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Frequency, localization, and diameter of the accessory maxillary ostium and its relationship with sinus pathologies and nasal cavity variations: an anatomical study based on cone beam computed tomography

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Frequency, localization, and diameter of the accessory maxillary ostium and its relationship with sinus pathologies and nasal cavity variations: an anatomical study based on cone beam computed tomography

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ABSTRACT

Background: The aim of the present study was to determine the presence, frequency, and characteristics of the accessory maxillary ostium (AMO) in a specific Turkish population using cone beam computed tomography (CBCT) and to evaluate the frequency of pathologies and anatomical variations in the nasal cavity and maxillary sinus and to assess their relationship with the AMO.

Materials and methods: This study retrospectively evaluated the presence of AMO in CBCT images of 543 patients, the patients' age, gender, and dentition status, the presence of nasal cavity variations and maxillary sinus pathologies, and their relationship to the presence of AMO. Descriptive values of the data and comparative results were included.

Results: 249 males and 294 females participated in the study. The majority of right and left sinus pathologies were irregular type mucosal thickenings (right/left; 14%, 14.9%). The majority of nasal variations were concha bullosa (right/left; 37.9%, 39.2%). There were 148 (27.3%) and 138 (25.4%) AMOs on the right and left sides, respectively, with the majority in the middle position (right/left; 21.2%/17.5%). The frequency of right and left AMOs was significantly higher in men (P = 0.019 and P = 0.020, respectively). The left AMO frequency was significantly higher in patients with left-sided sinus pathology (P = 0.003). AMO

diameters were larger in men (right/left P = 0.010 and P = 0.021, respectively), and left AMO diameter was significantly larger in patients with left sinus pathology (P = 0.006).

Conclusions: Before any surgical intervention in the maxillary sinus and osteomeatal region, the presence and location of the AMO, existing pathologies, and variations in the region should be carefully checked to avoid complications.

Keywords: accessory maxillary ostium, anatomical variation, cone-beam computed tomography, maxillary sinus, sinus pathology

INTRODUCTION

The maxillary sinus is the largest paranasal sinus, pyramidal in shape, and the medial wall (lateral nasal wall) of the maxillary sinus separates it from the nasal cavity [1, 2]. The development of the maxillary sinus begins in the 10th week of the intrauterine period, and there are two periods of rapid development between the 17th and 20th and the 25th and 28th weeks. After birth, there are two further periods of rapid development periods between 0–3 and 7–12 years of age. It reaches adult size at the age of 14–18 years [3–5]. The primary maxillary ostium (PMO) is located in the uppermost part of the medial wall of the maxillary sinus and ensures the drainage of mucus from the maxillary sinus against gravity [6]. The drainage pathways of the maxillary sinus include the PMO, the ethmoidal infundibulum, and the semilunar hiatus. Blockages in these pathways can lead to maxillary sinus disease. The AMO is considered an incidental anatomical finding located in the lateral nasal wall [7]. If the ostium may be observed during the endoscopic examination, it is highly probable that this is an accessory maxillary ostium, as the primary ostium lies deep in the infundibulum and so may not be seen during endoscopy [8]. Active mucociliary transport in the maxillary sinus directs mucus to the primary ostium, and the AMO plays no role in physiological transport within the maxillary sinus, even when the primary ostium is blocked [9]. There is an ongoing debate as to whether AMO is congenital or acquired [10]. Some symptoms of maxillary sinusitis occur in the maxillary dentoalveolar region and can be assessed with CBCT imaging as part of the dental examination. In this imaging, maxillary sinusitis can be observed in parallel with the occurrence of AMO.

The aim of this study is to reveal the presence, frequency, and characteristics of AMO, to evaluate the frequency of pathologies and anatomical variations in the nasal cavity and maxillary sinuses, and to assess their relationship with AMO. Understanding the possible relationship between AMO and pathologies of the nasal cavity and maxillary sinus will help clinicians to make accurate diagnoses and determine appropriate treatments.

MATERIALS AND METHODS

This retrospective study was conducted between 2021–2022 in accordance with the Declaration of Helsinki and was approved by the Clinical Research Ethics Committee of Bolu Abant İzzet Baysal University with approval number 2021/255.

The study analyzed the CBCT archive from 2017 to 2021 in the Department of Oral, Dental, and Maxillofacial Radiology. The study group's CBCT images were acquired using the i-CAT 3D Imaging System (Imaging Sciences International, Hatfield, PA, USA) with an amorphous silicon flat panel 23.8 cm wide and 19.2 cm high. The device was set to an exposure time of 4.8 seconds, with parameters of 120 kVp and 7 mA, a voxel size of 0.3 mm^3, a slice thickness of 0.3 mm, and a standard field of view (FOV) of 10–13 × 16 mm. The X-ray tube-flat panel system captures images around the patient's head with a single 360-degree rotation, and the scan duration is 26.9 seconds. The study included images of patients aged 18 years and older with a resolution that clearly showed all edges of the maxillary sinus and allowed a thorough examination of the region.

Images with developmental and neoplastic lesions that could affect the size and borders of the maxillary sinus and nasal cavity, images of trauma cases, images of patients who have previously undergone surgical procedures affecting the osteomeatal complex and the borders of the maxillary sinus, images with inflammatory processes of endodontic origin near the floor of the affected maxillary sinuses (periapical inflammatory lesions), which can cause sinusopathies, as well as images with localised bone grafts and images of insufficient quality in which the entire area of interest was not captured, were excluded from the study. Images were analyzed by the same observer with three years of experience. To measure intra-observer consistency, the images of 82 randomly selected patients were re-evaluated 15 days later under the same conditions, and high intra-observer consistency was found (ICC = 0.893). The study analyzed 1086 maxillary sinuses in CBCT images of 543 patients. The patients' age, gender, and posterior dentition were recorded. For the statistical analyses, patients were divided into age groups (18–24, 25–34, 35–44, 45–54, 55 ≥) before the relationship between AMO and age was investigated. Patients were categorized into 3 groups based on their posterior dentition type: dentate, partially edentulous, and edentulous. The posterior dentition was categorized according to the presence or absence of teeth from the distal canine of the maxilla to the third molar of the maxilla. Individuals with all teeth from the distal canine of the maxilla to the third molar of the maxilla were categorized as dentate, individuals with two

or more missing teeth as partially edentulous, and individuals with no teeth as edentulous [11]. The parameters examined in the images were as follows:

• AMO presence (Fig. 1).

• AMO diameter (Fig. 1). In patients with AMO, mean AMO diameters were measured in the coronal plane to determine whether there was a significant difference in AMO size according to the status of sinus pathology [1].

• AMO localization (upper, middle, lower) (Fig. 2). The medial wall of the maxillary sinus was divided into three equal parts at the level where it appears longest in the coronal plane. The AMO localization was then classified as upper, middle, or lower [1].

• The presence of pathology in the right and left maxillary sinuses (uniform mucosal thickening, polypoid type mucosal thickening, irregular type mucosal thickening, circumferential mucosal thickening, total opacification, mucus retention cyst, air-fluid leveling) values of ≥ 3 mm in mucosal thickening were considered pathological [12].

• Variations in the nasal cavity (Haller cell, concha bullosa, paradoxical concha, uncinate process deviation, inferior nasal concha hypertrophy, uncinate process pneumatization)

Statistical analysis

SPSS for Windows SPSS® ver. 23 (IBM Corp., New York, NY, USA; formerly SPSS Inc., Chicago, IL, USA) was used for statistical analysis. The Kolmogorov-Smirnov test was performed to analyze whether the data were suitable for a normal distribution. Descriptive values such as mean, standard deviation (SD), median, and quartiles (25^{th} and 75^{th}) were calculated. Relationships between categorical characteristics were examined using the Pearson chi-square analysis. When comparing groups on the basis of numerical characteristics, the Mann-Whitney U test or the Kruskal-Wallis test was used for variables without normal distribution. A statistical significance level of $P \leq 0.05$ was taken into account.

RESULTS

A total of 543 patients, 249 men and 294 women, aged between 18 and 78 years (mean age 43.44) were examined in the study. Of the patients, 27.3% had AMO on the right side, 25.4% on the left side, and 14.9% on both sides. The demographic data of the patients are listed in Table 1.

Table 2 shows the distribution of right and left sinus pathologies and right and left nasal variations as a function of gender. The frequency of sinus pathology was higher in men on both the right and left sides ($P = 0.001$ and $P = 0.023$, respectively). There was no gender

difference in the frequency of nasal variation on the right side (P = 0.073), but it was higher in women on the left side (P = 0.001).

Looking at the total values for both sides, regardless of gender, only the presence of nasal variation was significantly higher on the right side than on the left side (P = 0.008). There were no gender differences in the frequency of other pathologies.

It was observed that the frequency of right and left AMO was significantly higher in men (P = 0.019 and P = 0.020, respectively) (Table 3). No statistically significant correlation was found between the frequency of right AMO and the presence of right sinus pathology (P = 0.479). However, the frequency of left AMO was significantly higher in individuals with left sinus pathology (P = 0.003, Table 4). The frequency of AMO was higher in those with mucous retention cysts on the left side. No significant relationship was found between the presence of other maxillary sinus pathologies and the frequency of AMO (Supplemental Table 1). Furthermore, there was no significant correlation between the frequency of right AMO and right nasal variation and between the frequency of left AMO and left nasal variation (P = 0.893 and P = 0.364, respectively). When comparing the frequency of right and left AMO by age group, no significant difference was found (P-values 0.733 and 0.718 respectively) (Table 5). No significant difference was also found when comparing the frequency of right and left AMO and posterior dentate status, as shown in Table 6 (P-values: right = 0.904; left = 0.985). In the study, AMO localization was assessed in 3 groups (upper, middle, and lower), but the lower position was detected in only one of the examined individuals. Therefore, this case was included in the middle group, which accounted for the majority of localizations. On both the right and the left side, the AMO was most frequently found in the middle. No significant correlation was observed between the localization of the AMO and gender (P = 0.518 and P = 0.297 for the right and left sides, respectively) (Table 7). Furthermore, no significant correlation was found between right and left AMO localization and the presence of right or left sinus pathology (right/left P = 0.52 and 0.531, respectively) (Table 8). The descriptive values of AMO diameter by gender and sides are shown in Table 9. The mean diameter of the right AMO was 1.00 ± 1.83 mm, while the left AMO was 0.95 ± 1.79 mm, with no significant difference between the two sides (P = 0.675). It was determined that the diameters of both the right and left AMO were significantly larger in men (P = 0.010 and P = 0.021, respectively). No significant difference was found when comparing right and left AMO diameters by age group as shown in Table 10. (P = 0.841 and 0.741, respectively) The left AMO diameter was significantly larger in the patients with left sinus pathology (P = 0.006), and the mean right AMO diameter was larger in the patients with right sinus pathology, although not statistically

significant (P = 0.469). (Table 11). The distribution of patients with nasal septum deviation and AMO on one side (on one side or the opposite side) is shown in Table 12. There was no significant correlation between the side of AMO and the direction of nasal septum deviation on either the right or left side (P = 0.373 and 0.558 respectively).

DISCUSSION

A good knowledge of the possible variations and anatomy of the nasal cavity and paranasal sinuses is clinically and surgically important. In dentistry, the maxillary sinus is particularly important for oral surgery. Therefore, a thorough examination of this area prior to surgery and identification of all anatomical variations is crucial for clinicians to avoid complications during surgery [13].

The study found that sinus pathologies are more common in men, which is consistent with previous studies [12–17]. This could be due to anatomical differences, systemic diseases or unhealthy habits. However, the study did not consider the patients' medical history as it was based on retrospective and radiological evaluation. In addition, the frequency of the left nasal variation was significantly higher in women in this study, which is supported by the findings of Özcan et al. [18] and Yapıcı et al. [19]. In contrast, Demirel et al. [12] and Akay et al. [13] found no statistically significant difference between the genders. The different proportions of men and women and the different subpopulations of these studies may have influenced the results, although they were conducted on the same population.

In this study, AMO was found in a total of 37.7% of patients, 14.9% on both sides, 27.3% on the right side, and 25.4% on the left side. Previous studies conducted in the Turkish population using CBCT showed different rates of AMO prevalence. Özcan et al. [18] detected AMO in 307 of 1242 maxillary sinuses with a rate of 24.7%, Dedeoğlu et al. [20] detected AMO in 100 of 258 maxillary sinuses with a total rate of 38.8% in a study that included individuals aged 20 years and older, and Demirel [21] detected AMO in 55 (27.5%) on the right and 67 (33.5%) on the left of 200 maxillary sinuses. Orhan Soylemez and Atalay [1] detected AMO in a total of 122 maxillary sinuses (22.1%) in computed tomography (CT) studies, 57 on the right and 65 on the left, and 22 of these AMOs were bilateral. Yenigün et al. [7] reported an AMO incidence of 19.1%, with 7.2% on the right side, 3.7% on the left side, and 8.2% bilateral. Serindere et al. [22] found AMO in 42 of 400 patients (10.5%); it was found on the right side in 4.5% of patients, on the left side in 1.25%, and on both sides in 4.75%. In the present study, the prevalence of total AMO was consistent with the results of previous studies conducted in the same ethnic group and was higher than in CT studies. The

fact that CBCT allows a more accurate one-to-one assessment of bone structures compared to CT may have enabled a more detailed assessment of small cavities such as the ostium.

In the studies conducted with CBCT in different countries, Shetty et al. [11] reported 142 (35.5%) in 400 maxillary sinuses of 200 patients, Hung et al. [23] reported the prevalence of AMO in 151 of 320 maxillary sinuses (47.2%) and Yeung et al. [24] reported the prevalence of AMO in 167 of 368 maxillary sinuses amounting to 45.5%. Ali et al. [25] observed AMO in 114 patients, 27 (23.7%) on the right side only, 26 (22.8%) on the left side only and 61 (53.5%) on both sides. In studies performed with CT, Bani Ata et al. [15] found AMO in 376 of 928 patients with a rate of 40.5%. They detected a right AMO in 274 (29.5%), which corresponds to the number of patients with left AMO and bilateral AMO in 172 patients (18.5%). Other studies in the literature using different methods report the prevalence of AMO to be 14–23% [26–28]. These differences in study results can be attributed to ethnic variations, methodological differences, researcher sensitivity, and variables related to the resolution of the imaging used.

Based on the results of this study, it was revealed that the frequency of right and left AMO was significantly higher in men. In agreement with this study, Demirel [21] found AMO in 48 of 96 male patients (50%) and 38 of 104 female patients (36.5%). Shetty et al. [11], Bani Ata et al. [15], Ozel et al. [29], and Orhan Soylemez and Atalay [1] reported in their study that gender had no significant effect on AMO formation. However, Hung et al. [23] pointed out that AMOs were mainly found in CBCT scans of women. These differences could be due to the different frequency of men and women as well as racial differences in the population studied.

In the present study, similar to previous studies [1, 7, 11, 15, 23, 29], the frequency of right and left AMO in individuals with an average age of 43.44 years showed no significant change by age group. However, Yeung et al. [24] found that patients with more than one AMO (median age = 23.7 years) were generally younger than patients without AMO or with only one AMO (median age = 26.4; P = 0.018). They found age to be an influential factor in the number of AMOs diagnosed. As the number of AMOs was not recorded in this study, this result could not be compared. In another study [20], a higher prevalence of AMOs was demonstrated in older age groups. The authors attributed the increased incidence of AMOs in older people to the age-related phenomenon and the resorption phenomenon associated with age-related edentulism.

In this study, no significant association was found between the frequency of AMO and dentate status, similar to the study by Hung et al. [23]. However, Dedeoğlu et al. [20] found

that the rate of AMO was increased in edentulous patients (P = 0.015). Yeung et al. [24] reported that dentate status affected the number of AMOs determined, with dentate patients having a higher rate of multiple AMOs (47.4%). In the statistical analysis of this study, the AMOs on the right and left side were considered as single AMOs as they were located in a single sinus and no association with dentate status was observed. It is hypothesized that this difference in the study results is due to the different methods used.

The study found that both right and left AMO localization was most found in the middle position with 21.2% and 17.5% prevalence, respectively. The study found no significant correlation between the localization of AMOs and the presence of sinus pathology on either side. While Orhan Soylemez and Atalay [1] reported similar findings, Shetty et al. [11] also argued that there was no significant relationship between the localization of AMOs and mucosal thickening. They suggested that the fragility of the lateral nasal wall in the middle region may contribute to the high incidence of AMOs in this area, a view supported by the authors of the present study.

In the present study, similar to the literature [1, 7, 18], while there was no relationship between nasal variations and the frequency of AMO, the frequency of left AMO was significantly higher in those with left sinus pathology. Although it was not found to be statistically significant on the right, the prevalence of AMO in those with right sinus pathology was higher than the prevalence of AMO in those without pathology. Many authors [1, 7, 11, 18, 30] have presented results supporting this study between sinus pathology and the incidence of AMO. This relationship is also reflected in endoscopy-based and CBCT studies, which have shown a higher incidence of AMOs in patients with rhinosinusitis [31–33]. Mladina et al. [10] reported that the prevalence of AMO was higher in patients with maxillary sinusitis (19.9%) than in healthy individuals (0.48%). These and other studies in the literature support the possible association between pathological changes in the maxillary sinus and the occurrence of AMO. In this study, when each pathology was examined separately, the frequency of AMO was higher in those with mucus retention cysts only on the left side. Yenigün et al. [7] found the occurrence of AMO and mucus retention cysts to be significant on both sides, supporting our study (P = 0.00 for both sides). However, Orhan Söylemez and Atalay [1], and Do and Han [34] did not find that the presence of AMO was associated with mucus retention cysts. Serindere et al. [22] stated that the incidence of mucus retention cysts decreased in the presence of AMO. It has been observed in the literature that there is no consensus on this issue yet.

It has been found that maxillary sinus pathologies and morphological variations of the maxillary sinus mucosa are correlated with an increased area and length of the accessory ostia [23]. Similarly, in the present study, the left AMO diameter was significantly larger in patients with left maxillary sinus pathology. Shetty et al. [11] found that greater maximum length of AMOs was associated with greater mucosal thickening. However, Orhan Soylemez and Atalay [1] reported that the mean diameter of AMOs was smaller in individuals with sinus disease, but this difference was not statistically significant.

In this study, no significant correlation was found between the side of the AMO and the direction of the deviated nasal septum. In contrast, the study by Ozel et al. [29] found a significant correlation between the side with AMO and the direction of septum deviation.

Ozel et al. [29] suggested that the effects of septum deviation on nasal airflow may lead to the development of AMO. However, this study suggests that these results may be random and specific to the selected population and that studies in larger populations are needed to draw a more definitive conclusion. One limitation of the current study is the retrospective use of radiographic data. Another limitation is that it was analyzed by a single researcher. In this study, in which many anatomical structures were analyzed, some parameters were not previously correlated as far as we have examined the literature. Statistically significant results were obtained for some of these parameters. We recommend conducting prospective studies on larger populations in order to generalize the results.

CONCLUSIONS

In the current study, the prevalence of AMO was found to be higher and the diameter of AMO was larger in the presence of maxillary sinus pathology, especially on the left side. Prior to procedures such as sinus floor elevation and endoscopic sinus surgery, clinicians should identify the presence and location of AMO, which may be a predisposing factor for chronic maxillary sinusitis and other potential pathologies in the osteomeatal complex, and pay attention to these regions during surgery. CBCT is the ideal imaging technique that allows detailed examination of small bone structures with low radiation dose, which can be used to determine the presence and anatomical features of AMO.

ARTICLE INFORMATION AND DECLARATIONS

Data availability statement

The entirety of the data analyzed in this study has been included in the published article. The corresponding author will provide access to the raw data upon making a reasonable request.

Ethics statement

The study was conducted by the Declaration of Helsinki and was approved by Bolu Abant İzzet Baysal University Clinical Research Ethics Committee (protocol #2021–255). This study was conducted retrospectively using the data of patients/participants who attended the oral and maxillofacial radiology department. So, the patient's written informed consent was not obtained to participate in this study.

Author contributions

NT: designing, gathering the data, writing, editing the original draft of the paper, and approving the final version. DGB: the critical review of the paper, analysis, and interpretation of the data.

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Conflict of interest

The authors declare no conflict of interest.

Supplementary material

Supplementary material is available on Journal's site.

It contains:

Supplementary Table 1. Frequency of right and left AMO according to the presence of each right and left sinus pathology and each nasal variation.

Supplementary Material. Statistical results.

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Table 1. Descriptive values of the categorical variables (n, %).

		n	%
Gender	Male	249	45.9
	Female	294	54.1
Age groups	18–24	83	15.3
	25–34	73	13.4
	35–44	107	19.7
	45–54	148	27.3
	≥ 55	132	24.3
Right AMO	Absent	395	72.7
	Present	148	27.3
Left AMO	Absent	405	74.6
	Present	138	25.4
Bilateral AMO	-	81	14.9
Right AMO localization	Upper	33	6.1
	Middle	115	21.2
Left AMO localization	Upper	43	7.9
	Middle	95	17.5
Right posterior dentition	Dentate	252	46.4
	Partial edentulous	143	26.3
	Edentulous	148	27.3
Left posterior dentition	Dentate	252	46.4
	Partial edentulous	152	28.0
	Edentulous	139	25.6
Nasal septum deviation	No deviation	231	42.5
	Right	159	29.3
	Left	153	28.2

Table 2. Right and left sinus pathologies and right and left nasal variations according to gender.

Variables		Right					Left				
		Male		Female			Male		Female		
		n	%	n	%	P	n	%	n	%	P
Total sinus pathology	Absent	55	22.1	119	40.5	0.001*	75	30.1	116	39.5	**0.023**
	Present	194	77.9	175	59.5		174	69.9	178	60.5	
Uniform mucosal thickening	Absent	214	85.9	260	88.4	0.385	216	86.7	260	88.4	0.551

		Present	35	14.1	34	11.6		33	13.3	34	11.6	
Polypoid-type	mucosal	Absent	215	86.3	272	92.5	0.018*	223	89.6	268	91.2	0.528
thickening		Present	34	13.7	22	7.5		26	10.4	26	8.8	
Irregular-type	mucosal	Absent	210	84.3	257	87.4	0.303	203	81.5	259	88.1	**0.032**
thickening		Present	39	15.7	37	12.6		46	18.5	35	11.9	
Circumferential	mucosal	Absent	241	96.8	288	98.0	0.391	244	98.0	289	98.3	0.791
thickening		Present	8	3.2	6	2.0		5	2.0	5	1.7	
Total opacification		Absent	246	98.8	291	99.0	0.838	248	99.6	291	99.0	0.401
		Present	3	1.2	3	1.0		1	0.4	3	1.0	
Mucus Retention Cyst		Absent	234	94.0	289	98.3	0.008*	243	97.6	285	96.9	0.644
		Present	15	6.0	5	1.7		6	2.4	9	3.1	
Air-fluid leveling		Absent	249	100.0	294	100.0	–	249	100.0	293	99.7	0.357
		Present	0	0.0	0	0.0		0	0.0	1	0.3	
Total nasal variation		Absent	98	39.4	94	32.0	0.073	124	49.8	106	36.1	
		Present	151+	60.6	200+	68.0		125+	50.2	188+	63.9	**0.001**
Haller cells		Absent	219	88.0	221	75.2	0.001*	216	86.7	234	79.6	**0.027**
		Present	30	12.0	73	24.8		33	13.3	60	20.4	
Concha Bullosa		Absent	169	67.9	168	57.1	0.010*	174	69.9	156	53.1	**0.001**
		Present	80	32.1	126	42.9		75	30.1	138	46.9	
Paradox Concha		Absent	243	97.6	289	98.3	0.559	244	98.0	288	98.0	0.978
		Present	6	2.4	5	1.7		5	2.0	6	2.0	
Uncinate process deviation.		Absent	249	100.0	294	100.0	–	249	100.0	294	100.0	–
		Present	0	0.0	0	0.0		0	0.0	0	0.0	
Inferior nasal concha		Absent	176	70.7	227	77.2	0.083	192	77.1	228	77.6	0.902
		Present	73	29.3	67	22.8		57	22.9	66	22.4	
Uncinate process pneumatization		Absent	249	100.0	289	98.3	0.039*	248	99.6	288	98.0	0.092
		Present	0	0.0	5	1.7		1	0.4	6	2.0	

*Pearson chi-square test, +Regardless of gender. Only the presence of nasal variation was significantly higher on the right side than on the left. (P = 0.008).

Table 3. Frequency of right and left AMO according to gender.

		Male N (%)	Female N (%)	Total N	P*
Right AMO	Absent	169 (67.9)	226 (76.9)	395	0.019*
	Present	80 (32.1)	68 (23.1)	148	
Left AMO	Absent	174 (69.9)	231 (78.6)	405	0.020*
	Present	75 (30.1)	63 (21.4)	138	

*Pearson chi-square test.

Table 4. Frequency of right and left AMO according to the presence of right and left sinus pathology and nasal variation.

			AMO Presence		
			Absent	Present	P*
Sinus pathology	Right	Absent	130	44	0.479
		Present	265	104	
	Left	Absent	157	34	**0.003**
		Present	248	104	
Nasal variation	Right	Absent	139	53	0.893
		Present	256	95	
	Left	Absent	167	63	0.364
		Present	238	75	

*Pearson chi-square test.

Table 5. Frequency of right and left AMO according to age groups.

		Age groups										
		18–24		25–34		35–44		4554		≥ 55		
		n	%	n	%	n	%	n	%	n	%	P*
Right AMO	Absent	60	72.3	51	69.9	74	69.2	109	73.6	101	76.5	0.733
	Present	23	27.7	22	30.1	33	30.8	39	26.4	31	23.5	
Left AMO	Absent	60	72.3	52	71.2	81	75.7	116	78.4	96	72.7	0.718
	Present	23	27.7	21	28.8	26	24.3	32	21.6	36	27.3	

*Pearson chi-square test.

Table 6. Right and left AMO frequency according to right and left posterior dentition status.

		Posterior dentition status						P*
		Dentate		Partial edentulous		Edentulous		
		n	%	n	%	n	%	
Right AMO	Absent	181	71.8	105	73.4	109	73.6	0.904
	Present	71	28.2	38	26.6	39	26.4	
Left AMO	Absent	188	74.6	114	75.0	103	74.1	0.985
	Present	64	25.4	38	25.0	36	25.9	

*Pearson chi-square test.

Table 7. Distribution of AMO localization according to gender.

		Gender					
		Male		Female			
		n	%	n	%	Total n	P*
Right AMO localization	Upper	16	20.0	17	25.0	33	0.466
	Middle	64	80.0	51	75.0	115	
Left AMO localization	Upper	23	30.7	20	31.7	43	0.892
	Middle	52	69.3	43	68.3	95	

*Pearson chi-square test.

Table 8. Relationship between right and left AMO localization and presence of right and left sinus pathology

		Right/Left Sinus Pathology				Total	
		Absent		Present			
		n	%	n	%	n	P*
Right AMO localization	Upper	8	18.2	25	24.0	33	0.434
	Middle	36	81.8	79	76.0	115	
Left AMO localization	Upper	9	26.5	34	32.7	43	0.497
	Middle	25	73.5	70	67.3	95	

*Pearson chi-square test.

Table 9. Descriptive values of right and left AMO diameter according to gender

	Gender	N	Mean	Standard Deviation	P**
Right AMO diameter	Total		1.0083*	1.8300	
	Male	249	1.24	2.01	**0.010**
	Female	294	0.81	1.64	
Left AMO diameter	Total		0.9589*	1.7973	
	Male	249	1.14	1.92	**0.021**
	Female	294	0.80	1.67	

*No significant difference between the diameter of right and left AMO. P = 0.466. Wilcoxon sign test

**Mann-Whitney U test.

Table 10. Descriptive values of right and left AMO diameter according to age groups.

	Age groups	n	Mean	Standard deviation	Percentages 25th	Median	75th	P*
Right AMO diameter	18–24	83	1.03	1.87	0	0	2.10	0.841
	25–34	73	0.97	1.60	0	0	2.10	
	35–44	107	1.10	1.89	0	0	2.10	
	45–54	148	1.05	1.91	0	0	2.00	
	≥ 55	132	.90	1.81	0	0	0	
Left AMO diameter	18–24	83	1.05	1.92	0	0	2.00	0.741
	25–34	73	1.16	2.03	0	0	2.50	
	35–44	107	0.96	1.81	0	0	0	
	45–54	148	0.81	1.66	0	0	0	
	≥ 55	132	0.96	1.72	0	0	2.08	

*Kruskal-Wallis Test.

Table 11. Relationship between sinus pathology and AMO diameter.

	Sinus Pathology	N	Mean	Standard Deviation	P*
Right AMO diameter	Absent	174	0.90	1.67	0.469
	Present	369	1.06	1.90	
Left AMO diameter	Absent	191	0.72	1.67	**0.006**
	Present	352	1.09	1.85	

*Mann-Whitney U test.

Comparison of non-parametric AMO diameter by the presence of sinus pathology with Mann-Whitney U test.

Table 12. Distribution of patients with nasal septum deviation and AMO on one side (on one side or the opposite side).

AMO		Nasal Septum deviation			Total	P*
		Absent	Right	Left		
Right	Absent	166_a	122_a	107_a	395	0.373
	Present	65_a	37_a	46_a	148	
Left	Absent	170_a	116_a	119_a	405	0.558
	Present	61_a	43_a	34_a	138	

*Pearson chi-square test.

Figure 1A. Left AMO diameter (white line). **B.** Presence of right AMO (white arrow).

Figure 2A. Upper AMO localization. **B.** Middle AMO localization. **C.** Lower AMO localization.

Supplementary Material. Statistical results.

		Count	Column N %
Gender	Male	249	45.9%
	Female	294	54.1%
Age groups	18–24	83	15.3%
	25–34	73	13.4%
	35–44	107	19.7%
	45–54	148	27.3%
	≥ 55	132	24.3%
Right AMO	0	395	72.7%
	1	148	27.3%
Left AMO	0	405	74.6%
	1	138	25.4%
Right AMO localization	0	395	72.7%
	1	33	6.1%
	2	115	21.2%
Left AMO localization	0	405	74.6%
	1	43	7.9%
	2	95	17.5%
Right posterior dentition	0	252	46.4%
	1	143	26.3%
	2	148	27.3%
Left posterior dentition	0	252	46.4%
	1	152	28.0%
	2	139	25.6%
Nasal septum deviation	0	231	42.5%
	1	159	29.3%
	2	153	28.2%
Right sinüs pathology present_absent	0	174	32.0%
	1	369	68.0%
Right sinüs pathology	0	174	32.0%
	1	39	7.2%
	2	32	5.9%
	3	38	7.0%
	4	8	1.5%
	5	6	1.1%
	6	13	2.4%
	18	30	5.5%
	28	24	4.4%
	38	38	7.0%
	48	6	1.1%

	68	7	1.3%
	78	3	0.6%
Uniformmucosalthickening_right	0	474	87.3%
	1	69	12.7%
Polipoidmucosalthickening_right	0	487	89.7%
	1	56	10.3%
Irregularmucosalthickening_right	0	467	86.0%
	1	76	14.0%
Circumferentialmucosalthickening_right	0	529	97.4%
	1	14	2.6%
Totalopacification_right	0	537	98.9%
	1	6	1.1%
MucusRetentionCyst_right	0	523	96.3%
	1	20	3.7%
Air fluid leveling_ right	0	543	100.0%
Left sinus pathology present_absent	0	191	35.2%
	1	352	64.8%
Left sinus pathology	0	191	35.2%
	1	43	7.9%
	2	26	4.8%
	3	44	8.1%
	4	8	1.5%
	5	2	0.4%
	6	12	2.2%
	7	1	0.2%
	8	122	22.5%
	18	24	4.4%
	28	26	4.8%
	38	37	6.8%
	48	2	0.4%
	58	2	0.4%
	68	3	0.6%
Uniformmucosalthickening_left	0	476	87.7%
	1	67	12.3%
Polipoidmucosalthickening_left	0	491	90.4%
	1	52	9.6%
Irregularmucosalthickening_left	0	462	85.1%
	1	81	14.9%
Circumferentialmucosalthickening_left	0	533	98.2%
	1	10	1.8%

Totalopacification_left	0	539	99.3%
	1	4	0.7%
MucusRetentionCyst_left	0	528	97.2%
	1	15	2.8%
Air fluid leveling_left	0	542	99.8%
	1	1	0.2%
Right nasal variation present_absent	0	192	35.4%
	1	351	64.6%
Right nasal variation	0	192	35.4%
	1	40	7.4%
	2	122	22.5%
	3	6	1.1%
	5	82	15.1%
	12	35	6.4%
	13	3	0.6%
	15	11	2.0%
	16	1	0.2%
	23	1	0.2%
	25	34	6.3%
	26	1	0.2%
	56	2	0.4%
	123	1	0.2%
	125	10	1.8%
	126	1	0.2%
	1235	1	0.2%
HallerCells_right	0	440	81.0%
	1	103	19.0%
Concha Bullosa_right	0	337	62.1%
	1	206	37.9%
Paradox Concha_right	0	532	98.0%
	1	11	2.0%
Uncinate processdeviation_right	0	543	100.0%
Inferiornasalconchahypertrophy_right	0	403	74.2%
	1	140	25.8%
Uncinateprocesspneumatization_right	0	538	99.1%
	1	5	0.9%
Left nasal variation present_absent	0	230	42.4%
	1	313	57.6%
Left nasal variation	0	230	42.4%
	1	24	4.4%
	2	117	21.6%

	3	3	0.6%
	5	52	9.6%
	6	2	0.4%
	12	37	6.8%
	13	1	0.2%
	15	12	2.2%
	16	1	0.2%
	25	39	7.2%
	35	4	0.7%
	123	1	0.2%
	125	13	2.4%
	126	3	0.6%
	235	2	0.4%
	1256	1	0.2%
HallerCells_left	0	450	82.9%
	1	93	17.1%
Concha Bullosa_left	0	330	60.8%
	1	213	39.2%
Paradox Concha_left	0	532	98.0%
	1	11	2.0%
Uncinateprocessdeviation_left	0	543	100.0%
Inferiornasalconchahypertrophy_left	0	420	77.3%
	1	123	22.7%
Uncinateprocesspneumatization_left	0	536	98.7%
	1	7	1.3%

Descriptives

			Statistic	Std. Error
age	Mean		43.44	0.620
	95% Confidence Interval for Mean	Lower Bound	42.22	
		Upper Bound	44.66	
	5% Trimmed Mean		43.33	
	Median		45.00	
	Variance		208.723	
	Std. Deviation		14.447	
	Minimum		15	
	Maximum		78	
	Range		63	
	Interquartile Range		22	
	Skewness		–0.078	0.105
	Kurtosis		–0.790	0.209

Right AMO diameter	Mean		1.0083	0.07854
	95% Confidence Interval for Mean	Lower Bound	0.8540	
		Upper Bound	1.1626	
	5% Trimmed Mean		0.7866	
	Median		0.0000	
	Variance		3.349	
	Std. Deviation		1.83008	
	Minimum		0.00	
	Maximum		10.00	
	Range		10.00	
	Interquartile Range		2.00	
	Skewness		1.750	0.105
	Kurtosis		2.442	0.209
Left AMO diameter	Mean		0.9589	0.07713
	95% Confidence Interval for Mean	Lower Bound	0.8074	
		Upper Bound	1.1104	
	5% Trimmed Mean		0.7328	
	Median		0.0000	
	Variance		3.230	
	Std. Deviation		1.79732	
	Minimum		0.00	
	Maximum		9.00	
	Range		9.00	
	Interquartile Range		1.50	
	Skewness		1.744	0.105
	Kurtosis		2.095	0.209

Right sinus pathology present_absent * gender

Crosstab

			Gender		
			Male	Female	Total
Right sinus pathology present/absent	0	Count	55	119	174
		% within gender	22.1%	40.5%	32.0%
	1	Count	194	175	369
		% within gender	77.9%	59.5%	68.0%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	20.933[a]	1	0.000		
Continuity Correction[b]	20.097	1	0.000		
Likelihood Ratio	21.347	1	0.000		
Fisher's Exact Test				0.000	0.000
Linear-by-Linear Association	20.894	1	0.000		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 79.79.

[b]Computed only for a 2 × 2 table.

Uniformmucosalthickening_right * gender

Crosstab

			Gender		
			Male	Female	Total
Uniformmucosalthickness_right	0	Count	214	260	474
		% within gender	85.9%	88.4%	87,3%
	1	Count	35	34	69
		% within gender	14.1%	11.6%	12,7%
Total		Count	249	294	543
		% within gender	100,0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.755[a]	1	0.385		
Continuity Correction[b]	0.547	1	0.460		
Likelihood Ratio	0.752	1	0.386		
Fisher's Exact Test				0.438	0.230
Linear-by-Linear Association	0.753	1	0.385		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 31.64.

[b]Computed only for a 2 × 2 table.

Polipoidmucosalthickening_right* gender

Crosstab

			Gender		
			Male	Female	Total
Polipoidmucosalthickness_right	0	Count	215	272	487
		% within gender	86.3%	92.5%	89.7%
	1	Count	34	22	56
		% within gender	13.7%	7.5%	10.3%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.552[a]	1	0.018		
Continuity Correction[b]	4.905	1	0.027		
Likelihood Ratio	5.545	1	0.019		
Fisher's Exact Test				0.023	0.013
Linear-by-Linear Association	5.542	1	0.019		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 25.68.

[b]Computed only for a 2 × 2 table.

Irregularmucosalthickening_right * gender

Crosstab

			Cinsiyet		
			Erkek	Kadın	Total
Irregularmucosalthickness_sağ	0	Count	210	257	467
		% within gender	84.3%	87.4%	86.0%
	1	Count	39	37	76
		% within gender	15.7%	12.6%	14.0%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.061[a]	1	0.303		
Continuity Correction[b]	.821	1	0.365		
Likelihood Ratio	1.057	1	0.304		
Fisher's Exact Test				0.322	0.182
Linear-by-Linear Association	1.059	1	0.303		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 34.85.

[b]Computed only for a 2 × 2 table.

Circumferentialmucosalthickening_right * gender

Crosstab

			Gender		
			Male	Female	Total
Circumferentialmucosalthickening_right	0	Count	241	288	529
		% within gender	96.8%	98.0%	97.4%
	1	Count	8	6	14
		% within gender	3.2%	2.0%	2.6%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.737[a]	1	0.391		
Continuity Correction[b]	0.345	1	0.557		
Likelihood Ratio	0.734	1	0.391		
Fisher's Exact Test				0.426	0.278
Linear-by-Linear Association	0.736	1	0.391		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.42.

[b]Computed only for a 2 × 2 table.

Totalopacification_right* gender

Crosstab

			Gender		
			Male	Female	Total
Total opacification_right	0	Count	246	291	537
		% within gender	98.8%	99.0%	98.9%
	1	Count	3	3	6
		% within gender	1.2%	1.0%	1.1%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.042[a]	1	0.838		
Continuity Correction[b]	0.000	1	1.000		
Likelihood Ratio	0.042	1	0.838		
Fisher's Exact Test				1.000	0.576
Linear-by-Linear Association	0.042	1	0.838		
N of Valid Cases	543				

[a]2 cells (50.0%) have expected count less than 5. The minimum expected count is 2.75.

[b]Computed only for a 2 × 2 table

MucusRetentionCyst_right* gender

Crosstab

			Gender		
			Male	Female	Total
MucusRetentionCyst_right	0	Count	234	289	523
		% within cinsiyet	94.0%	98.3%	96.3%
	1	Count	15	5	20
		% within cinsiyet	6.0%	1.7%	3.7%
Total		Count	249	294	543
		% within cinsiyet	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	7.103[a]	1	0.008		
Continuity Correction[b]	5.937	1	0.015		
Likelihood Ratio	7.294	1	0.007		
Fisher's Exact Test				0.010	0.007
Linear-by-Linear Association	7.090	1	0.008		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.17.

[b]Computed only for a 2 × 2 table.

Air fluid leveling_right * gender

Crosstab

			Gender		
			Male	Female	Total
Air fluid leveling_right	0	Count	249	294	543
		% within gender	100.0%	100.0%	100.0%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value
Pearson Chi-Square	.[a]
N of Valid Cases	543

[a]No statistics are computed because airfluidleveling_right is a constant.

Right nasal variation present_absent * gender

Crosstab

			Gender		
			Male	Female	Total
Right nasal variation present_absent	0	Count	98	94	192
		% within gender	39.4%	32.0%	35.4%
	1	Count	151	200	351
		% within gender	60.6%	68.0%	64.6%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.217[a]	1	0.073		
Continuity Correction[b]	2.902	1	0.088		
Likelihood Ratio	3.213	1	0.073		
Fisher's Exact Test				0.087	0.044
Linear-by-Linear Association	3.211	1	0.073		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 88.04.

[b]Computed only for a 2 × 2 table.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	32.614[a]	16	0.008
Likelihood Ratio	36.356	16	0.003
Linear-by-Linear Association	0.122	1	0.727
N of Valid Cases	543		

[a]19 cells (55.9%) have expected count less than 5. The minimum expected count is 0.46.

HallerCells_right * gender

Crosstab

			Gender		
			Male	Female	Total
Haller Cells_right	0	Count	219	221	440
		% within gender	88.0%	75.2%	81.0%
	1	Count	30	73	103
		% within gender	12.0%	24.8%	19.0%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	14.330[a]	1	0.000		
Continuity Correction[b]	13.510	1	0.000		
Likelihood Ratio	14.789	1	0.000		
Fisher's Exact Test				0.000	0.000
Linear-by-Linear Association	14.303	1	0.000		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 47.23.

[b]Computed only for a 2 × 2 table.

Concha Bullosa_right * gender

Crosstab

			Gender		
			Male	Female	Total
ConchaBullosa_right	0	Count	169	168	337
		% within gender	67.9%	57.1%	62.1%
	1	Count	80	126	206
		% within gender	32.1%	42.9%	37.9%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.591[a]	1	0.010		
Continuity Correction[b]	6.143	1	0.013		
Likelihood Ratio	6.628	1	0.010		
Fisher's Exact Test				0.013	0.006
Linear-by-Linear Association	6.579	1	0.010		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 94.46.

[b]Computed only for a 2 × 2 table.

ParadoxConcha_right * gender

Crosstab

			Gender		
			Male	Female	Total
Paradox Concha_right	0	Count	243	289	532
		% within gender	97.6%	98.3%	98.0%
	1	Count	6	5	11
		% within gender	2.4%	1.7%	2.0%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.341[a]	1	0.559		
Continuity Correction[b]	0.078	1	0.781		
Likelihood Ratio	0.340	1	0.560		
Fisher's Exact Test				0.762	0.388
Linear-by-Linear Association	0.341	1	0.559		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.04.

[b]Computed only for a 2 × 2 table.

Uncinateprocessdeviation_right * gender

Crosstab

			Gender		
			Male	Female	Total
Uncinateprocessdeviation_right	0	Count	249	294	543
		% within gender	100.0%	100.0%	100.0%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value
Pearson Chi-Square	.[a]
N of Valid Cases	543

[a]No statistics are computed because uncinateprocessdeviation_right is a constant.

Inferiornasalconchahypertrophy_right * gender

Crosstab

			Gender		
			Male	Female	Total
İnferiornasalconchahypertrophy_right	0	Count	176	227	403
		% within gender	70.7%	77.2%	74.2%
	1	Count	73	67	140
		% within gender	29.3%	22.8%	25.8%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.003[a]	1	0.083		
Continuity Correction[b]	2.671	1	0.102		
Likelihood Ratio	2.995	1	0.084		
Fisher's Exact Test				0.094	0.051
Linear-by-Linear Association	2.997	1	0.083		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 64.20.

[b]Computed only for a 2 × 2 table.

Uncinateprocesspneumatization_right* gender

Crosstab

			Gender		
			Male	Female	Total
Uncinateprocesspneumatization_right	0	Count	249	289	538
		% within gender	100.0%	98.3%	99.1%
	1	Count	0	5	5
		% within gender	0.0%	1.7%	0.9%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.274[a]	1	.039		
Continuity Correction[b]	2.613	1	.106		
Likelihood Ratio	6.175	1	.013		
Fisher's Exact Test				.066	.046
Linear-by-Linear Association	4.266	1	.039		
N of Valid Cases	543				

[a]2 cells (50.0%) have expected count less than 5. The minimum expected count is 2.29.

[b]Computed only for a 2 × 2 table.

Left sinus pathology present_absent * gender

Crosstab

			Gender		
			Male	Female	Total
Leftsinuspathology present_absent	0	Count	75	116	191
		% within gender	30.1%	39.5%	35.2%
	1	Count	174	178	352
		% within gender	69.9%	60.5%	64.8%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.153[a]	1	0.023		
Continuity Correction[b]	4.751	1	0.029		
Likelihood Ratio	5.182	1	0.023		
Fisher's Exact Test				0.024	0.014
Linear-by-Linear Association	5.143	1	0.023		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 87.59.

[b]Computed only for a 2 × 2 table.

Uniformmucosalthickening_left * gender

Crosstab

			Gender		
			Male	Female	Total
Uniformmucosalthickening_left	0	Count	216	260	476
		% within gender	86.7%	88.4%	87.7%
	1	Count	33	34	67
		% within gender	13.3%	11.6%	12.3%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.355[a]	1	0.551		
Continuity Correction[b]	0.216	1	0.642		
Likelihood Ratio	0.354	1	0.552		
Fisher's Exact Test				0.601	0.320
Linear-by-Linear Association	0.355	1	0.551		
N of Valid Cases	543				

[a0] cells (0.0%) have expected count less than 5. The minimum expected count is 30.72.

[bComputed] only for a 2 × 2 table.

Polipoidmucosalthickening_left * gender

Crosstab

			Gender		
			Male	Female	Total
Polipoidmucosalthickening_left	0	Count	223	268	491
		% within gender	89.6%	91.2%	90.4%
	1	Count	26	26	52
		% within gender	10.4%	8.8%	9.6%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.398[a]	1	0.528		
Continuity Correction[b]	0.235	1	0.628		
Likelihood Ratio	0.396	1	0.529		
Fisher's Exact Test				0.560	0.313
Linear-by-Linear Association	0.397	1	0.529		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 23.85.

[b]Computed only for a 2 × 2 table.

Irregularmucosalthickening_left * gender

Crosstab

			Gender		
			Male	Female	Total
İrregularmucosalthickening_left	0	Count	203	259	462
		% within gender	81.5%	88.1%	85.1%
	1	Count	46	35	81
		% within gender	18.5%	11.9%	14.9%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.584[a]	1	0.032		
Continuity Correction[b]	4.081	1	0.043		
Likelihood Ratio	4.569	1	0.033		
Fisher's Exact Test				0.040	0.022
Linear-by-Linear Association	4.575	1	0.032		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 37.14.

[b]Computed only for a 2 × 2 table.

Sirkumferansiyalmukozalkalınlaşma_sol * cinsiyet

Crosstab

			Gender		
			Male	Female	Total
Cicumferentialmucosalthickening_left	0	Count	244	289	533
		% within gender	98.0%	98.3%	98.2%
	1	Count	5	5	10
		% within gender	2.0%	1.7%	1.8%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.070[a]	1	0.791		
Continuity Correction[b]	0.000	1	1.000		
Likelihood Ratio	0.070	1	0.791		
Fisher's Exact Test				1.000	0.518
Linear-by-Linear Association	0.070	1	0.791		
N of Valid Cases	543				

[a]1 cells (25.0%) have expected count less than 5. The minimum expected count is 4.59.

[b]Computed only for a 2 × 2 table.

Totalopacification_left * gender

Crosstab

			Gender		
			Male	Female	Total
Totalopacification_left	0	Count	248	291	539
		% within gender	99.6%	99.0%	99.3%
	1	Count	1	3	4
		% within gender	0.4%	1.0%	0.7%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.706[a]	1	0.401		
Continuity Correction[b]	0.113	1	0.736		
Likelihood Ratio	0.747	1	0.387		
Fisher's Exact Test				0.629	0.377
Linear-by-Linear Association	0.705	1	0.401		
N of Valid Cases	543				

[a]2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.83.

[b]Computed only for a 2 × 2 table.

MucusRetentionCyst_left * gender

Crosstab

			Gender		
			Male	Female	Total
MucusRetentionCyst_left	0	Count	243	285	528
		% within gender	97.6%	96.9%	97.2%
	1	Count	6	9	15
		% within gender	2.4%	3.1%	2.8%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.213[a]	1	0.644		
Continuity Correction[b]	0.040	1	0.842		
Likelihood Ratio	0.215	1	0.643		
Fisher's Exact Test				0.795	0.424
Linear-by-Linear Association	.213	1	0.645		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.88.

[b]Computed only for a 2 × 2 table.

Air fluid leveling_left * gender

Crosstab

			Gender		
			Male	Female	Total
Air fluid leveling_left	0	Count	249	293	542
		% within gender	100.0%	99.7%	99.8%
	1	Count	0	1	1
		% within gender	0.0%	0.3%	0.2%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.849[a]	1	0.357		
Continuity Correction[b]	0.000	1	1.000		
Likelihood Ratio	1.229	1	0.268		
Fisher's Exact Test				1.000	0.541
Linear-by-Linear Association	0.847	1	0.357		
N of Valid Cases	543				

[a]2 cells (50.0%) have expected count less than 5. The minimum expected count is 0.46.

[b]Computed only for a 2 × 2 table.

Leftnasalvariationpresent_absent * gender

Crosstab

			Gender		
			Male	Female	Total
Left nasal variation present_absent	0	Count	124	106	230
		% within gender	49.8%	36.1%	42.4%
	1	Count	125	188	313
		% within gender	50.2%	63.9%	57.6%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	10.432[a]	1	0.001		
Continuity Correction[b]	9.876	1	0.002		
Likelihood Ratio	10.444	1	0.001		
Fisher's Exact Test				0.001	0.001
Linear-by-Linear Association	10.412	1	0.001		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 105.47.

[b]Computed only for a 2 × 2 table.

HallerCells_left* gender

Crosstab

			Gender		
			Male	Female	Total
HallerCells_left	0	Count	216	234	450
		% within gender	86.7%	79.6%	82.9%
	1	Count	33	60	93
		% within gender	13.3%	20.4%	17.1%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.863[a]	1	0.027		
Continuity Correction[b]	4.372	1	0.037		
Likelihood Ratio	4.939	1	0.026		
Fisher's Exact Test				0.030	0.018
Linear-by-Linear Association	4.854	1	0.028		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 42.65.

[b]Computed only for a 2 × 2 table.

ConchaBullosa_left* gender

Crosstab

			Gender		
			Male	Female	Total
Concha Bullosa_left	0	Count	174	156	330
		% within gender	69.9%	53.1%	60.8%
	1	Count	75	138	213
		% within gender	30.1%	46.9%	39.2%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	15.996[a]	1	.000		
Continuity Correction[b]	15.298	1	.000		
Likelihood Ratio	16.164	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	15.967	1	.000		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 97.67.

[b]Computed only for a 2 × 2 table.

ParadoxConcha_left* gender

Crosstab

			Gender		
			Male	Female	Total
ParadoxConcha_left	0	Count	244	288	532
		% within gender	98.0%	98.0%	98.0%
	1	Count	5	6	11
		% within gender	2.0%	2.0%	2.0%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.001[a]	1	0.978		
Continuity Correction[b]	0.000	1	1.000		
Likelihood Ratio	0.001	1	0.978		
Fisher's Exact Test				1.000	0.612
Linear-by-Linear Association	0.001	1	0.978		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.04.

[b]Computed only for a 2 × 2 table.

Uncinateprocessdeviation_left * gender

Crosstab

			Gender		
			Male	Female	Total
Uncinateprocessdeviation_left	0	Count	249	294	543
		% within gender	100.0%	100.0%	100.0%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value
Pearson Chi-Square	.[a]
N of Valid Cases	543

[a]No statistics are computed because Uncinateprocessdeviation_left is a constant.

Inferiornasalconchahypertrophy_left * gender

Crosstab

			Gender		
			Male	Female	Total
Inferiornasalconchahypertrophy_left	0	Count	192	228	420
		% within gender	77.1%	77.6%	77.3%
	1	Count	57	66	123
		% within gender	22.9%	22.4%	22.7%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.015[a]	1	0.902		
Continuity Correction[b]	0.000	1	0.984		
Likelihood Ratio	0.015	1	0.902		
Fisher's Exact Test				0.918	0.491
Linear-by-Linear Association	0.015	1	0.902		
N of Valid Cases	543				

[a0] cells (0.0%) have expected count less than 5. The minimum expected count is 56.40.

[bComputed] only for a 2 × 2 table.

Uncinateprocesspneumatization_left * gender

Crosstab

			Gender		
			Male	Female	Total
Uncinateprocesspneumatization_left	0	Count	248	288	536
		% within gender	99.6%	98.0%	98.7%
	1	Count	1	6	7
		% within gender	0.4%	2.0%	1.3%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.847[a]	1	0.092		
Continuity Correction[b]	1.704	1	0.192		
Likelihood Ratio	3.217	1	0.073		
Fisher's Exact Test				0.132	0.093
Linear-by-Linear Association	2.842	1	0.092		
N of Valid Cases	543				

[a]2 cells (50.0%) have expected count less than 5. The minimum expected count is 3.21.

Right AMO * gender

Crosstab

			Gender		
			Male	Female	Total
Right AMO	0	Count	169	226	395
		% within gender	67.9%	76.9%	72.7%
	1	Count	80	68	148
		% within gender	32.1%	23.1%	27.3%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.507[a]	1	0.019		
Continuity Correction[b]	5.062	1	0.024		
Likelihood Ratio	5.495	1	0.019		
Fisher's Exact Test				0.020	0.012
Linear-by-Linear Association	5.497	1	0.019		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 67.87.

[b]Computed only for a 2 × 2 table.

Left AMO * gender

Crosstab

			Gender		
			Male	Female	Total
Left AMO	0	Count	174	231	405
		% within gender	69.9%	78.6%	74.6%
	1	Count	75	63	138
		% within gender	30.1%	21.4%	25.4%
Total		Count	249	294	543
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.373[a]	1	0.020		
Continuity Correction[b]	4.925	1	0.026		
Likelihood Ratio	5.360	1	0.021		
Fisher's Exact Test				0.023	0.013
Linear-by-Linear Association	5.363	1	0.021		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 63.28.

[b]Computed only for a 2 × 2 table.

Right sinus pathology present_absent * Right AMO Crosstabulation

			Right AMO		
			0	1	Total
Right sinus pathology present_absent	0	Count	130	44	174
		% within Right sinus pathology present_absent	74.7%	25.3%	100.0%
	1	Count	265	104	369
		% within Right sinus pathology present_absent	71.8%	28.2%	100.0%
Total		Count	395	148	543
		% within Right sinus pathology present_absent	72.7%	27.3%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.500[a]	1	0.479		
Continuity Correction[b]	0.365	1	0.546		
Likelihood Ratio	0.505	1	0.477		
Fisher's Exact Test				0.536	0.274
Linear-by-Linear Association	0.500	1	0.480		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 47.43.

[b]Computed only for a 2 × 2 table.

Right nasal variation present_absent * Right AMO Crosstabulation

			Right AMO		
			0	1	Total
Right nasal variation present_absent	0	Count	139	53	192
		% within Right nasal variation present_absent	72.4%	27.6%	100.0%
	1	Count	256	95	351
		% within Right nasal variation present_absent	72.9%	27.1%	100.0%
Total		Count	395	148	543
		% within Right nasal variation present_absent	72.7%	27.3%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.018[a]	1	0.893		
Continuity Correction[b]	0.001	1	0.973		
Likelihood Ratio	0.018	1	0.893		
Fisher's Exact Test				0.920	0.485
Linear-by-Linear Association	0.018	1	0.893		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 52.33.

[b]Computed only for a 2 × 2 table.

Left sinus pathology present_absent * Left AMO

Crosstab

			Left AMO		
			0	1	Total
Left sinus pathology present_absent	0	Count	157	34	191
		% within Left sinus pathology present_absent	82.2%	17.8%	100.0%
	1	Count	248	104	352
		% within Left sinus pathology present_absent	70.5%	29.5%	100.0%
Total		Count	405	138	543
		% within Left sinus pathology present_absent	74.6%	25.4%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	9.010[a]	1	0.003		
Continuity Correction[b]	8.401	1	0.004		
Likelihood Ratio	9.373	1	0.002		
Fisher's Exact Test				0.003	0.002
Linear-by-Linear Association	8.993	1	0.003		
N of Valid Cases	543				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 48.54.

[b]Computed only for a 2 × 2 table.

Right AMO * age groups

Crosstab

			Age groups				
			18–24	25–34	35–44	45–54	≥ 55
Right AMO	0	Count	60	51	74	109	101
		% within age groups	72.3%	69.9%	69.2%	73.6%	76.5%
	1	Count	23	22	33	39	31
		% within age groups	27.7%	30.1%	30.8%	26.4%	23.5%
Total		Count	83	73	107	148	132
		% within age groups	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.016[a]	4	.733
Likelihood Ratio	2.022	4	.732
Linear-by-Linear Association	.983	1	.321
N of Valid Cases	543		

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 19.90.

Left AMO * age groups

Crosstab

			Age groups				
			18–24	25–34	35–44	45–54	≥ 55
Left AMO	0	Count	60	52	81	116	96
		% within age groups	72.3%	71.2%	75.7%	78.4%	72.7%
	1	Count	23	21	26	32	36
		% within age groups	27.7%	28.8%	24.3%	21.6%	27.3%
Total		Count	83	73	107	148	132
		% within age groups	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.098[a]	4	0.718
Likelihood Ratio	2.119	4	0.714
Linear-by-Linear Association	0.249	1	0.618
N of Valid Cases	543		

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 18.55.

Right AMO * right posterior dentition Crosstabulation

			Right posterior dentition			
			0	1	2	Total
Right AMO	0	Count	181	105	109	395
		% within right posterior dentition	71.8%	73.4%	73.6%	72.7%
	1	Count	71	38	39	148
		% within right posterior dentition	28.2%	26.6%	26.4%	27.3%
Total		Count	252	143	148	543
		% within right posterior dentition	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	0.202[a]	2	0.904
Likelihood Ratio	0.202	2	0.904
Linear-by-Linear Association	0.177	1	0.674
N of Valid Cases	543		

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 38.98.

Left AMO * left posterior dentition Crosstabulation

			Left posterior dentition			
			0	1	2	Total
Left AMO	0	Count	188	114	103	405
		% within left posterior dentition	74.6%	75.0%	74.1%	74.6%
	1	Count	64	38	36	138
		% within left posterior dentition	25.4%	25.0%	25.9%	25.4%
Total		Count	252	152	139	543
		% within left posterior dentition	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	0.031[a]	2	0.985
Likelihood Ratio	0.031	2	0.985
Linear-by-Linear Association	0.007	1	0.931
N of Valid Cases	543		

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 35.33.

Right AMO localization * gender

Crosstab

			Gender		
			Male	Female	Total
Right AMO localization	1	Count	16	17	33
		% within gender	20.0%	25.0%	22.3%
	2	Count	64	51	115
		% within gender	80.0%	75.0%	77.7%
Total		Count	80	68	148
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.530[a]	1	0.466		
Continuity Correction[b]	0.281	1	0.596		
Likelihood Ratio	0.529	1	0.467		
Fisher's Exact Test				0.553	0.297
Linear-by-Linear Association	0.527	1	0.468		
N of Valid Cases	148				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 15.16.

[b]Computed only for a 2 × 2 table.

Left AMO localization * gender

Crosstab

			Gender		
			Male	Female	Total
Left AMO localization	1	Count	23	20	43
		% within gender	30.7%	31.7%	31.2%
	2	Count	52	43	95
		% within gender	69.3%	68.3%	68.8%
Total		Count	75	63	138
		% within gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.019[a]	1	0.892		
Continuity Correction[b]	0.000	1	1.000		
Likelihood Ratio	0.019	1	0.892		
Fisher's Exact Test				1.000	0.518
Linear-by-Linear Association	0.018	1	0.892		
N of Valid Cases	138				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 19.63.

[b]Computed only for a 2 × 2 table.

```
CROSSTABS
  /TABLES=rightAMOlocalization BY rightsinuspathologypresent_absent
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ
  /CELLS=COUNT COLUMN  /COUNT ROUND CELL
```

Crosstabs

Notes

Output Created		28-AUG-2024 01:47:31
Comments		
Input	Data	D:\Hard Disk Kopyaları\HD 2024\statistical analysis\Nurşat Diş\veri Nurşat.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	543
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each table are based on all the cases with valid data in the specified range(s) for all variables in each table.
Syntax		CROSSTABS /TABLES=rightAMOlocalization BY rightsinuspathologypresent_absent /FORMAT=AVALUE TABLES /STATISTICS=CHISQ /CELLS=COUNT COLUMN /COUNT ROUND CELL.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.01
	Dimensions Requested	2
	Cells Available	524245

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	n	Percent	n	Percent	n	Percent
Right AMOlocalization * rightsinuspathology present_absent	148	27.3%	395	72.7%	543	100.0%

Right AMOlocalization * rightsinuspathologypresent_absent Crosstabulation

			Rightsinuspathology present_absent		
			0	1	Total
Right AMO localization	1	Count	8	25	33
		% within rightsinuspathologypresent_absent	18.2%	24.0%	22.3%
	2	Count	36	79	115
		% within rightsinuspathologypresent_absent	81.8%	76.0%	77.7%
Total		Count	44	104	148
		% within rightsinuspathologypresent_absent	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.612[a]	1	0.434		
Continuity Correction[b]	0.321	1	0.571		
Likelihood Ratio	0.630	1	0.427		
Fisher's Exact Test				0.520	0.290
Linear-by-Linear Association	0.608	1	0.436		
N of Valid Cases	148				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.81.

[b]Computed only for a 2 × 2 table.

Left AMO localization* leftsinuspathologypresent_absent Crosstabulation

			Leftsinuspathology present_absent		
			0	1	Total
Left AMO localization	1	Count	9	34	43
		% within leftsinuspathologypresent_absent	26.5%	32.7%	31.2%
	2	Count	25	70	95
		% within leftsinuspathologypresent_absent	73.5%	67.3%	68.8%
Total		Count	34	104	138
		% within leftsinuspathologypresent_absent	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.462[a]	1	0.497		
Continuity Correction[b]	0.218	1	0.641		
Likelihood Ratio	0.472	1	0.492		
Fisher's Exact Test				0.531	0.325
Linear-by-Linear Association	0.459	1	0.498		
N of Valid Cases	138				

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.59.

[b]Computed only for a 2 × 2 table.

Mann-Whitney Test

Ranks

	cinsiyet	n	Mean Rank	Sum of Ranks
Right AMO diameter	Male	249	286.81	71415.00
	Female	294	259.46	76281.00
	Total	543		
	Male	249	284.92	70944.00

Left AMO diameter	Female	294	261.06	76752.00
	Total	543		

Test Statistics[a]

	rightAMOdiameter	leftAMOdiameter
Mann-Whitney U	32916.000	33387.000
Wilcoxon W	76281.000	76752.000
Z	–2.581	–2.308
Asymp. Sig. (2-tailed)	0.010	0.021

[a]Grouping Variable: gender

Wilcoxon Signed Ranks Test

Ranks

		n	Mean Rank	Sum of Ranks
leftAMOdiameter - rightAMOdiameter	Negative Ranks	101[a]	99.29	10028.50
	Positive Ranks	93[b]	95.55	8886.50
	Ties	349[c]		
	Total	543		

[a]leftAMOdiameter < rightAMOdiameter

[b]leftAMOdiameter > rightAMOdiameter

[c]leftAMOdiameter= rightAMOdiameter

Test Statistics[a]

	leftAMOdiameter - rightAMOdiameter
Z	–0.730[b]
Asymp. Sig. (2-tailed)	0.466

[a]Wilcoxon Signed Ranks Test

[b]Based on positive ranks.

Descriptives

Age groups				Statistic	Std. Error
18–24	Right AMOdiameter	Mean		1.0308	0.20497
		95% Confidence Interval for Mean	Lower Bound	0.6231	
			Upper Bound	1.4386	
		5% Trimmed Mean		0.8052	
		Median		0.0000	
		Variance		3.487	
		Std. Deviation		1.86738	
		Minimum		0.00	
		Maximum		7.80	
		Range		7.80	
		Interquartile Range		2.10	
		Skewness		1.721	0.264
		Kurtosis		2.077	0.523
	leftAMOdiameter	Mean		1.0531	0.21120
		95% Confidence Interval for Mean	Lower Bound	0.6330	
			Upper Bound	1.4733	
		5% Trimmed Mean		0.8058	
		Median		0.0000	
		Variance		3.702	
		Std. Deviation		1.92412	
		Minimum		0.00	
		Maximum		7.00	
		Range		7.00	
		Interquartile Range		2.00	
		Skewness		1.739	0.264
		Kurtosis		2.002	0.523
25–34	rightAMOdiameter	Mean		0.9679	0.18745
		95% Confidence Interval for Mean	Lower Bound	0.5943	
			Upper Bound	1.3416	
		5% Trimmed Mean		0.7926	
		Median		0.0000	
		Variance		2.565	
		Std. Deviation		1.60156	
		Minimum		0.00	
		Maximum		6.00	
		Range		6.00	
		Interquartile Range		2.10	
		Skewness		1.390	0.281
		Kurtosis		0.731	0.555

	leftAMOdiameter	Mean		1.1603	0.23799
		95% Confidence Interval for Mean	Lower Bound	0.6859	
			Upper Bound	1.6347	
		5% Trimmed Mean		0.9162	
		Median		0.0000	
		Variance		4.135	
		Std. Deviation		2.03338	
		Minimum		0.00	
		Maximum		7.80	
		Range		7.80	
		Interquartile Range		2.50	
		Skewness		1.596	0.281
		Kurtosis		1.494	0.555
35–44	rightAMOdiameter	Mean		1.1014	0.18227
		95% Confidence Interval for Mean	Lower Bound	0.7400	
			Upper Bound	1.4628	
		5% Trimmed Mean		0.8858	
		Median		0.0000	
		Variance		3.555	
		Std. Deviation		1.88543	
		Minimum		0.00	
		Maximum		9.00	
		Range		9.00	
		Interquartile Range		2.10	
		Skewness		1.695	0.234
		Kurtosis		2.433	0.463
	leftAMOdiameter	Mean		0.9641	0.17519
		95% Confidence Interval for Mean	Lower Bound	0.6168	
			Upper Bound	1.3114	
		5% Trimmed Mean		0.7592	
		Median		0.0000	
		Variance		3.284	
		Std. Deviation		1.81214	
		Minimum		0.00	
		Maximum		6.90	
		Range		6.90	
		Interquartile Range		0.00	
		Skewness		1.590	0.234
		Kurtosis		1.098	0.463
45–54	rightAMOdiameter	Mean		1.0453	0.15676
			Lower Bound	0.7355	

		95% Confidence Interval for Mean	Upper Bound	1.3551	
		5% Trimmed Mean		0.8258	
		Median		0.0000	
		Variance		3.637	
		Std. Deviation		1.90711	
		Minimum		0.00	
		Maximum		8.00	
		Range		8.00	
		Interquartile Range		2.00	
		Skewness		1.617	0.199
		Kurtosis		1.417	0.396
	leftAMOdiameter	Mean		0.8061	0.13652
		95% Confidence Interval for Mean	Lower Bound	0.5363	
			Upper Bound	1.0759	
		5% Trimmed Mean		0.5858	
		Median		0.0000	
		Variance		2.758	
		Std. Deviation		1.66085	
		Minimum		0.00	
		Maximum		7.00	
		Range		7.00	
		Interquartile Range		0.00	
		Skewness		1.917	0.199
		Kurtosis		2.524	0.396
≥ 55	rightAMOdiameter	Mean		0.8995	0.15775
		95% Confidence Interval for Mean	Lower Bound	0.5875	
			Upper Bound	1.2116	
		5% Trimmed Mean		0.6553	
		Median		0.0000	
		Variance		3.285	
		Std. Deviation		1.81245	
		Minimum		0.00	
		Maximum		10.00	
		Range		10.00	
		Interquartile Range		0.00	
		Skewness		2.170	0.211
		Kurtosis		5.041	0.419
	leftAMOdiameter	Mean		0.9555	0.14996
		95% Confidence Interval for Mean	Lower Bound	0.6589	
			Upper Bound	1.2522	

	5% Trimmed Mean	0.7462	
	Median	0.0000	
	Variance	2.968	
	Std. Deviation	1.72287	
	Minimum	0.00	
	Maximum	9.00	
	Range	9.00	
	Interquartile Range	2.08	
	Skewness	1.817	0.211
	Kurtosis	3.275	0.419

Kruskal-Wallis Test

Ranks

	Age groups	n	Mean Rank
rightAMOdiameter	18–24	83	273.34
	25–34	73	275.88
	35–44	107	280.39
	45–54	148	272.03
	≥ 55	132	262.19
	Total	543	
leftAMOdiameter	18–24	83	278.01
	25–34	73	282.86
	35–44	107	271.14
	45–54	148	261.64
	≥ 55	132	274.53
	Total	543	

Test Statistics[a.b]

	rightAMOdiameter	leftAMOdiameter
Kruskal-Wallis H	1.420	1.974
df	4	4
Asymp. Sig.	0.841	0.741

[a]Kruskal Wallis Test

[b]Grouping Variable: age groups

Right AMO * nasal septum deviation

Crosstab

			Nasal septum deviation			
			0	1	2	Total
Right AMO	0	Count	166	122	107	395
		% within nasal septum dev.	71.9%	76.7%	69.9%	72.7%
	1	Count	65	37	46	148
		% within nasal septum dev.	28.1%	23.3%	30.1%	27.3%
Total		Count	231	159	153	543
		% within nasal septum dev.	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.974[a]	2	0.373
Likelihood Ratio	2.003	2	0.367
Linear-by-Linear Association	.069	1	0.793
N of Valid Cases	543		

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 41.70.

Left AMO * nasal septum deviation

Crosstab

			Nasal septum deviation			
			0	1	2	Total
Left AMO	0	Count	170	116	119	405
		% within nasal septum dev.	73.6%	73.0%	77.8%	74.6%
	1	Count	61	43	34	138
		% within nasal septum dev.	26.4%	27.0%	22.2%	25.4%
Total		Count	231	159	153	543
		% within nasal septum dev.	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.165[a]	2	0.558
Likelihood Ratio	1.186	2	0.553
Linear-by-Linear Association	0.728	1	0.394
N of Valid Cases	543		

[a]0 cells (0.0%) have expected count less than 5. The minimum expected count is 38.88.

Supplementary Table 1. Frequency of right and left AMO according to the presence of each right and left sinus pathology and each nasal variation.

			AMO Presence		
			Absent	Present	*p*
Uniform mucosal thickening	Right	Absent	348	126	0.355
		Present	47	22	
	Left	Absent	355	121	0.993
		Present	50	17	
Polypoid-type mucosal thickening	Right	Absent	359	128	0.133
		Present	36	20	
	Left	Absent	366	125	0.942
		Present	39	13	
Irregular-type mucosal thickening	Right	Absent	337	130	0.451
		Present	58	18	
	Left	Absent	350	112	0.134
		Present	55	26	
Circumferential mucosal thickening	Right	Absent	383	146	0.269
		Present	12	2	
	Left	Absent	397	136	0.691
		Present	8	2	
Total opacification	Right	Absent	390	147	0.558
		Present	265	104	
	Left	Absent	402	137	0.985
		Present	3	1	
Mucus Retention Cyst	Right	Absent	381	142	0.779
		Present	14	6	
	Left	Absent	398	130	**0.012***
		Present	7	8	
Air-fluid leveling	Right	Absent	395	148	---
		Present	-	-	
	Left	Absent	405	137	0.086
		Present	-	1	
Haller cells	Right	Absent	328	112	0.051
		Present	67	36	
	Left	Absent	336	114	0.924
		Present	69	24	
Concha Bullosa	Right	Absent	241	96	0.410
		Present	154	52	
	Left	Absent	241	89	0.300
		Present	164	49	

Paradox Concha	Right	Absent	388	144	0.493
		Present	7	4	
	Left	Absent	396	136	0.578
		Present	9	2	
Uncinate process deviation,	Right	Absent	395	148	----
		Present	-	-	
	Left	Absent	405	138	---
		Present	-	-	
Inferior nasal concha hypertrophy	Right	Absent	290	113	0.487
		Present	105	35	
	Left	Absent	307	113	0.140
		Present	98	25	
Uncinate process pneumatization	Right	Absent	392	146	0.520
		Present	3	2	
	Left	Absent	399	137	0.496
		Present	6	1	

*: Pearson chi-square test