TOPOGRAPHY CHANGES IN THE TEMPORO-MANDIBULAR JOINT IN EDENTUOUS MOUTH

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Introduction. Complete loss of teeth leads to a change in the jaws spatial ratio, including the development of senile progeny. This condition can include either distal or mesial shift of the mandible, which is accompanied with certain structural changes in the temporomandibular joint topography [1–5]. Even though mesial mandible shift is far less common in clinical practice, still the respective issues involving diagnostics and treatment remain relevant since a combination of facial and intraoral signs revealing a mesial shift, as well as thus induced functional disorders, require a comprehensive approach to treatment and following up on the cases.

Aim of study: to identify the temporomandibular joint topography features in edentuous patients, which is also accompanied with the mandible mesial shift.

Materials and methods. We carried out a comprehensive examination and treatment of 24 edentuous patients, whereas the condition was accompanied with the mandible mesial shift. The comparison group included 32 patients with dentition defects yet without the lower jaw shift. All patients underwent temporomandibular joint tomography performed on a universal X-ray unit ORTHOPHOS 3 (SIEMENS). The obtained data was analyzed followed the method we proposed for analyzing temporomandibular joint zonograms.

Results. The zonogram analysis showed that the comparison group patients had the mandibular joint space equal to 2.4 ± 0.3 mm in its anterior part; 3.2 ± 0.6 mm in the upper section; and 3.8 ± 0.2 mm in the posterior part. The tomogram analysis carried out in the main group revealed a joint space narrowing up to 1.1 ± 0.4 mm ($p < 0.05$) in the anterior part, whereas in its upper section there was a widening noted (up to 4.8 ± 0.7 mm; $p < 0.001$), as well as in the posterior section (up to 5.4 ± 0.5 mm; $p < 0.05$).

All the patients of the main group first used removable laminar dentures for 3–4 months in order to improve the topographic interaction in the temporomandibular joint structure, which allowed gradual recovery in the interalveolar distance and the lower face height; restoring the canine guidance and balanced occlusion; reproducing the specified mandibular movements (right and left), which in turn facilitated coordinating the masticatory muscles and temporomandibular joint function. Further on, all the patients were given removable orthopedic dentures in a constructive occlusion controlled via tomography.

Following the treatment, tomographic images were taken again for the temporomandibular joint. An examination of these showed that the width of the joint space in the anterior section was 2.1 ± 0.5 mm ($p < 0.001$), in the upper section — 3.5 ± 0.4 mm ($p < 0.01$), whereas in the posterior section it was 4.1 ± 0.6 mm ($p < 0.001$).

Conclusions. The above means that edentuous patients who also feature the mandible mesial shift, have certain topographic changes in the temporomandibular joint — narrowed joint space in the anterior section and its widening in the upper and posterior sections. Orthopedic treatment allows improving the ratio between the temporomandibular joint parts as well as ensuring proper occlusion pattern while using removable dentures.

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X-RAY SPECIFICS OF THE TEMPOROMANDIBULAR JOINT IN PATIENTS WITH FREE-END EDENTUOUS SPACE

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Introduction. The temporomandibular joint (TMJ) is the most important part of the dentition. In case left untreated, free-end dentition issues may get complicated with a mandibular posterior displacement as well as lead to morphological and functional changes in the TMJ [1, 3, 6, 7, 10].

The topography of the temporomandibular bone elements is an important criterion determining the choice of the complex treatment to be administered to patients with impaired occlusion relations in the teeth and dentition complicated with a displaced mandible. The mandible head displacement range is determined at the stage of developing a constructive occlusion controlled with tomograms and in view of its location in the temporal bone's mandibular fossa [2, 4, 5, 8, 9].

Aim of study. — to use X-ray data to study the anatomical and topographic features of the TMJ in patients with free-end dentition issues.

Materials and methods. The study involved 59 patients with free-end edentuous space who were divided into two groups. Group 1 included 29 patients with free-end dentition issues and with no mandible displacement, while Group 2 was comprised of 30 patients with displaced mandible.

To ensure objective evaluation of the TMJ bone elements, lateral tomography (by N.A. Ryabuhina) was used. Following this technique, determining the Frankfurt horizontal plane on the TMJ lateral tomogram was followed with identifying the mandible head shape, the depth of the temporal bone mandibular fossa, the articular tubercle height, the angle of its posterior ramp towards the horizontal line, as well as the joint space width.

Results. In Group 1, the TMJ zonograms showed that 53.3% of the patients had the mandible head of ovoid shape; 33.4% of the cases had it club-shaped, with it being cylindrical in another 13.3% of the patients. In the other group, however, the predominant shapes were cylindrical (39.3%) and club-shaped, which accounted for 37.9%. Only 22.8% of the patients in Group 2 were found to have ovoid-shaped mandible head. The mandible head was of the same shape bilaterally (the left and the right sides) in 69.7% of the patients, whereas only in 30.3% of the patients had their two mandibular sides different.

The mandible head width in Group 1 was 10.91 ± 0.61 mm on the right side and 11.20 ± 0.71 mm on the left. In Group 2, this value was 10.59 ± 0.59 mm and 10.81 ± 0.73 mm, respectively. The patients in Group 1 had the articular tubercle height at 11.92 ± 0.25 mm on the right and 11.92 ± 0.27 mm on the left. In Group 2, the height of the articular tubercle on the left side was 10.01 ± 0.43 mm, while on the right side it was 10.79 ± 0.85 mm. The angle of the temporal bone articular tubercle posterior ramp towards the line drawn from the articular tubercle apex to the lower edge of the auditory canal was 60.32 ± 1.7° on the right and 60.93 ± 1.30° on the left in patients of Group 1, while in Group 2 it was 60.00 ± 2.65° and 59.80 ± 2.97°, right and left, respectively.