

## Anthropological Characterization of the Nasal Region in Cranial Series from Medieval Necropolis in Drastar (9<sup>th</sup>-15<sup>th</sup> c. AD)

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The aim of this investigation is to characterize the peculiarities in nasal region of the facial part of cranium in medieval population from Drastar, based on metric and scopic data for size, form and projection of nasal bones, nasal aperture and nasal' base. This craniological investigation was made on 69 crania of adult individuals (39 males and 30 females). The results show that the medieval population from Drastar was distinguished by a large nose size, as the nasal bones are strongly projected, symmetrical, long and wide. The form of the bone nose in profile is mainly straight and convex. In intersexual aspect was observed a tendency for *os nasale* in male crania to be relatively more high (convex) and narrower, compared to female crania.

*Key words:* nasal region, *os nasale*, *apertura piriformis*.

### Introduction

The nasal region is one of the most characteristic parts of the human face, determining its aspect. The metric and scopic characterizations of the nasal region are important share of the data, necessary for the biological reconstruction of the investigated populations concerning the bone material from archaeological excavations [6].

Characterization of the nasal region complements the morphological notion for the facial part of cranium in buried individuals. The comparatively investigations of bone remains from different ages and areas gives an idea for specific morphological peculiarities of the human face.

The aim is to characterize the peculiarities in nasal region of the cranium's facial part in medieval population from Drastar, on the basis of metric and scopic data for the size and form, the projection of nasal bones, nasal aperture and nasal's base.



*a*



*b*

Fig. 1. Male cranium of adult individual



*c*



*d*

Fig. 2. Male cranium of adult individual

## Material and Methods

The craniological investigation was made on 69 crania of adult individuals (39 male and 38 female) from medieval necropolis in Silistra, dated 9<sup>th</sup> – 15<sup>th</sup> century AD (Figs. 1a, b; 2a, b) [5].

The sex of the investigated cranial series was determined on the basis of metric and scopic features by the methods of R. Martin — K. Saller; V. Pashkova; B. Nikityuk [2, 9, 8].

The physiological age of the individuals was determined by the obliteration's degree (G. Olivier) and by the degree of attrition of the chewing surfaces of the teeth (M. Gerasimov) [3, 7].

The metric characterization of the nasal region was made by the classic methods of R. Martin — K. Saller and B. Alekseev — G. Debetz [2, 4]. Nine linear and three angular features were measured and four indices were calculated. Five scopic features were investigated and described taking into consideration the corresponding grades and scales [7, 1, 2].

The data in this investigation were computed by variation and alternative analysis. The sexual differences in metric features were estimated through the U-test of Mann — Whitney.

Describing the results, the categories from the different features are defined according to theirs rubrics by R. Martin — K. Saller [2].

## Results and Discussion

### *Metric characterization*

The biostatistical results from this study are given in Table 1

Table 1. Biostatistical characterization of measurements and indices of the nasal region in male and female crania (osteological data)

No by Martin	Measurements and indices	Males						Females						U - value
		n	mean	min	max	SD	S <sub>x</sub>	n	mean	min	max	SD	S <sub>x</sub>	
54	Breadth of aperture piriformis	37	24.80	21.00	30.00	2.29	0.38	30	23.25	20.00	27.00	2.08	0.38	0.012*
55	Height of aperture piriformis	28	53.93	49.00	61.00	2.93	0.55	27	51.06	43.00	60.00	4.59	0.88	0.020*
49a	Dacrial height	20	22.88	20.00	27.00	2.30	0.52	15	21.23	18.00	25.00	2.08	0.54	0.053
50	Maxillo-frontal breadth	32	24.70	20.00	32.00	2.57	0.45	21	22.62	19.00	27.00	2.22	0.48	0.008*
57	Least breadth of os nasale	26	10.12	8.00	13.00	1.50	0.30	17	10.56	8.00	15.00	1.81	0.44	0.679
57 <sub>1</sub>	Greatest breadth of os nasale	17	18.18	11.00	25.00	2.96	0.72	12	17.13	14.00	20.00	1.69	0.49	0.160
49	Lacrimal breadth	4	23.50	20.00	27.00	2.89	1.44	8	24.25	20.00	27.00	2.36	0.83	0.808
DS	Dacrial height	20	12.26	10.00	15.00	1.22	0.27	14	11.75	9.00	19.50	2.58	0.69	0.023*
SS	Simotic height	28	5.96	3.00	8.00	1.33	0.25	17	5.21	40.00	70.00	1.05	0.25	0.042*
73	Nose' profile angle	21	86.10	79.00	98.00	4.75	1.04	16	84.63	78.00	90.00	3.58	0.89	0.534
75	Profile angle of os nasale	10	53.40	44.00	65.00	6.13	1.94	9	54.67	43.00	73.00	8.62	2.87	0.905
75 <sub>1</sub>	Angle of projection of os nasale	8	31.63	26	38	3.74	1.32	8	31.50	25	42	5.76	2.04	0.792
54:55	Nasal index	27	46.38	37.07	57.69	4.74	0.91	24	46.21	35.71	55.81	5.43	1.11	-
57:57 <sub>1</sub>	Transversal index of os nasale	13	54.94	40.00	66.67	7.76	2.15	12	63.45	50.00	85.71	10.43	3.01	-
DS:49a	Dacrial index	20	55.70	42.31	68.18	7.62	1.70	14	55.01	45.45	84.78	10.62	2.74	-
SS:57	Simotic index	26	58.00	34.78	77.78	12.62	2.47	16	49.73	33.33	63.64	8.62	2.15	-

\* Statistically significant differences at  $P < 0,05$ .

The least breadth of os nasale (57<sub>1</sub>) and lacrimal breadth (49) are with greater mean values in the female crania from all measured breadth-wise features, as the difference is not statistically significant. All the rest breadth-wise features are greater in the male crania, as statistically significant differences (at  $p < 0,05$ ) display only the breadth of apertura piriformis (54) and the maxillo-frontal breadth (50).

In the male crania all measured height-wise feature are with greater mean value, as all of them show statistically significant intersexual differences at  $p < 0,05$ .

The nose' profile angle (73) is greater in the male crania as in both sexes predominate the crania with angle from the categories "orthognath" and "mesognath". The angle of projection of os nasale (75<sub>1</sub>) is with almost equal mean values in both sexes, as the priority is for the male crania, while the profile angle of os nasale (75) is with greater value in the female ones. This expresses tendency, the nasal bones in female crania to be relatively more projecting.

Index characterization for form and proportionately

The nasal index (54:55) is an indicator for the relatively breadth towards height of apertura piriformis. The mean values in both sexes are almost equal, with small priority for male crania.

The transversal index of os nasale (57:57<sub>1</sub>), indicates the relatively breadth of the nasal bones. The vastly less mean value in the male crania shows tendency for relatively more narrow os nasale at the male crania in comparison with female ones.

The dacrial index (DS:49a) gives idea for the relatively projective height towards breadth of the nasal' back. In the male crania this index has a greater value, which shows that the nasal' back in them is relatively more high (convex) and narrow, compared to female crania.

The simotic index (SS:57) is an indicator for the relatively projective height towards breadth of os nasale in their most narrow part. The vastly greater mean value in male crania express a tendency for nasal bone in their most narrow part to be relatively more high (convex) and narrow, compared with female crania.

### Scopic characterization

The results from this study are given in Table 2

Table 2. Distribution of the scopic features in both sexes (by total number and per cents)

Scopic fetures	Male		Female	
	n	%	n	%
<b>1. Form of the bone nose in profile</b>	<b>23</b>	<b>100</b>	<b>14</b>	<b>100</b>
straight	11	47.82	7	50
convex	10	43.48	4	28.57
concave	2	8.7	2	14.29
undulate	0	0	1	7.14
<b>2. Os nasale</b>	<b>25</b>	<b>100</b>	<b>14</b>	<b>100</b>
symmetrical, long, wide	13	52	7	50
symmetrical, long, narrow	2	8	1	7.14
symmetrical, short, wide	0	0	3	21.44
symmetrical, short, narrow	0	0	0	0
asymmetrical, long, wide	7	28	1	7.14
asymmetrical, long, narrow	3	12	1	7.14
asymmetrical, short, wide	0	0	1	7.14
asymmetrical, short, narrow	0	0	0	0
<b>3. Spina nasalis anterior (1-5)</b>	<b>23</b>	<b>100</b>	<b>22</b>	<b>100</b>
grade 1	0	0	0	0

grade 2	0	0	5	22,72
grade 3	11	47.82	13	59.09
grade 4	6	26.09	3	13.64
grade 5	6	26.09	1	4.55
<b>4. Lower end of <i>apertura piriformis</i></b>	<b>39</b>	<b>100</b>	<b>29</b>	<b>100</b>
<i>anthropina</i>	23	58.97	17	58.62
<i>infantilis</i>	9	23.08	6	20.69
<i>fossa praenasalis</i>	4	10.26	1	3.45
<i>sulcus praenasalis</i>	3	7.69	5	17.24
<b>5. Form of <i>apertura piriformis</i></b>	<b>26</b>	<b>100</b>	<b>20</b>	<b>100</b>
pear-shaped	22	84.62	13	65
triangle	3	11.54	5	25
heard-shaped	1	3.84	2	10

The bone nose in profile is predominantly convex and straight in male crania. The concave form is found more rarely, while the undulated one is not established. In the female crania are accounted all forms of the bone nose, as the convex and straight ones again are found in greatest per cent, while the concave and undulated form are found in less per cent [7].

In both sexes highest frequency has the symmetrical long and wide *os nasale*. Asymmetrical long and wide bones are found in a less per cent. At the female crania in few cases are found symmetrical short and wide, asymmetrical long and narrow, asymmetrical short and wide and asymmetrical long and narrow nasal bones [7].

*Spina nasalis inferior* is accounted by a 5 grades scale (1-5). Crania with grade 3 (middle development of the prick) are established at highest per cent in both sexes. Slightly developed prick (grade 2) in the male crania is absent, while in the female ones it is present. The grades 4 and 5 (strong developed nasal' prick) are found in equal per cent in male crania, while in female ones the 4 and 5 grades are more rarely established [1].

In both sexes according to the lower end of *apertura piriformis*, at highest frequency is the "*anthropina*" form (sharp ridge of *apertura piriformis*). The following by frequency is the "*infantilis*" form (blunt lower end). From all crania the "*fossae praenasales*" form (formed *fossae*) is established at lower frequency, while the "*sulcus praenasalis*" form (formed groove) is absent [2].

In both sexes the form of *apertura piriformis* is predominantly pear-shaped, as following by frequency is the triangle form, and the heard-shaped one is presented with lowest per cent [7].

## Conclusion

The described results from the metric and scopic investigation of crania from medieval necropolis in Drastar, characterize the morphological peculiarities in nasal region of the individuals. These results show that the medieval population from Drastar was distinguished by a large nose size, as the greatest superiority had the high and narrow *apertura piriformis* with lower end "*anthropina*" and well-developed *spina nasalis anterior*. The middle part of the face is "orthognathous", with relatively

high nasal's base. The nasal bones are strongly projecting, symmetrical, long and wide. The form of the bone nose is mainly straight and convex in profile and the nasal aperture is with pear-shaped form.

In intersexual aspect statistically significant differences are established in all measured height-wise features, as well as in two breadth-wise ones, which are with greater measurements in the male crania. The index characterization expresses tendency for *os nasale* in the male crania to be relatively more high (convex) and narrower, compared with female ones.

## References

1. Broca, P. Instructions anthropologiques. Paris, 1875.
2. Martin, R., K. Saller. Lehrbuch der Anthropologie in systematischer Darstellung., Band I. Stuttgart, 1957.
3. Olivier, G. Pratique anthropologique. Paris, 1960.
4. Алексеев, В. П., Г. Ф. Дебец. Краниометрия. М., 1964.
5. Ангелова, С. т. Археологическото проучване на средновековния Дръстър /резултати и проучвания/. — В: Дуросторум — Дръстър — Силистра. Силистра, 1988, 32—52.
6. Боев, П., Н. Кондова, Сл. Чолаков. Биологична реконструкция на ранносредновековното население на българските земи. — Българска етнография, 2, 1980, 15—27.
7. Герасимов, М. М. Восстановление лица по черепу. М., 1955.
8. Никитюк, Б. А. Определение пола по скелету и зубам человека. — Вопросы антропологии, 3, 1960, 135—139.
9. Пашкова, В. Краниометрия как один из методов повышения достоверности определения пола по черепу. — Вопросы антропологии, 7, 1961, 95—101.