

A. M. Хоссейнпур

**ОПРЕДЕЛЕНИЕ ВЕРХНЕЧЕЛЮСТНОЙ АРТЕРИИ ПО ДАННЫМ
КОНУСНО-ЛУЧЕВОЙ КОМПЬЮТЕРНОЙ ТОМОГРАФИИ
У ПАЦИЕНТОВ С ХРОНИЧЕСКИМ ВЕРХНЕЧЕЛЮСТНЫМ СИСУСИТОМ**

Научный руководитель: канд. мед. наук, доц. Е. В. Максимович

Кафедра хирургической стоматологии,

Белорусский государственный медицинский университет, Минск

A. M. Hosseinpour

**DEFINITION OF THE MAXILLARY ARTERY ACCORDING TO CBCT IN
PATIENTS WITH CHRONIC MAXILLARY SINUSITIS**

Tutor: PhD, assos. prof. E. V. Maksimovich

Department of Oral and Maxillofacial Surgery,

Belarusian state medical university, Minsk

Резюме. Инфекционно-воспалительные заболевания верхнечелюстного синуса занимают значимое место в структуре амбулаторного хирургического стоматологического приема и являются одной из ведущих причин госпитализации пациентов. Ведущим диагностическим методом при обследовании в предоперационном периоде является конусно-лучевая компьютерная томография.

Ключевые слова: хронический верхнечелюстной синусит, верхнечелюстная артерия, КЛКТ.

Resume. Inflammatory diseases of the maxillary sinus are significant in the structure of diseases on an outpatient maxilla-facial surgery and they are one of the chief reasons for the hospitalization of patients. Appropriate presurgical treatment planning should include understanding the anatomy of maxillary sinus with 3D CT scan.

Keywords: maxillary artery, CBCT, chronic maxillary sinusitis.

Objectives. An inflammatory condition of the maxillary sinuses that is the result of dental pathology is called odontogenic. According etiology most often it's the result of maxillary dentition infections, dentoalveolar procedures, maxillary dental trauma. It should be noted that in majority of cases infections are often polymicrobial with an anaerobe-predominant microbiome [1].

Odontogenic maxillary sinusitis is chronic disease. In fact, any diseases that arise from dental or dentoalveolar structures could affect the Schneiderian membrane and lead to pathologic process in the maxillary sinus.

An essential diagnostic tool in the diagnosis and management of odontogenic sinusitis is radiographic imaging. include Periapical radiography and panoramic radiography are standard dental radiographs. But, it should be noted that they are limited in the evaluation of multi-rooted teeth that are most commonly the cause of odontogenic sinusitis [2, 3]. But it was written by scientists that the overall sensitivity of dental radiographs in the detection of periodontal disease and carious dental lesions are 85% and 60%, respectively [2, 3]. And high rates of false negatives results were reported with one study demonstrating that compared to cone beam computerized tomography (CBCT) imaging periapical radiography missed more than 60% of periodontal pathology [4, 5].

Aim: the aim of the study was to analyze CBCT data of patients, to determine the visualization and diameter of the maxillary artery, to identify the relationship between the

visualization of the maxillary artery and its diameter and the presence of chronic maxillary sinusitis.

Tasks:

1. to analyze CBCT data of dental out-clinical patients to determine the presence or absents of chronic maxillary sinusitis,
2. to determine the visualization of the maxillary artery,
3. to determine the diameter of the maxillary artery,
4. to identify the relationship between the visualization of the maxillary artery and its diameter and the presence of chronic maxillary sinusitis.

Materials and methods. The data of 44 CBCT results was performed for 24 patients with chronic maxillary sinusitis (observation group, 1, 48 sinuses), 20 patients without pathological changes in the maxillary sinus (comparison group, 2, 40 sinuses). All the CBCTs randomly selected by patients who visited dental outpatient hospitals of Minsk, Belarus during the period from 2018 to 2020 were analyzed by GALILEOS program.

Results and discussion. After the analysis, it was revealed that maxillary artery was not detected in group 1 in 25% (12) patients, while maxillary artery was not detected in group 2 in 5% (2) patients (figure 1).

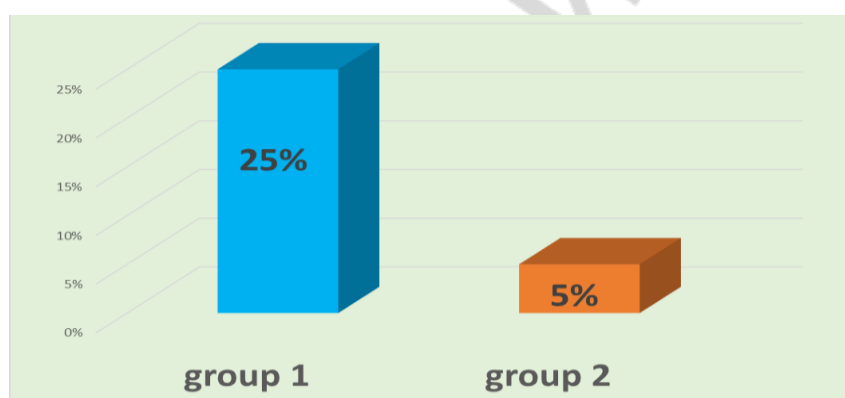


Fig. 1 - The maxillary artery detection

During determining the diameter of the maxillary artery, it was found that in patients of group 1, the diameter of the artery 0.1-0.99 mm was determined in 91.7% (33) cases, in patients of group 2 - in 92.2% (35), the diameter of the maxillary artery 1.0 mm or more in patients of group 1 was determined in 8.3% (3) of observations, in patients of group 2 - in 7.8% (3) (figure 2).

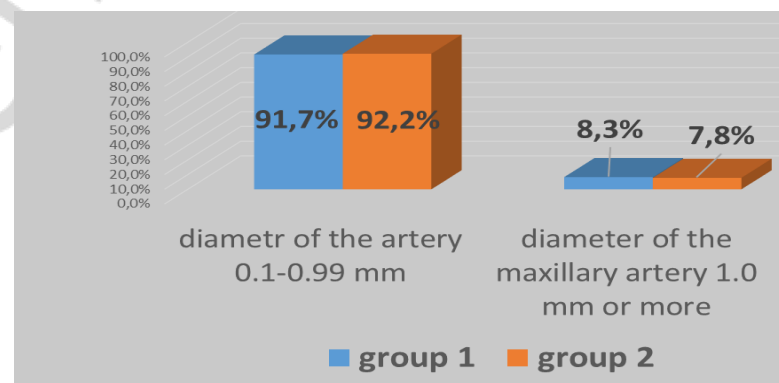


Fig. 2 - Diameter of the maxillary artery in patients of groups 1, 2

It was revealed different type of the maxillary arteries localization (figure 3).

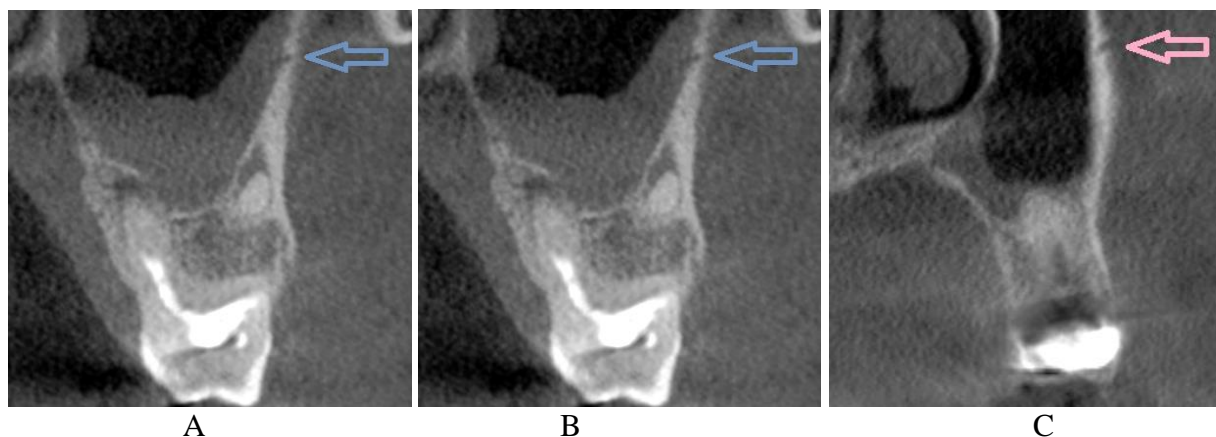


Fig. 3 - A. The detection of the posterior superior alveolar artery, intraosseous localization. B. The detection of the posterior superior alveolar artery, localization under the sinus membrane (between the Schneiderian membrane and the lateral bony wall of the sinus, in which a small concavity was often visible). C. The detection of the posterior superior alveolar artery, localization out of cortex (under the periosteum of the sinus lateral wall)

According the anatomical literature data there are 3 arteries suppling the maxillary sinus: posterior superior alveolar, infraorbital, posterior lateral nasal arteries, which are branches of the maxillary artery. Different types of localization of maxillary artery should be taken into account during maxillofacial. And the diameter of the maxillary artery can influence on the blood flow in mucosa of maxillary sinus.

Conclusion: as a result of the study, it was found that in patients of group 1 with the presence of chronic maxillary sinusitis, the maxillary artery was not visualized 5 times more often than in patients of group 2 (comparison group), which may indicate to deeper ischemic changes in the maxillary tissues of patients with chronic maxillary sinusitis. There was no significant difference in the diameter of the maxillary arteries in groups 1 and 2. The study will be continued.

References

1. Odontogenic sinusitis maxillaris: A retrospective study of 121 cases with surgical intervention. / Zirk M., Dreiseidler T., Pohl M et al. // J Craniomaxillofac Surg. – 2017. – 45. – P. 520–525.
2. Soung Min Kim Definition and management of odontogenic maxillary sinusitis / Soung Min Kim // Maxillofac Plast Reconstr Surg. – 2019. - Dec; 41(1). - P. 13.
3. Simuntis R1, Kubilius R, Vaitkus S. Odontogenic maxillary sinusitis: a review. / Simuntis R1, Kubilius R, Vaitkus S. // Stomatologija. – 2014. - 16(2). – P. 39-43.
4. Comparative assessment of periapical radiography and CBCT imaging for radiodiagnostics in posterior maxilla / Shahbazian M, Vandewoude C, Wyatt J, Jacobs R. // Odontology. – 2015. – 103. - P. 97–104.
5. Odontogenic sinusitis: A review of the current literature // Ryan E. Little, Christopher M. Long, Todd A. Loehrl, David M. Poetker, // Laryngoscope Investig Otolaryngol. – 2018. - Apr; 3(2). – P. 110–114.