

**ANALYSIS OF THE DIFFERENCES IN THE STRUCTURE OF THE JAWS OF THE  
SAMARKAND CITY POPULATION ON CONICAL-BEAM COMPUTED  
TOMOGRAPHY**

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**ANNOTATION**

On the basis of an analysis of cone beam computed tomography, 50 people (25 men and 25 women) of mature age (from 32 to 59) the study examines the structural features of the dentoalveolar segments in 13, 14, 15, 16, 23, 24, 25 of the upper jaw and 34, 35, 36, 44, 45, 46 of the lower jaw, the retromolar space of the mandible, the frequency of the presence of growths of the mucosa (Schneider membrane) lining the walls of the cavity of the upper jaw, the frequency of perforation of the bottom cavity of the upper jaw by the root tips of the fangs, premolars and first molars, odontometry of 1.3, 1.4, 1.5, 1.6, 2.3, 2.4, 2.5 of the upper jaw and 3.4, 3.5, 3.6, 4.4, 4.5, 4.6 of the lower jaw. The height of the lower jaw bone in men was greater due to the alveolar tissue. The total length of teeth 3.6, 4.6 of the lower jaw, 1.3, 1.4, 1.6, 2.3, 2.4, 2.6 of the upper jaw, the size of the base of the retromolar fossa were observed to be larger in men. The frequency of perforation of the bottom of the upper jaw cavity by the tops of the canine roots and first premolars was higher in men, the size (AP diameter and height) of the maxillary sinuses was larger in men. The study found that the height of the upper jaw bone in men and women did not differ, and the teeth 1.4, 2.4, 1.6, 2.6 of the upper jaw were larger in men, which can be attributed to the coronal section. The obtained data will help improve the procedure of immediate dental implantation and augmentation of the alveolar bone.

**Keywords:** radiography, odontometry, height of bone, mucosal thickening, maxillary sinus.

**АНАЛИЗ ГЕНДЕРНЫХ РАЗЛИЧИЙ СТРОЕНИЯ ЧЕЛЮСТЕЙ ЖИТЕЛЕЙ ГОРОДА  
САМАРКАНДА ПО ДАННЫМ КОНУСНО-ЛУЧЕВОЙ КОМПЬЮТЕРНОЙ  
ТОМОГРАФИИ**

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## АННОТАЦИЯ

На основании анализа данных конусно-лучевой компьютерной томографии 50 человек (25 мужчин и 25 женщин) зрелого возраста (от 32 лет до 59 лет) изучены особенности строения зубочелюстных сегментов в области 13, 14, 15, 16, 23, 24, 25 зубов верхней челюсти и 34, 35, 36, 44, 45, 46 зубов нижней челюсти, ретромолярного пространства нижней челюсти, частоты наличия разрастания слизистой (мембраны Шнайдера), выстилающей стенки полости верхней челюсти, частоты перфорации дна полости верхней челюсти верхушками корней клыков, премоляров и первых моляров, одонтометрия 1.3, 1.4, 1.5, 1.6, 2.3, 2.4, 2.5 зубов верхней челюсти и 3.4, 3.5, 3.6, 4.4, 4.5, 4.6 зубов нижней челюсти. Высота кости нижней челюсти у мужчин оказалась большей за счёт альвеолярной части, общая длина 3.6, 4.6 зубов нижней челюсти, 1.3, 1.4, 1.6, 2.3, 2.4, 2.6 зубов верхней челюсти, размеры основания ретромолярной ямки у мужчин оказались большими у мужчин, частота перфорации дна полости верхней челюсти верхушками корней клыков и первых премоляров оказалась выше у мужчин, размеры (переднезадний размер и высота) гайморовых пазух оказались большими у мужчин. Установлено, что высота кости верхней челюсти у мужчин и женщин не различалась, а 1.4, 2.4, 1.6, 2.6 зубы верхней челюсти были больше у мужчин за счёт коронковой части. Полученные данные помогут улучшить процедуру одномоментной дентальной имплантации и аугментации альвеолярного отростка.

**Ключевые слова:** рентгенография, одонтометрия, высота кости, утолщение слизистой оболочки, верхнечелюстные пазухи.

**Relevance:** The study of morphological features of dental segments is important for planning surgical interventions for the installation of dental implants, the location of which should be as physiological as possible [9]. When performing simultaneous implantation at the stage of tooth extraction, the doctor may encounter a communication of the maxillary sinus with the oral cavity or a lack of bone volume. Atrophy of the alveolar process is often considered in the literature, we also studied the anatomy of the maxillary segments normally in mature age individuals living in the territory of the city of Samarkand, taking into account gender differences to improve the preoperative planning stage of simultaneous dental implantation. The retromolar space is a donor zone from which bone can be taken, if necessary, augmentation of the implantation bed in case of atrophy or insufficient bone volume [4], [6], [10]. The size of the base of the retromolar fossa, as well as the relationship of the indicator with gender, are rarely or absent in the literature. Examination of the maxillary sinuses is important for the diagnosis of chronic sinusitis, which morphologically can manifest itself in the form of thickening of the mucous membrane lining the sinus wall [2], which is a contraindication to sinus-lifting surgery. Odontogenic sinusitis can be predicted due to information about the location of the root tips in the maxillary sinus [3], [8]. The study of the morphological features of the sinuses of each individual patient is of great importance when planning the treatment of sinusitis surgically [5]. The study was carried out using the technology of cone-beam computed tomography, the most accurate and effective X-ray method [1], [7].

**The purpose of the work:** to study the structural features of the upper and lower jaws and maxillary sinuses in mature age individuals, male and female, living on the territory of the city of Samarkand, based on cone-beam computed tomography data.

**Materials and methods of the study:** The analysis of cone-beam tomograms of 50 people (25 of them males and 25 of them females) of mature age (from 32 to 59 years) living in the territory

of the Samarkand region, obtained on a Vaitech computed tomograph, was carried out. Measurements of the size of the sinuses (anteroposterior size, height and width), the parameters of the maxillary segments in the teeth area were carried out 1.3, 2.3, 1.4, 2.4, 1.5, 2.5, 1.6, 2.6 and teeth 3.4, 4.4, 3.5, 4.5, 3.6, 4.6, the size of the retromolar space. The occurrence of growths of the mucosa (Schneider's membrane) lining the walls of the maxillary cavity, the frequency of perforation of the bottom of the maxillary sinus by the tips of the roots of the teeth was investigated 1.3, 2.3, 1.4, 2.4, 1.5, 2.5, 1.6, 2.6. Odontometry of teeth was performed 1.3, 2.3, 1.4, 2.4, 1.5, 2.5, 1.6, 2.6 and teeth 3.4, 4.4, 3.5, 4.5, 3.6, 4.6. The method of cone-beam computed tomography was used. Statistical analysis was performed in the Statistica 10.0 program, and reliable indicators were attributed to gender differences (at  $p \leq 0.05$ ). The units of measurement are millimeters.

**Results of the study:** In the course of the study, we identified gender differences in the overall height of the lower jaw body in the studied areas. In the group of men, the bone height in the area of the 3.4 tooth was higher, which was ( $32.18 \pm 0.43$  for men vs.  $28.57 \pm 0.40$  for women), 4.4 tooth ( $31.57 \pm 0.38$  for men vs.  $28.21 \pm 0.38$  for women), 3.5 tooth ( $31.30 \pm 0.48$  for men vs.  $27.64 \pm 0.42$  for women), 4.5 tooth ( $30.47 \pm 0.44$  for men vs.  $27.64 \pm 0.39$  for women), 3.6 tooth ( $30.04 \pm 0.45$  for men vs.  $25.44 \pm 0.54$  in women), 4.6 teeth ( $29.43 \pm 0.45$  in men versus  $25.36 \pm 0.55$  in women).

There were also differences in the height of the bone above the maxillofacial line, which turned out to be larger in men and was 3.4 ( $16.67 \pm 0.47$  in men versus  $13.68 \pm 0.45$  in women), 4.4 ( $16.28 \pm 0.45$  in men versus  $13.84 \pm 0.41$  in women), 3.5 ( $15.52 \pm 0.53$  in men versus  $11.93 \pm 0.60$  in women), 4.5 ( $15.45 \pm 0.50$  in men versus  $12.23 \pm 0.56$  in women), 3.6 ( $15.39 \pm 0.37$  in men vs.  $11.22 \pm 0.45$  in women), 4.6 teeth ( $15.10 \pm 0.46$  in men vs.  $11.68 \pm 0.43$  in women).

Differences in the length of the first molars of the mandible in men, tooth size 3.6 ( $21.27 \pm 0.37$  in men versus  $19.46 \pm 0.4$  in women), tooth 4.6 ( $20.87 \pm 0.25$  in men versus  $19.12 \pm 0.37$  in women) were revealed. Differences in the length of the root part of teeth 3.4, 4.4 and teeth 3.6, 4.6 were found to be larger in men. The length of the intraosseous part of the tooth 3.4 was ( $13.55 \pm 0.4$  in men vs.  $12.46 \pm 0.39$  in women), the tooth 4.4 ( $13.68 \pm 0.43$  in men vs.  $12.46 \pm 0.36$  in women), the tooth 3.6 was ( $13.06 \pm 0.36$  in men vs.  $11.23 \pm 0.36$  in women), the tooth 4.6 ( $12.85 \pm 0.30$  in men vs.  $11.44 \pm 0.42$  in women). The bases of the retromolar triangles in men were larger, and the size of the right retromolar triangle was ( $16.59 \pm 0.37$  in men versus  $15.30 \pm 0.35$  in women), and the left retromolar triangle ( $16.35 \pm 0.28$  in men versus  $15.43 \pm 0.37$  in women). There were no differences in the height of the upper jaw bone in men and women. The sizes of the canines, the first premolars, the first molars of the upper jaw in men turned out to be large. Thus, the length of the 2.3 tooth was equal to ( $26.97 \pm 0.42$  for men vs.  $24.7 \pm 0.43$  for women), 1.3 tooth ( $26.6 \pm 0.4$  for men vs.  $25.05 \pm 0.41$  for women), 2.4 tooth ( $22.02 \pm 0.31$  for men vs.  $20.99 \pm 0.33$  for women), 1.4 tooth ( $22.24 \pm 0.4$  for men vs.  $21.21 \pm 0.34$  for women), 2.6 tooth ( $21 \pm 0.27$  for men vs.  $20.32 \pm 0.23$  for women), 1.6 tooth ( $21.53 \pm 0.3$  in men versus  $20.32 \pm 0.3$  in women). The roots of the canines turned out to be large in males. Thus, the root length of the 2.3 tooth was equal to ( $16.37 \pm 0.52$  in men versus  $15.06 \pm 0.43$  in women), the 1.3 tooth ( $16.19 \pm 0.47$  in men versus  $15 \pm 0.5$  in women). The anteroposterior size of the maxillary sinuses was larger in men and on the left was equal ( $40.9 \pm 0.76$  in men versus  $38.14 \pm 0.57$  in women), and on the right ( $40.7 \pm 0.77$  in men versus  $38.55 \pm 0.57$  in women). The height of the sinuses was also higher in males and on the left was ( $32.69 \pm 0.9$  in men versus  $29.27 \pm 0.78$  in women), and on the right ( $33.2 \pm 0.79$  in men versus  $28.38 \pm 0.88$  in women).

Half of the men and more than half of the women had no mucosal growths. The presence of growths in the left sinus in men was detected 4 times more often, and the lesion of both sinuses at the same time was determined 2 times more often in women. It was found that the frequency of perforation of

the bottom of the maxillary sinus by the tips of the roots of teeth 1.3 and 2.3 in men was ten times greater than in women, the 1.4 tooth was about 4 times more common in men, the 2.4 tooth was about 2 times more common in men.

Thus, it was found that the frequency of perforation of the bottom of the maxillary sinus by the tips of the canine roots and the first premolars in men was greater than that in women.

The data obtained during the study make it possible to improve the stages of planning the implantation operation, as well as augmentation, by studying the structural features of anatomical structures in mature individuals and their gender characteristics.

**Conclusions:** As a result of the study, it was found that men have a larger anteroposterior size and height of the maxillary sinuses, the frequency of perforation of the bottom of the maxillary sinuses by the tips of the canine roots and the first premolars, the height of the lower jaw, due to the alveolar part in the area of the studied teeth (premolars and molars), as well as the size of the base of the retromolar fossa. These indicators are significant when planning simultaneous implantation surgery, augmentation of the alveolar process, as well as sinus-lifting operations.

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