A morphological Study of Anatomical Variations of Frontal Sinus in Adult Libyan People Using CT Scan

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Introduction

The frontal sinus is one of the four major sinuses in the skull. The development process of these four paired sinuses differ from one another. The sphenoid and frontal sinuses are both pneumatized after birth, and not fully grown until late adolescence.[1] The frontal sinuses are two sinuses located within the frontal bone in the posterior section of the supercilliary arches. They are rarely symmetrical; the septum between these two sinuses frequently deviates from the midline. On rare occasions, one or both sinuses may be absent.[2] A large asymmetry between both frontal sinuses can occur in the same individual separately. The pneumatization of the frontal sinus is highly variable, ranging from aplasia to hyperplasia. The predominance of supercilliary arches does not influence the presence, absence, or size of the frontal sinus.[3] A typical series of CT scans for the sinuses uses less x-ray radiation than a standard complete set of x-rays. However, a CT scan of the sinuses does not show any brain tissue.

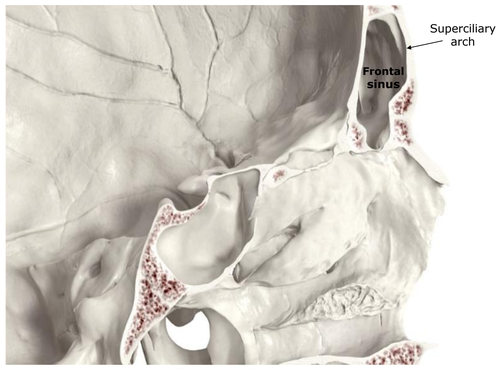


Figure 1: Frontal sinus

Aim

The aim of this study is to morphometrically evaluate the anatomical variations of the frontal sinus in adult Libyan people using CT scan in relation to gender.

Method

This is a retrospective study that included 100 adult Libyan participants of both genders (45 females and 55 males) randomly selected from Benghazi hospitals, who had a CT scan of their paranasal sinuses between May 2020 and March 2021. The frontal sinus size is measured to understand the clinical importance. The DICOM viewer for medical image software is used to classify the sinuses as small, medium sized, and large according to the classification proposed by Stokovic et al.,[4] based on their size and relation to the orbital roof for analysis and measurement of 100 images of the CT scan.[5] SSPS was used for statistical analysis.[6]

Results

Table 1: The findings recorded Frontal sinus type in 100 participants.

	Gender n(%)	
	Female	Male
Frontal sinus type		
Right		
Aplasia	7(15.5)	5(9.1)
Small	15(33.3)	11(20)
Medium-sized	13(29)	27(49.1)
Large	10(22.2)	12(21.8)
Left		
Aplasia	7(15.5)	3(5.5)
Small	16(35.5)	16(29)
Medium-sized	13(29)	22(40)
Large	9(20)	14(25.5)

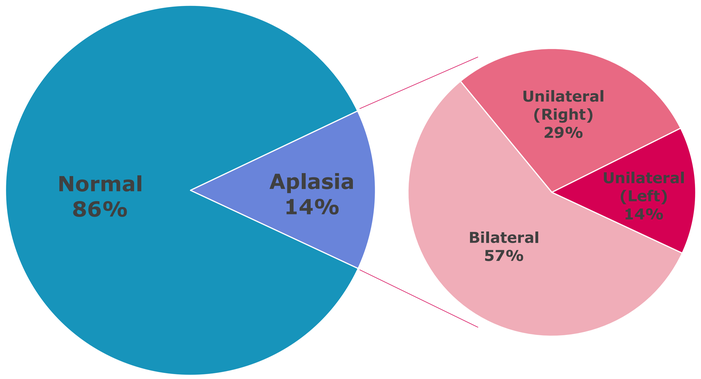
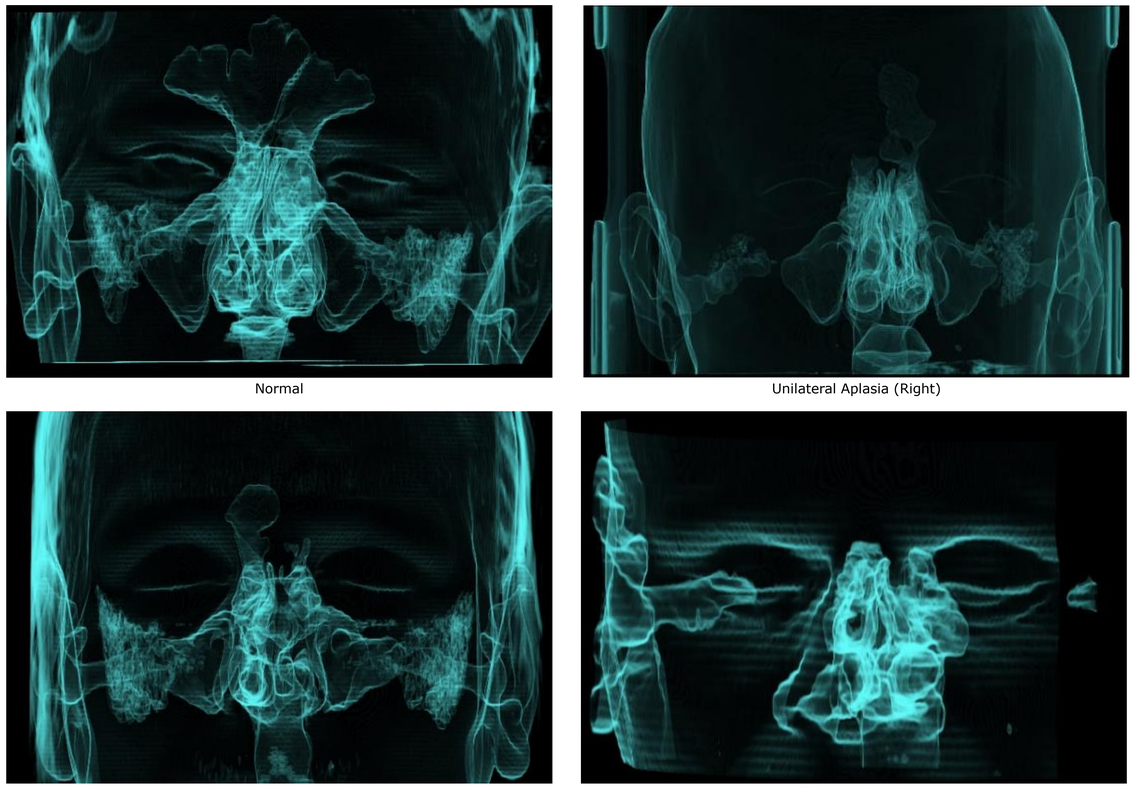


Figure 2: Frequencies of Aplasia



Normal | Unilateral Aplasia (Right) | Unilateral Aplasia (Left) | Bilateral Aplasia

Figure 3: Morphological variation of Frontal sinus

Conclusion

In conclusion, the aplasia was less frequent in this study, which was discovered in 14% of cases. As related to gender, it was more frequent in females (9) than males (5). Further studies on frontal For sinus morphology, larger sample sizes are required to ascertain the accuracy level in determining the variation.

References

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