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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 edentulous 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 tomo-

gram 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  $10.91 \pm 0.61$  mm on the right side and  $11.20 \pm 0.71$  mm on the left. In Group 2, this value was  $10.59 \pm 0.59$  mm and  $10.81 \pm 0.73$  mm, respectively. The patients in Group 1 had the articular tubercle height at  $11.92 \pm 0.25$  mm on the right and  $11.92 \pm 0.27$  mm on the left. In Group 2, the height of the articular tubercle on the left side was  $10.01 \pm 0.43$  mm, while on the right side it was  $10.79 \pm 0.85$  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  $60.32 \pm 1.7^\circ$  on the right and  $60.93 \pm 1.30^\circ$  on the left in patients of Group 1, while in Group 2 it was  $60.00 \pm 2.65^\circ$  and  $59.80 \pm 2.97^\circ$ , right and left, respectively.

The bone tissue structure in the temporal articular tubercle revealed no significant difference when compared in the two groups. The joint space, which is a projection of the articular disc and that of the articular surface cartilage, had a shape of a clearly outlined irregular arch. In Group 1, the anterior joint space was  $2.51 \pm 0.2$  mm on the right and  $2.32 \pm 0.19$  mm on the left; the posterior joint space was  $4.81 \pm 0.2$  mm on the right and  $4.91 \pm 0.22$  mm on the left. The posterior joint space exceeded the anterior one  $0.49 \pm 0.04$  times on the left and  $0.51 \pm 0.05$  on the right. When examining the tomographic images in Group 2, we could see that the right-side posterior joint space was  $4.3 \pm 0.52$  mm, while its left counterpart was  $4.72 \pm 0.91$  mm; the anterior joint space was  $3.90 \pm 0.28$  mm and  $3.75 \pm 0.21$  mm on the right and left, respectively. The distance from the mandibular fossa bottom to the top of the mandible head was  $5.81 \pm 0.53$  on the right and  $5.24 \pm 0.84$  mm on the left side.

**CONCLUSIONS.** The lateral tomograms revealed that free-end dentition issues with a displaced mandible result in anatomical and topographic changes in the TMJ — shortening in the articular tubercle height; narrowed mandible head; joint space reduction in its posterior part, and its widening in the anterior part; as well as an impaired symmetry of the mandible heads location.

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