Abstract 1 – October 2015

Schmitter M, Kares-Vrincianu A, Kares H, Bermejo JL, Schindler HJ. Sleep-associated aspects of myofascial pain in the orofacial area among Temporomandibular Disorder patients and controls. Sleep Med. 2015 Sep;16(9):1056-61.

STUDY OBJECTIVES: To assess sleep-associated aspects of temporomandibular disorder (TMD) with myofascial pain (MP) in the orofacial area of patients and controls.

MEASUREMENTS: Three hundred five female patients were screened to find 44 participants fulfilling the inclusion criteria, 22 suffering from MP and 22 in a control group. Sleep quality was assessed by use of the Pittsburgh Sleep-Quality-Index (PSQI) and a validated German sleep questionnaire (SF-AR). Tooth wear was assessed and anterior temporalis muscle activity was measured at home for several nights by use of a portable electromyography (EMG) device.

RESULTS: 22 patients (45.0 ± 13.6 years) and 22 controls (45.2 ± 9.0 years) were recruited. The PSQI sum-score was 7.5 ± 3.7 for patients and 4.4 ± 3.0 for controls ($p = 0.006$). The SF-AR showed that 23% of the controls and 14% of the patients were "long sleepers". The overall number of episodes in the two groups was not significantly different (4.10 ± 2.65 versus 4.57 ± 1.99 episodes per hour). However, more patients had temporalis muscle activity possibly related to SB during all four consecutive nights ($p = 0.04$). According to the International Classification of Sleep Disorders - Third Edition (ICSD-3) criteria, 13.6% of the controls and 71.4% of the patients ($p < 0.001$) showed SB.

CONCLUSIONS: Sleep-associated disturbances, including reduction of sleep quality and greater prevalence of SB and facial pain in the morning, occurred significantly more often among TMD patients. Additionally, SB fluctuated over the nights especially in controls. This should be taken into consideration when the prevalence of SB is assessed by use of EMG.

Abstract 2 – October 2015

Lövgren A, Häggman-Henrikson B, Visscher CM, Lobbezoo F, Marklund S, Wänman A. Temporomandibular pain and jaw dysfunction at different ages covering the lifespan - A population based study. Eur J Pain. 2015 Aug 27. [Epub ahead of print]

BACKGROUND: Temporomandibular pain and jaw dysfunction can have a negative effect on daily life, but these conditions are not well recognized in the health care systems. The general aim was to examine the cross-sectional prevalence of frequent temporomandibular pain and jaw dysfunction in men and women across the lifespan.

METHODS: The analysis was based on data from 137,718 individuals (mean age 35 years, SD 22.7) who answered three questions (3Q/TMD) included in the digital health declaration in the Public Dental Health care in the county of Västerbotten, Sweden; Q1: 'Do you have pain in your temple, face, jaw or jaw joint once a week or more?'; Q2: 'Does it hurt once a week or more when you open your mouth or chew?'; and Q3: 'Does your jaw lock or become stuck once a week or more?'

RESULTS: The prevalence of frequent temporomandibular pain (Q1) was 5.2% among women and 1.8% among men ($p < 0.0001$). The prevalence of frequent pain on jaw movement (Q2) was 2.5% among women and 0.9% among men ($p < 0.0001$). The prevalence of frequent locking of the jaw (Q3) was 2.7% among women and 1.2% among men ($p < 0.0001$).

CONCLUSIONS: The study shows that the cross-sectional prevalence of temporomandibular pain and jaw dysfunction varies during the lifespan. For men and women, respectively, symptoms increase during adolescence, peak in middle age and then gradually diminish. The prevalence of these symptoms is significantly higher among women except from the first and last decades of a 100-year lifespan.

Abstract 3 – October 2015

Henderson SE, Lowe JR, Tudares MA, Gold MS, Almarza AJ. Temporomandibular joint fibrocartilage degeneration from unilateral dental splints. Arch Oral Biol. 2015 Jan;60(1):1-11.

OBJECTIVE: The objective of this study was to determine the extent to which altered loading in the temporomandibular joint (TMJ), as might be associated with a malocclusion, drives degeneration of articulating surfaces in the TMJ. We therefore sought to quantify the effects of altered joint loading on the mechanical properties and biochemical content and distribution of TMJ fibrocartilage in the rabbit.

DESIGN: Altered TMJ loading was induced with a 1mm splint placed unilaterally over the maxillary and mandibular molars for 6 weeks. At that time, TMJ fibrocartilage was assessed by compression testing, biochemical content (collagen, glycosaminoglycan (GAG), DNA) and distribution (histology), for both the TMJ disc and the condylar fibrocartilage.

RESULTS: There were no changes in the TMJ disc for any of the parameters tested. The condylar fibrocartilage from the splinted animals was significantly stiffer and the DNA content was significantly lower than that in control animals. There was significant remodeling in the condylar fibrocartilage layers as manifested by a change in GAG and collagen II distribution and a loss of defined cell layers.

CONCLUSIONS: A connection between the compressive properties of TMJ condylar fibrocartilage after 6 weeks of splinting and the changes in histology was observed. These results suggest a change in joint loading leads to condylar damage, which may contribute to pain associated with at least some forms of TMJ disease.

Abstract 4 – October 2015

McAuliffe P, Kim JH, Diamond D, Lau KT, O'Connell BC. A sleep bruxism detection system based on sensors in a splint - pilot clinical data. J Oral Rehabil. 2015 Jan;42(1):34-9.

It is difficult in a dental setting to accurately diagnose sleep bruxism and to objectively assess the severity, frequency or natural history of the condition in an individual patient. Yet this information is essential for the management of sleep bruxism and to plan appropriate dental treatment. The objective of this study was to clinically test a device that could be used to record bruxism events in a home environment. Pressure sensors were developed for use under the surface of an occlusal splint, and circuitry was designed to facilitate the recording and wireless transmission of the pressure sensor signal to a computer. Controlled mandibular movements were carried out in vivo to simulate bruxism and non-bruxism patterns. These patterns of force application were graphically presented to two examiners who were asked to identify the type of activity represented by the force curves. Examiners were largely able to distinguish bruxism from non-bruxism activity; the sensitivity ranged from 80% to 100% and the specificity from 75% to 100%. Using sensors in an occlusal splint, it is possible to recognise the typical tooth contact patterns seen in sleep bruxism. Such a device may be useful for monitoring sleep bruxism over an extended period at home.