

PRIMARY MAXILLARY SINUS OSTIUM- A CADAVERIC STUDY

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ABSTRACT: Maxillary sinus develops during late fetal life as a diverticulum in the lateral nasal wall, the opening of the diverticulum present as the orifice of the sinus called primary maxillary sinus ostium (PMO). **OBJECTIVES:** To find out the position of Primary maxillary sinus ostium in the hiatus semilunaris. **MATERIALS AND METHODS:** Total of fifty cadaver specimens (32 male & 18 female) in which primary maxillary sinus ostium is identified and location is noted. **RESULTS:** Primary maxillary sinus ostium is present in the posterior 1/3 of hiatus semilunaris in 60% of specimens, which is the commonest type of presentation, middle 1/3 of hiatus semilunaris in 22% of specimens, anterior 1/3 of hiatus semilunaris in 14% of specimens and absent in 4% of specimens. **CONCLUSION:** The knowledge about the position of primary maxillary sinus ostium is important for the surgeons to prevent complications when doing endoscopic sinus surgery.

KEYWORDS: Maxillary sinus, Primary maxillary sinus ostium.

INTRODUCTION: Paranasal air sinuses develop as diverticulum of the lateral nasal wall and extend in to the maxilla, ethmoid, frontal and sphenoid bone.¹ Maxillary sinus develops during late fetal life, the opening of the diverticulum present as the orifice of the sinus called primary maxillary sinus ostium.² Maxillary sinus ostium opens into the inferior part of the ethmoidal infundibulum via the hiatus semilunaris. This hiatus lies above the superior edge of the uncinate process. The high level of ostium causes poor drainage for which it's mainly depends on mucociliary escalatory action³. The aim of our study is to find out the variation in the position of opening of primary maxillary sinus ostium in hiatus semilunaris.

MATERIAL AND METHODS: The cadaveric specimens with intact osteomeatal unit structures were included for the study. Total of fifty specimens were included among that 32 specimens were male and 18 specimens were female. The Ostia of the maxillary sinuses were identified and noted. The frequency in the distribution of various in position of primary maxillary sinus ostium is analyzed.

RESULTS: In the Total of 50 dissected specimens primary maxillary sinus ostium is present in the posterior 1/3 of hiatus semilunaris in 30(60%) specimens, middle 1/3 of hiatus semilunaris in 11(22%) specimens, anterior 1/3 of hiatus semilunaris in 7(14%)specimens and absent in 2(4%) specimens (Ref. Table 2, Fig. 1).

DISCUSSION: The Osteomeatal unit is a structure present in the middle meatus comprises of uncinate process, ethmoid infundibulum, Anterior ethmoid cells and Ostia of Anterior ethmoid, Maxillary and Frontal sinuses, a small obstruction in this critical region lead to significant disease

in the frontal and maxillary sinuses.⁴ The knowledge about the variation in the position of the maxillary sinus ostium is important for the endoscopic sinus surgeons for doing the surgery related to maxillary sinus.

In the present study, in 30specimens (60%) position of the primary maxillary sinus ostia are in the posterior 1/3 of hiatus semilunaris which is almost similar to that of the previous reports by prasanna L.C.et al (52.5%)⁵, Van Alyea OE (71.8%).⁶ The primary maxillary sinus ostia are present in middle 1/3 of hiatus semilunaris in 11(22%)specimens anterior 1/3 of hiatus semilunaris in 7(14%)specimens and absent in 2(4%)specimens in our study, while Prasanna L.C. et al⁵reported middle 1/3 in 27.5%, anterior 1/3 in 10% and absent in 10% of specimens. Van Alyea reported middle1/3 in 11.04%, anterior 1/3 in 5.53% of specimens. Kyung Rae Kim et al⁷ reported that in 76% specimens maxillary sinus ostium was present in the posterior 1/3, in 24% of specimens the position was in the middle 1/3 but there were no specimens with position of the ostium in the anterior 1//3 of hiatus semilunaris. In conclusion the primary maxillary sinus ostium is commonly present in the posterior 1/3 of hiatus semilunaris, second most common position is middle 1/3 of hiatus semilunaris, least common type of presentation is anterior 1/3 of hiatus semilunaris (Ref Table 1, 2, Fig. 1)which is coincide with the previous studies.^{5, 6, 7}

CONCLUSION: The knowledge about the variation in the position of primary maxillary sinus ostium is important for the surgeons to avoid intra operative complications ⁸. Our study helps to understand the variation in the distribution of primary maxillary sinus ostium position in hiatus semilunaris which helps for the surgeons while doing FESS with the detailed anatomical knowledge.

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Position	Male			Female		
	Right n (%)	Left n (%)	Total n (%)	Right n (%)	Left n (%)	Total n (%)
Posterior 1/3 of *HS	9(56.3)	10(62.5)	19(59.4)	6(66.7)	5(55.6)	11(61)
Middle 1/3 of *HS	3(18.8)	4(25)	7(21.9)	2(22)	2(22)	4(22)
Anterior 1/3 of *HS	3(18.8)	1(6.25)	4(12.5)	1(11)	2(22)	3(16.7)
Absent	1(6.25)	1(6.25)	2(6)	-	-	-
Total	16	16	32	9	9	18

Table 1: The position of opening of primary maxillary sinus ostium
In hiatus semilunaris in Male and Female specimen.

Position	Present study			Previous studies		
	Right n(%)	Left n(%)	Total n(%)	Prasanna L.C. et al	Van Alyea OE	Kyung Rae Kim et al
Posterior 1/3 of HS	15(60)	15(60)	30(60)	52.5%	71.8%	76%
Middle 1/3 of HS	5(20)	6(24)	11(22)	27.5%,	11.04%,	24%
Anterior 1/3 of HS	4(16)	3(12)	7(14)	10%	5.53%	Nil
Absent	1(4)	1(4)	2(4)	10%	-	-

Table 2: The position of opening of primary maxillary sinus ostium
in hiatus semilunaris in Total specimen

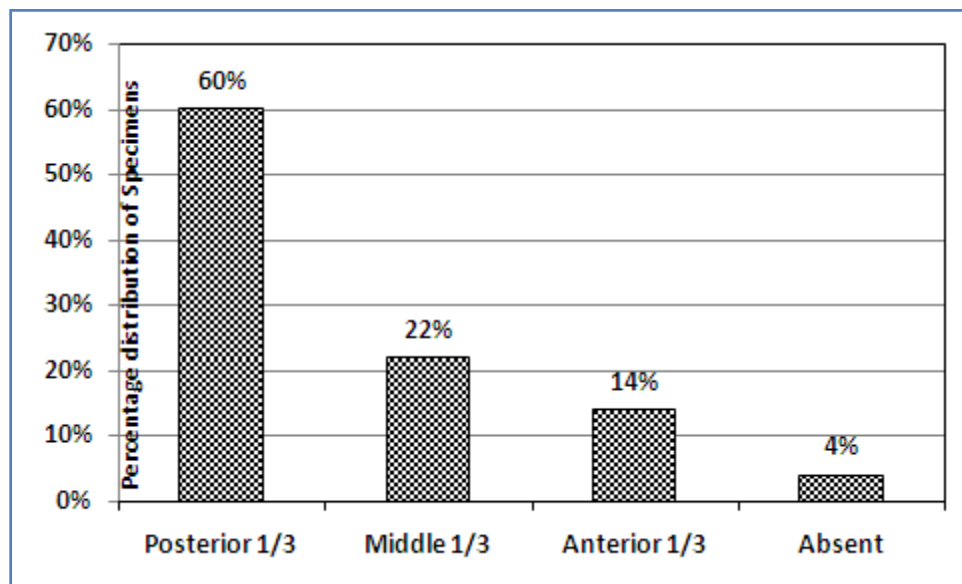


Fig. 1: The Position of primary maxillary sinus ostium in the present study



Fig. 2: The position of primary maxillary sinus ostium (*pink colour) in hiatus semilunaris

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