Atrophic Rhinitis

**Definition**

Atrophic rhinitis is defined as a chronic nasal disease characterised by progressive atrophy of the nasal mucosa along with the underlying bones of turbinates. Also associated presence of viscid secretion which rapidly dries up forming foul smelling crusts. This fetid odour is also known as ozaena. Abnormally patent nasal airway. The patient is fortunately unaware of the stench emitting from the nose as this disorder is associated with merciful anosmia.

**Triad**

1. The triad of atrophic rhinitis as described by [Dr. Bernhard Fraenkel](https://www.rhonotology.com/directory/dr-bernhard-fraenkel) is
   1. Fetor
   2. Crusting
   3. Atrophy

**Aetiology**

**Associated Organisms**

1. Coccobacillus
2. *Bacillus Mucosus*
3. Coccobacillus foetidus Ozanae
4. Diphtheroid bacilli
5. Klebsiella Ozanae
6. Pasteurella multocida

**HERNIAS** (double I, A, S)
2. **HEREDITARY** – AD inheritance
3. **ENDOCRINE** – worsens with pregnancy / menstruation
4. **RACIAL** – Yellow races, Latin & American negro races
5. **NUTRITIONAL** – Vitamin A, D deficiencies, (Iron deficiency postulated by Bernat)
6. **INFECTIVE** – Chronic sinusitis, Granulomatous infections like Syphilis, leprosy Tuberculosis etc
7. **IATROGENIC** – Excessive surgical destruction of the nasal mucosa and turbinates
8. **AUTOIMMUNE CAUSES**
9. **AGE** – Puberty
10. **SURFACTANT DEFICIENCY** – A significant decrease in the total phospholipids and also a Change in the phospholipid profile is seen in Atrophic Rhinitis patients. This suggests a possible role for surfactant deficiency in the aetiopathogenesis.
11. **SEX** – Female > Male

**PATHOLOGY**

1. Metaplasia of Ciliated Columnar Nasal Epithelium into Squamous Epithelium.
2. There is a decrease in the number and size of Compound Alveolar Glands.
3. Dilated capillaries are also seen.

**TYPES**

**PATHOLOGICAL**

**Type I**

- Majority of atrophic rhinitis patients belong to Type I.
- **Endarteritis** and **Periarteritis** of the terminal arterioles seen.
- This could be caused by chronic infections.
- These patients **benefit from** the vasodilator effects of **Oestrogen Therapy**.

**Type II**

- Vasodilatation of the capillaries seen and thus these patients may **worsen** with estrogen therapy.
- The endothelial cells lining the dilated capillaries have been demonstrated to contain **more cytoplasm** than those of normal capillaries and they also showed a positive reaction for alkaline phosphatase suggesting the presence of **active bone resorption**.

**CLINICAL**

**PRIMARY ATROPHIC RHINITIS**

1. Diagnosis of exclusion, classical form, Causative organisms are as mentioned above.

**SECONDARY ATROPHIC RHINITIS**

2. Is the most common form seen in developed countries. The most common causes for this problem could be:
   - Extensive destruction of nasal mucosa and turbinates during nasal surgery.
   - Following irradiation.
Granulomatous infections like leprosy, syphilis, tuberculosis etc

**CLINICAL FEATURES**

1. Nasal Obstruction
2. Epistaxis
3. Merciful Anosmia
4. Atrophic changes in pharynx i.e. Pharyngitis Sicca – Choking attacks due to detached crusts
5. Can be seen in larynx also known as Atrophic Laryngitis.
6. Nose may show saddle deformity, nasal perforation
7. Eustachian Tubal obstruction (Otological symptoms)

**CLINICAL EXAMINATION**

1. Extremely roomy nasal cavity
2. Foul smelling discharge
3. Nasal crustings - greenish, yellow or black crusts
4. When these crusts are removed bleeding starts to occur
5. On X-ray – PNS may have thick walls and appear opaque

_BLOQUED NOSE_ ??????

_The nasal cavity is filled with sensory nerve endings close to the nasal valve area. These receptors sense the flow of air through this area thus giving a sense of freeness in the nasal cavity. These nerve endings are destroyed in patients with atrophic rhinitis thus depriving the patient of this sensation. In the absence of these sensation the nose feels blocked._

**CT SCAN FINDINGS**

1. Mucoperiosteal thickening of Paranasal Sinuses
2. Loss of definition of Osteomeatal Complex due to resorption of Ethmoidal Bulla and Uncinate Process.
3. Hypoplastic Maxillary Sinuses
4. Enlargement of nasal cavity with erosion of the lateral nasal wall
5. Atrophy of inferior and middle turbinates

**MANAGEMENT**

**CONSERVATIVE**

1. **Alkaline Nasal douching**

The patient must be asked to douche the nose at least twice a day with a solution prepared with:

1. Sodium bicarbonate – 28.4 g
2. Sodium diborate – 28.4 g
3. Sodium chloride – 56.7 g
4. mixed in 280 ml of Luke warm water

2. **25% Glucose in Glycerine drops**

Applied to the nose thus inhibiting the growth of proteolytic organism and reducing foul smell
3. **Oestradiol in Arachis Oil drops**

In patients with histological type I atrophic rhinitis Oestradiol in Arachis oil 10,000 units/ml can be used as nasal drops

4. **Kemecetine antiozaena solution (PCOD)**

Prepared with Chloramphenicol 90mg, Oestradiol dipropionate 0.64mg, vitamin D2 900 IU and Propylene Glycol in 1 ml of saline.

5. **Potassium Iodide**

To increase nasal secretions

6. **Placental Extracts**

7. **Systemic use of Streptomycin 1gm/day for 10 days**

**SURGICAL**

- **Lautenslauger's operation**: Sub mucous injections of paraffin, and operations aimed at displacing the lateral nasal wall medially
- **Recently Teflon strips, and Autogenous Cartilages** have been inserted along the floor and lateral nasal wall after elevation of flaps
- **Wilson's operation** - Sub mucosal injection of 50% Teflon in glycerine paste
- **Repeated stellate ganglion blocks** have also been employed with some success
- **Young's operation**: This surgery aims at closure of one or both nasal cavities by plastic surgery. Young's method is to raise folds of skin inside the nostril and suturing these folds together thus closing the nasal cavities. After a period of **6 to 9 months** when these flaps are opened up the mucosa of the nasal cavities have found to be healed.
- Modifications of this procedure has been suggested (**modified Young's operation**) where a 3mm hole is left while closing the flaps in the nasal vestibule. **This enables the patient to breath through the nasal cavities.** It is better if these surgical procedures are done in a staged manner, while waiting for one nose to heal before attempting on the other side.
- **Witt Mack’s Operation** – Salivary duct transposition into maxillary antrum
- **Raghav Sharan Operation** – Caldwell Luc combined with inferior meatal antrostomy. Mucosa of maxillary antrum is elevated and brought into the nasal cavity on each side through the antrostomy. Benefits – decreasing size of cavity, increasing vascularity and lubrication.
- **Vestibuloplasty**