role of acupuncture, physiotherapy and CBT?
Questions

• How might an ideal Local Managed Network look for TMD?
• For what patients would you wish to access Max-Fac and Botox?
• Which patients will require MRI / CT scans?
• What research do you think a MDT should be carrying out?