



ORIGINAL RESEARCH PAPER

ENT

TO STUDY THE INCIDENCE OF ANATOMICAL VARIATIONS OF LATERAL NASAL WALL IN RELATION TO VARIOUS SINO NASAL SYMPTOMATOLOGY

KEY WORDS:

Dr Gondela Hari Krishna

Associate Professor, Govt Ent Hospital, Andhra Medical College, Visakhapatnam, AP.

Dr Gedela Keerthi Varma*

Senior Resident, NRI Institute of Medical Sciences, Sangivalasa, Visakhapatnam, AP.
*Corresponding Author

MATERIALS AND METHODS:

The present study, "Lateral Nasal wall, Anatomical Variations, their Incidence, and role in Symptomatology of patients", was carried out in the Government General hospital, Kakinada. Patients admitted in our hospital from 1/8/2013 – 31/7/2015 with symptoms suggestive of sino nasal pathology were randomly selected for the study.

INCLUSION CRITERIA:

Clinical history suggestive of chronic Sinonasal pathology, Evidence of Rhinosinusitis, sino nasal polyposis on DNE, Evidence of Rhinosinusitis, sino nasal polyposis on CT-PNS.

EXCLUSION CRITERIA:

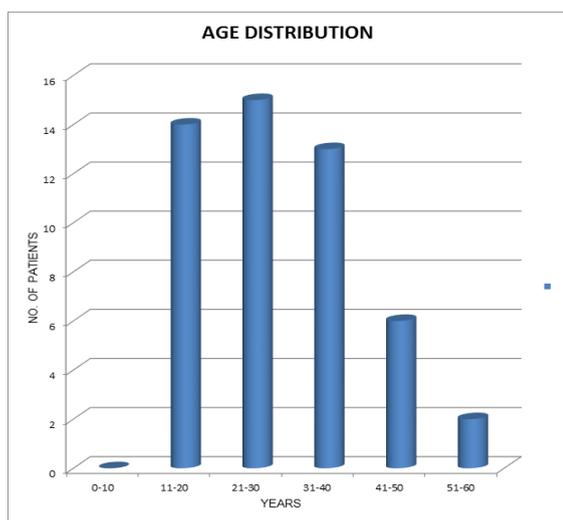
Deviated nasal septum, complicated sinusitis, Sino nasal malignancy, Osteomyelitis, Abscess, Patients with alteration of PNS anatomy due to facial trauma, Previous sinus surgery.

OBSERVATIONS AND RESULTS

1) AGE DISTRIBUTION:

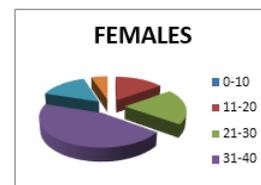
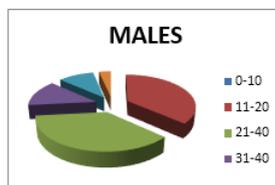
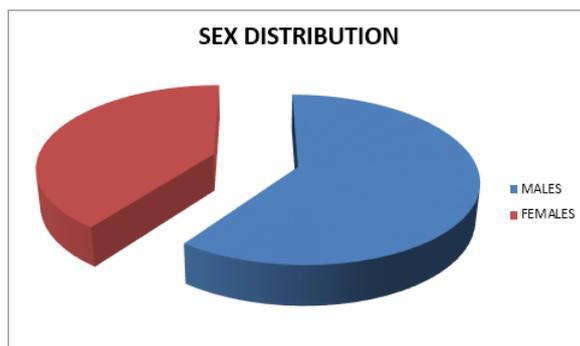
Of the 50 patients, 32 (29.91%) belong to age group 21-30 years, 30 (28.04%) belong to age group 11-20 years, 28 (26.17%) belonged to 31-40 years category, 14(13.08%) were in 41-50 years category, only 3(2.8%) in 51-60 years and no cases below 10 years.

S.no	Category(years)	No. of cases	%
1.	0-10(A)	0	0
2.	11-20(B)	14	28
3.	21-30(C)	15	30
4.	31-40(D)	13	26
5.	41-50(E)	6	12
6.	51-60(F)	2	4
Total		50	100.00



2) SEX DISTRIBUTION: Of the 50 cases, 30(60%) were males and 20(40%) were females.

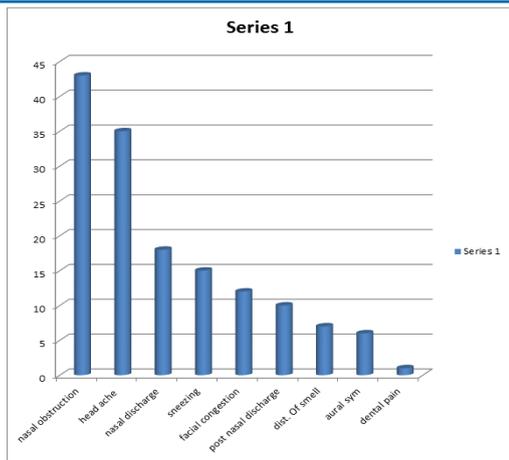
S.no	Category(years)	Male	Female
1.	0-10	0	0
2.	11-20	11	3
3.	21-30	11	4
4.	31-40	4	9
5.	41-50	3	3
6.	51-60	1	1
Total		30	50



3)INCIDENCE OF SYMPTOMS:

Major presenting symptoms were Nasal obstruction (86%), Headache (70%), Nasal discharge (36%) and Sneezing (30%). Less common symptoms include Facial congestion (24%), Posterior nasal discharge (20%), Disturbance of smell (14%), Aural symptoms (12%) and Dental pain (2%).

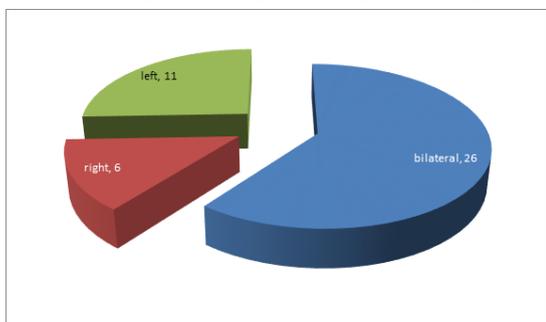
S.no	Symptom	No. of cases	%
1.	Nasal Obstruction	43	86
2.	Headache	35	70
3.	Nasal Discharge	18	36
4.	Sneezing	15	30
5.	Facial Congestion	12	24
6.	Post Nasal Discharge	10	20
7.	Disturbance of smell	07	14
8.	Aural Symptoms	06	12
9.	Dental Pain	01	02
		50	100



NASAL OBSTRUCTION:

Nasal obstruction was complained of in 43(86%) cases. Among these 26 had bilateral obstruction, 11 had only left sided and 6 had only right sided obstruction.

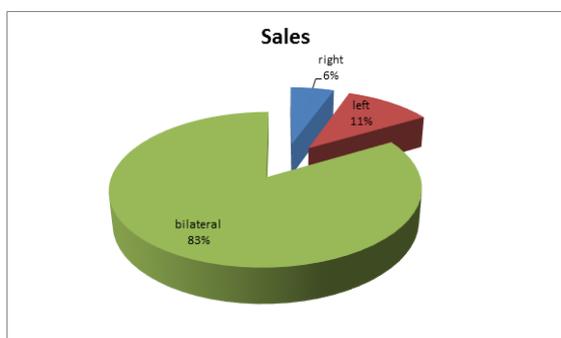
	Bilateral	Only right	Only left	Total
Nasal Obstruction	26	6	11	43



NASAL DISCHARGE:

Nasal discharge was present in 18(36%) cases, varying from mucoid, mucopurulent to purulent. Of these, 15 had bilateral and only 3 had unilateral discharge.

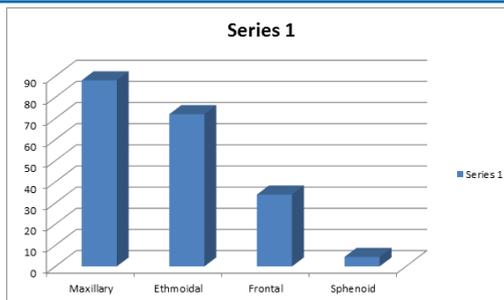
	Bilateral	Only right	Only left	Total	Incidence
Nasal Discharge	15	01	02	18	36



4) INCIDENCE OF MUCOSAL ABNORMALITIES:

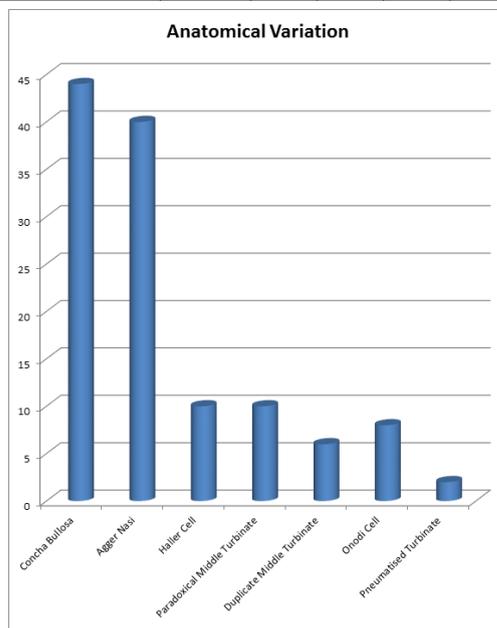
In the present study, Maxillary sinus was predominantly involved (88%), followed by Ethmoidal sinus(72%), Sphenoid sinus(38%) and Frontal(34%).

Involved sinus	Bilateral	Only right	Only left	Total	%
Maxillary	28	7	9	44	88
Ethmoidal	20	8	8	36	72
Frontal	09	5	3	17	34
Sphenoid	10	3	6	19	38



5) INCIDENCE OF ANATOMICAL VARIATIONS:

S. no	Anatomical Variation	Bilateral	Only right	Only left	Total	Incidence (%)
1.	Concha Bullosa	19	02	01	22	44
2.	Agger Nasi	18	01	01	20	40
3.	Haller Cell	03	01	01	5	10
4.	Paradoxical Middle Turbinate	04	01	00	5	10
5.	Duplicate Middle turbinate	00	01	02	3	06
6.	Onodi Cell	02	01	01	4	08
7.	Pneumatized Uncinate	00	00	01	1	02



INCIDENCE OF CONCHA BULLOSA:

In the present study of 50 cases concha bullosa was seen in 23(46%) cases. In 20 cases, it was bilateral, 02 only on the right side and 01 only on the left side.

	Bilateral	Only right	Only left	Total
Concha Bullosa	19	02	01	22

INCIDENCE OF AGGER NASI:

In the present study Agger Nasi was seen in 20(40%) cases, 18 bilaterally, 01 only on the right side and 01 only on the left side.

	Bilateral	Only right	Only left	Total
Agger Nasi	18	01	01	20

INCIDENCE OF HALLER CELL:

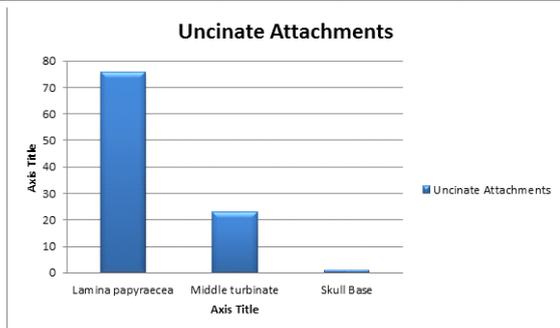
In the present study, Haller Cell was seen in 05(10%) cases, 03 bilaterally and 01 each on the right and left side.

	Bilateral	Only right	Only left	Total
Haller Cell	03	01	01	05

ATTACHMENT OF UNCINATE PROCESS:

Uncinate process was attached to Lamina papyraceae in 39 cases on the right and 37 cases on the left, to the Middle turbinate in 11 cases on the right and 12 on the left and to the skull base in 01 case on the left.

Uncinate attachment	Right	Left	%
Lamina papyraceae	39	37	76
Middle Turbinate	11	12	23
Skull base	00	01	01



DISCUSSION:

Out of the 50 cases, 14(28%) were in 11-20 years age group, 15(30%) in 21-30 years group and 13(26%) in 31-40 years group. So 84% of the patients were in the age range 11-40 years. Incidence of Rhinosinusitis declined beyond 40 years of age. The study shows that Rhinosinusitis is more prevalent in the age group 11-40 years i.e. 2nd to 4th decade (84%). After 40 years the incidence tends to decline as evident from the table. In our study highest incidence was in the age group 21-30, closely followed by 11-20 and 31-40 years. A higher incidence in this age range (11-40), is because of greater exposure to infection in view of their outdoor activities. Of the 50 cases 30(60%) were male and 20(40%) were female. Male: Female = 3:2. The higher incidence among males may be attributed to the fact that males are more exposed to variable climatic conditions and do more strenuous activities. Presenting symptoms in the decreasing order were Nasal obstruction(86%), Headache(70%), Nasal discharge(36%), Sneezing(30%), Facial congestion(24%), Post nasal discharge(20%), Disturbance of smell(14%), Aural complaints (12%) and Dental pain(1%). Nasal obstruction was complained of in 43(86%) cases. Among these 26 had bilateral obstruction, 11 had only left sided and 6 had only right sided obstruction. Nasal obstruction can be attributed to the presence of nasal discharge, concha bullosa, agger nasi, hypertrophied middle turbinate. Headache was the 2nd commonest complaint in the present study in 35(70%) cases. Headache in sinus disease can be explained by the fact that oedema of the Middle meatus causes obstruction to the drainage of Maxillary, Ethmoidal and Frontal sinuses, thereby leading to headache, which immediately draws attention of the patient. Standard diurnal variation of headache and localizing features were not present noticeably in the present study because in many cases, there was involvement of more than one sinus. Nasal discharge was present in 18(36%) cases, varying from mucoid, mucopurulent to purulent. Of these, 15 had bilateral and only 3 had unilateral discharge. Post nasal discharge was observed in 10(20%) cases. Post nasal drip is an established feature of chronic infection in the sinuses and results from Excessive secretion into the nasal cavity, Natural instinct of spontaneously sniffing back the nasal secretions, aided by the backward movement of cilia, Sneezing was complained of in 15(30%) cases, which is attributable to allergy, Facial congestion in 12(24%) cases, Disturbances of smell in 07(14%), Aural symptoms (pain, discharge) in 06(12%) cases and Dental pain in 1(2%) case were the other symptoms. In the present study, Maxillary sinus was predominantly involved (88%), followed by Ethmoidal sinus (72%), Sphenoid sinus(38%) and Frontal(34%). Anatomical Variations leading to sinusitis were Concha bullosa(46%), Agger nasi (40%), Haller cell(10%), Paradoxical middle turbinate(10%), Duplicate Middle turbinate (7.48%), Onodi cell(8%) and Pneumatized uncinate(2%), In the present study of 50 cases

concha bullosa was seen in 23(46%) cases. In 20 cases, it was bilateral, 02 only on the right side and 01 only on the left side, In the present study Agger Nasi was seen in 20(40%) cases, 18 bilaterally, 01 only on the right side and 01 only on the left side, In the present study, Haller Cell was seen in 05(10%) cases, 03 bilaterally and 01 each on the right and left side. Uncinate process was attached to Lamina Papyraceae in 76 %, to the Middle turbinate in 23% and to the skull base in 01% of the cases.

CONCLUSION:

The present study was conducted to find out the incidence of Anatomical Variations in cases of various sinonasal pathologies. It was found out that variations like Concha Bullosa, and Agger Nasi were the major conditions that led to sinusitis. Haller Cell, Paradoxical Middle turbinate, and Duplicate Middle turbinate were seen only in few cases. These variations, by narrowing the drainage pathway of the Paranasal sinuses, impair the drainage of secretions from the sinuses, which subsequently may get infected. In fact, close approximation of adjacent surfaces will impair the ciliary activity, affecting the normal drainage of sinuses. This subsequently leads to inflammation and oedema of the nasal and sinus mucosa, further impairing ciliary activity and aggravating stasis of secretions. Detection of these variations and their correction (those possible) at surgery is necessary to prevent recurrence of the disease. The results of this study correlate well with some of the previous established studies. So we strongly believe that these above mentioned Anatomical Variations can play an important role in the pathogenesis of sinusitis.

References:

- 1) Scott-Brown's Otorhinolaryngology, Head and Neck Surgery – IV Edition.
- 2) Scott-Brown's Otorhinolaryngology, Head and Neck Surgery – VI Edition.
- 3) Scott-Brown's Otorhinolaryngology, Head and Neck Surgery – VII Edition.
- 4) Functional Endoscopic Sinus Surgery- Stammberger.
- 5) Renuka Brado
- 6) Cummings Otolaryngology Head and Neck Surgery IV Edition.
- 7) Cummings Otolaryngology Head and Neck Surgery V Edition.
- 8) 13th FESS Course Book by Sethi, 2009.
- 9) Endoscopic Anatomy of the Lateral Nasal Wall, Osteomeatal Complex and Anterior Skull Base by Reda Kamel.
- 10) Endoscopic Sinus Surgery Dissection Manual – Roy R. Casiano.
- 11) Manual of Endoscopic Sinus Surgery and It's Extended Applications by Daniel Simmen and Nick Jones.
- 12) Endoscopic Sinus Surgery – Wormald II Edition.
- 13) Endoscopic Sinus Surgery – Wormald III E