

# Nasa Shareera: Review of Anatomy of Nose in Ayurveda

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## ABSTRACT

Problems of nose and paranasal sinuses are amongst the frequent reasons for patients' visits to primary care as well as E.N.T. speciality clinics. Ayurveda, which means 'the science of life' in Sanskrit, is one of the oldest practised medical systems of the world, originating in India some 5000 years ago. Diseases of nose and paranasal sinuses, together with those of ear and throat, have been delineated alongside Oro-dentistry, diseases related to head and neck region and also Ophthalmology, in the specialized branch of Ayurveda termed as Shalakya Tantra, which is one of the original eight branches of Ayurveda, i.e. Astanga Ayurveda. In recent years the subject of Shalakya Tantra has been recognized into subspecialities, of which the diseases of ear, nose and throat alongside oro-dentistry, have been embodied in Karna-Nasa- Mukha rogas. The Ayurvedic equivalent of modern Anatomy is Shareera Rachana, the branch dealing with the structural aspects of human body; as such anatomy of nose in Ayurveda is dealt with in Nasa Shareera. From many scattered references in the various Ayurvedic classics, Nasa Shareera can be delineated vis-à-vis the Historical Review, Embryology, Anatomical parts, Characteristics of an ideal nose, as well as the consideration of nose as the Gateway to the structures of the Head and Neck, by virtue of which, a specialized therapy called Nashya Karma (intranasal drug delivery) is employed in Ayurveda to nourish and treat lesions of nose, paranasal sinuses as well as other vital structures located in the head and neck region of human body, viz. ear, throat, brain, eyes and surrounding areas.

**Keywords:**- Ayurveda, Shalakya Tantra, Karna-Nasa-Mukha, Nasa Shareera.

## INTRODUCTION

Otorhinolaryngology, which was separated from Surgery and internal diseases during the 2<sup>nd</sup> half of the 19<sup>th</sup> century, has a very rich history. The knowledge on the presence of paranasal sinuses and attempts to treat their diseases date back to early mankind. Egyptian physicians were the precursors of nasal surgeries. They used instruments to remove the brain through the nose as part of the mummification process. The first known medical practitioner was an Egyptian rhinologist called Ni-Ankh Sekhmet, who was the court physician to King Sahura; he was familiar with treatments for nasal polyps and included medicaments containing alcohol, and it is possible that he may have used some of the surgical instruments to remove polyps. The first report in the world medical literature of a nasal exam dates back to the sixth century before Christ in the Hindu document Sushruta Samhita, in which is described a tubular nasal speculum, made of Bamboo tree, used to remove nasal polyps. Sushruta was the first surgeon to describe rhinoplasty and other plastic surgical operations.<sup>1</sup> Writing in Sanskrit in the form of verses he described in detail the technique of total

reconstruction, which is still being practiced today as Indian Rhinoplasty. This surgical reconstruction paved the way to modern plastic surgery in Europe and United States in 18th century. Sushruta contributed not only to the plastic surgery of the nose, but described entire philosophy of Head and Neck and other surgery as well.<sup>2</sup> Ayurveda, widely regarded as the world's oldest medical system, originated in India 5000 years ago. Diseases of ear, nose and throat along with ophthalmology and diseases of head & neck, have been encompassed in the

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branch of Ayurveda called 'Shalakya Tantra', which is one of the original eight folds of Ayurveda.<sup>3</sup> Descriptions of Rhinology in Ayurveda have been assimilated into Nasarogas; 31 types of which have been described by Acharya Sushruta, additionally few other types have also been narrated by some other teachers of Ayurveda, alongside their management.<sup>4</sup> Extensive description of the anatomical structures of nose has been mentioned in the prominent authoritative texts of Ayurveda, most significantly, the Sushruta Samhita, in which a special section named the Shareera Sthana, is dedicated to human anatomy.

### Historical Review

The word 'Nasa' has been mentioned in the Rigveda, the earliest sacred book of India. Similarly in the second Veda, the Yajurveda, references of 2 Netra (eyes), 2 Karna (ears), 2 Nasika Chidra (nostrils) and Jihva (tongue) are found in context of Indriyas (sensory faculties). 'Nasa' has been described along with the 9 Chidras (gates of human body) and Indriya in the Atharvaveda, the fourth Veda. The holy Bhagavad Gita has mentioned about 'Nasa' in the description of Indriyas, as well.

### Nasaroga Vijnaniya:- Rhinology in Ayurveda

Descriptions of the embryology, anatomy, physiology and even the disorders and their managements, in respect of the nose are available only as scattered references in the Ayurvedic Samhitas, the bedrock of Ayurvedic literature; most significant being the Charaka Samhita, Sushruta Samhita and Astanga Hridaya/ Samgraha, called the Brihat-Trayi (the great trilogy), and also the Madhav Nidana, Sharangadhar Samhita and Bhav Prakash, called the Laghu-Trayi (the lesser trilogy).

### Nasa Garbhavakranti:- Embryology of Nose

The different kinds of organs of the human body, i.e. the sense organs (Gyanendriyas) and the organs of action (Karmendriyas) alongside the mind (Mana), emerge from the Rajasika and Satwika Ahamkaras (ego-soul, traits of the instrument of spirit for individual's development).<sup>5</sup>

The sense organ of smell, i.e. Ghranendriya, originates by the assortment of the Panchamahabhutas, i.e. the 5 great elements forming the basis of all cosmic creation, with the predominance of Prithvi (earth element) Mahabhuta.<sup>6</sup>

Acharya Caraka and Acharya Vaghbhata have opined that all sense organs evolve during the 3rd month of intrauterine life (Garbhavastha).<sup>7,8</sup>

### Nasa Sareera:- Anatomy of Nose

Anatomy of nose in the ancient Ayurvedic literature is available in imprecise form; often scattered in different chapters of different treatises.

Nasa houses the sense organ of smell,<sup>9</sup> i.e. the Ghranendriya. Acharya Sushruta has commented that Nasa is a Partyanga<sup>10</sup> (sub-part) of the human body, which is attached to the main limbs or organs. The 2 nostrils have been included in the 9 Bahirmukha Srotas<sup>11</sup> of the human body, i.e. the nine outward openings.

### Various anatomical terms associated with the nose and PNS found in the Ayurvedic classics are:

- **Nasikaasthi:** refers to the bony framework of the nose. According to Acharya Caraka there is only one bone, while Acharya Sushruta has mentioned about 3 bones, which a<sup>12,13</sup>
- **Nasasandhi:** refers to the joints of nose; only one has been mentioned in the nose.<sup>14</sup>
- **Peshi:** refers to the nasal musculature; 2 muscles have been revealed in relation to the nose.<sup>15</sup>
- **Agranasika/ Nasaagra/ Nasikaagra:** refers to the tip of the nose. Acharya Vaghbhata used this term while explaining Pittaja Pratishyaya (Rhinitis).<sup>16</sup>
- **Nasaputa Bahirbhaga:** this term has been used to denote the outer part of nostrils, i.e. ala of the nose.<sup>17</sup>
- **Nasaputa:** refers to the nostrils, as stated by Acharya Sushruta. It has been said by Acharya Sushruta that the Nasaputa measures 11/3 angula, whereas Dalhana commented that the circumference of Nasaputa is 1/3 angula excluding the Tarunasthi, i.e. cartilages, and 2 angula as external breadth.<sup>17</sup> Angula measurement (Anguli Pramana) is a personalized system of measuring the human body parts in Ayurveda, using the width of the person's own finger.
- **Ghranarandhra or Nasarandhra:** Acharya Bahvamishra has used these terms to indicate the nostrils.<sup>19</sup>
- **Nasikasrota:** indicates the nasal cavity; this term has been employed by Acharya Vaghbhata while explaining the pathophysiology of a disease called Nasasosha (Rhinitis sicca).<sup>20</sup>
- **Nasanadi:** denotes nasal cavity; reference of this term is observed in explanation of Talayantra, an instrument used to remove any foreign body from nasal cavity.<sup>21</sup>
- **Nasavangsha:** used in different places in context of explanation of fatal signs; it has been stated that a boil formation in Nasavangsha is a fatal sign. Nasavangsha can be considered as the bony portion of external nose, i.e. nasal bridge. Dalhana has commented that the pramana (measurement) of Nasavangsha is 4 Angula (4 fingers width).<sup>22,23,24</sup>
- **Ghrana:** Arundatta explains that Ghrana is the specially modified area of the nose which is responsible for the function of Olfaction as mentioned by Vaghbhata; can be correlated to the Olfactory epithelium at the upper 1/3<sup>rd</sup> of the nasal cavity.<sup>25</sup>

- **Ghranamula/ Nasamula:** these terms have been used to denote the upper part of the Nasal cavity, the roof, by Acharya Charaka while explaining the pathophysiology of Pratishyaya, i.e. Rhinitis. This can again be correlated to the specialized olfactory epithelium of the nasal cavity.<sup>26</sup>
- **Nasavaha Dhamani:** Acharya Sushruta has mentioned about 2 Dhamanis present in the Nasa, which are responsible for Gandhagyana, i.e. perception of smell.<sup>27</sup>
- **Nasasira:** Acharya Vaghbhata has used this term while explaining Raktaja Pratishyaya, a disease marked by Epistaxis; total 24 have been mentioned- 6 each of Vata, Pitta, Kapha and Rakta types. 4 out of these 24 Siras have been deemed as Avedhya, i.e. venesection is contradicted. Nasal vasculature might have been hinted by this word.<sup>28</sup>
- **Marmas associated with Nasa:** Marmas are the vital points of the human body, injury to which can cause severe harm, disability and even death; however, in the context of healing, Marmas can also be deemed as the gateways of body's self-healing mechanisms, as such these are also the sites for various therapeutic maneuvers.

#### **The following three types of Marmas are associated with Nasa:**

1. **Matrika Marma:** These are 8 Sira-Marmas (related to blood vessels), associated with Nasa. All these are Sadyopranahara Marmas, which means that injury to them will cause immediate death.<sup>29</sup>
2. **Phana Marma:** These are 2 Sira-Marmas (related to blood vessels) which perform Olfactory function. These are Vaikalyakara Marmas, which means that any injury to them will cause loss of Gandhagyana, i.e. anosmia. They are similar to the Olfactory Bulbs of the nasal cavity as per shape, site, resultant injury etc.<sup>30</sup>
3. **Shringataka Marma:-** These are 4 Dhamani-Marmas (related to blood vessels) associated with Nasa. They are Sadyopranahara Marmas, which means that injury to them leads to immediate death. They have been mentioned in Kshavathu, Bhrishakshav etc. Nasarogas, which bear the clinical feature of Sneezing.<sup>31</sup>

#### **Characteristics of an Ideal Nose:**

Acharya Caraka has described the features of an ideal nose of a baby, based on which the proper development and longevity can be assumed-

The bridge of the nose is regular and straight, there is no obstruction in breathing, having big nares and the tip is slightly bent downward.<sup>32</sup>

#### **Nasa Hi Shirosa Dwaram- Nose is the Gateway to the Head**

Ayurveda has not merely deemed the nose as an organ of breathing and smelling, but also regarded it as a direct access to the head, brain and related structures. This opinion is based on the Anatomical and Physiological relations of the nose and the paranasal sinuses. Nose is connected to the cranial cavity through its roof, i.e. the cribriform plate of the ethmoid bone; the venous drainage of the nose is linked to the cavernous sinus; as such, for providing medicines to the related important areas of the head and neck, nose has been considered to be the approach. In Ayurveda, a special intranasal drug delivery system is very popular for nourishing as well as treating diseases of the organs of head and neck, viz. nose, ears, throat, eyes, brain, neck etc., which is denominated as Nashya Karma.<sup>33</sup>

#### **CONCLUSION**

Anatomy of nose has undergone a long evolution of understanding, from early functional and surgical observations to the highly detailed and integrated anatomical knowledge of today; and for this progression different medical and surgical enthusiasts from different parts of the world at different times have contributed immensely over the years. In ancient India, Ayurvedic practitioners, specially those interested in surgery, had spent good amount of time in learning the anatomy of human body, for which scientific methods like dissection of dead bodies was also undertaken. Most significant contribution has been from Acharya Sushruta, who emphasized that learning through dissection was a necessary prerequisite to become a good surgeon and also described the methods of preservation of cadavers and the process of dissection in scientific way dating back to that time. In modern times Acharya Sushruta is widely regarded as the 'Father of Rhinoplasty', and a primary reason for this is his contribution to Rhinoplasty, which was well practised by the surgeons of ancient India. Though humble attempt has been made to correlate the nasal anatomy described in ancient Ayurvedic literature in Sanskrit language, with the advanced terms of modern Rhinology, it is always a challenging task and many entities are beyond explanation, at least with our current understanding. The modern Rhinology is heavily supported by sophistications like CT Scan, Endoscopy etc., whereas the healers of Ayurveda in Vedic times had to rely on deep observational wisdom, epistemological and clinical methods called Pramana and Pariksha etc. to diagnose a medical condition, of course it is presumed that they had the 'Divya Dristi', i.e. divine sight alongside other superpowers in their favour.

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