

TMD and Malocclusion

Mohlin BO, Derweduwen K, Pilley R, Kingdon A, Shaw WC, Kenealy P. Malocclusion and temporomandibular disorder: a comparison of adolescents with moderate to severe dysfunction with those without signs and symptoms of temporomandibular disorder and their further development to 30 years of age. Angle Orthod. 2004 Jun;74(3):319-27.

A total of 1018 subjects were examined at the age of 11 years, 791 were reexamined at 15 years, 456 at 19 years, and 337 at 30 years. Anamnestic and clinical recordings of temporomandibular disorder (TMD) were made. Morphology, including calculation of peer assessment rating (PAR) scores, was recorded. Previous history of orthodontic treatment was assessed. Muscular endurance was recorded. The subjects completed four psychological measures. The malocclusion prevalence, occlusal contacts, psychological factors, and muscular endurance in subjects with no recorded signs and symptoms of TMD were compared with those with the most severe dysfunction at 19 years of age. The further development of TMD to 30 years of age was followed. PAR scores were significantly higher in the subjects with the most severe dysfunction. Apart from crowding of teeth, no other significant differences were found between the groups with regard to separate malocclusions, tooth contact pattern, orthodontic treatment, or extractions. A greater proportion of subjects with low endurance were found in those with TMD. Significant associations between TMD and general health and psychological well-being as well as the personality dimension of neuroticism and self-esteem were found. During the period from 19 to 30 years, the prevalence of muscular signs and symptoms showed considerable reduction, whereas clicking showed a slight increase. Locking of the joint showed a decrease from 19 to 30 years. One-quarter of the TMD subjects showed complete recovery. Thus, orthodontic treatment seems to be neither a major preventive nor a significant cause of TMD.

Rodrigues-Garcia RC, Sakai S, Rugh JD, Hatch JP, Tiner BD, van Sickels JE, Clark GM, Nemeth DZ, Bays RA. Effects of major Class II occlusal corrections on temporomandibular signs and symptoms. J Orofac Pain. 1998 Summer;12(3):185-92.

This study explored the relationship between malocclusion and signs and symptoms of temporomandibular disorders (TMD) in 124 patients with severe Class II malocclusion, before and 2 years after bilateral sagittal split osteotomy (BSSO). Patients were evaluated with the Craniomandibular Index (CMI), the Peer Assessment Rating Index (PAR Index, to assess gross changes in the occlusion), and symptom questionnaires. The results showed a significant improvement in occlusion; PAR Index scores dropped from a mean of 18.1 before surgery to a mean of 6.1 at 2 years postsurgery ($P < 0.001$). The CMI and masticatory index (MI) for muscle pain indicated clinically small but statistically

significant improvement ($P = 0.0001$) from before surgery (mean CMI = 0.14, mean MI = 0.15) to after surgery (mean CMI = 0.10, mean MI = 0.08). The number of patients with clicking upon opening decreased significantly from 33 (26.6%) to 13 (10.5%) ($P = 0.001$). However, the number of patients with fine crepitus increased from 5 (4.0%) before surgery to 16 (12.9%) at 2 years postsurgery ($P = 0.005$). Significant reductions in subjective pain and discomfort were also found 2 years after surgery. The magnitude of change in muscular pain was not related to the severity of the pretreatment malocclusion, a finding that suggests that factors other than malocclusion may be responsible for the change in TMD.