Internal Nasal Valve and Its Significance

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Abstract Internal nasal valve (INV) is the narrowest area, of the nose where turbulence of the inspiratory and expiratory current takes place. This study analysis the significance of INV with respect to health and disease. Study design: Descriptive study/Prospective study. Study Centre: Tertiary Centre. 150 students were followed for 2 years after noting the endoscopic anatomic details of INV. The students who reported due to sinus/ear disease during this follow up period were again noted. The type of INV in health and disease were analysed. Septal deviation at the INV is noted in most of the cases of sinus/ear disease. It is advisable to correct the abnormality of INV if present simultaneously while clearing the ear/sinus pathology.

Keywords Internal nasal valve · Septal deviation · Sinusitis · Acute otitis media · Nasal septum · Upper lateral cartilage

Introduction

Internal nasal valve (INV) is the narrowest area of a nasal cavity [1]. Any reduction in this already crowded area, will lead to appreciable effect on the inspiratory and expiratory currents.

This study analysis the various anatomic details of INV and its role in health and disease of the para nasal sinuses.

Aim

To study the role of INV in health and disease of sinus conditions.

Study Design

Descriptive/Prospective study.

Method

Inclusion Criteria

150 students, with no disease or allergy of nose or paranasal sinus were examined by nasal endoscopy and the type of INV were noted down.

Exclusion Criteria

Individuals with chronic nasal obstruction, previous nasal surgeries, use of nasal decongestants/spray, anatomical abnormalities detected on diagnostic nasal endoscopy, existing disease of ear, nose and paranasal sinuses.

150 students (300 nasal cavities) were examined by nasal endoscopy. The type of INV was noted for each individual. They were under follow-up for 2 years.

Whenever these students reported sick, the diagnosis was noted in the list and at the end of 2 years the result were analyzed.

Observation

INV was classified based on endoscopic picture at the region of caudal border of upper lateral cartilage and

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anterior end of the inferior turbinate. The INV was categorized accordingly to the relation of caudal end of lateral cartilages with the septum [2]. They are: convex, concave, sharp angle, blunt angle, twisted caudal border and angle occupied with septal body. Angle occupied by septal body was found in 32 %, sharp angle was found in 37.33 %, blunt angle types were in 23.66 %, other types forming the rest. The nasal cavity was narrowest in the category where the INV occupied by septal body.

In the 2 year follow-up period, individuals reported for nose, ear or throat diseases like sinusitis, acute otitis media, and pharyngitis where INV was occupied by the septal body (26.66 %). Next in order were the sharp angled INV (21 %). The blunt angled INV formed 13.33 %. The rest were formed by other types.

Discussion

The INV forms an important anatomical landmark. The significance of INV in health and disease is very interesting. INV is the area where the inspiratory and expiratory air currents get turbulent [3]. Any further narrowing at this area will have a significant effect in the ventilation of the sinuses.

The area of a triangle is $\frac{1}{2} \times \text{base} \times \text{height}$. So, any reduction of any limb of the triangle will reduce the area by nearly 25–30 % of the effective space.

With the availability of endoscope, the examination of INV is more efficiently done. They were grouped based on the angle formed by the caudal border of upper lateral cartilages with the nasal septum. The different types of INV are sharp angle, concave, convex, twisted angle occupied by septal body and blunt angle [2].

The sharp angle, angle occupied by septal body [4] and blunt angle were the more prevalent. The types of INV were not the same on both sides in majority of the individuals. For e.g. if on right nasal cavity INV was occupied by septal body, the left nasal cavity showed a blunt angled INV. Thus different combinations of INV were observed [5–7].

Conclusions

INV forms an important area of nasal obstruction, having a significant role in sinus and middle ear ventilation. Any further narrowing of INV will have a considerable impact on sinus and middle ear pathology. So, necessary attention is to be given to INV narrowing.

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