An Approach to Nasal Obstruction

Nasal obstruction may vary in severity from a troublesome symptom (e.g. allergic rhinitis) to being life threatening (choanal atresia).

Causes

Congenital

Choanal atresia
Choanal atresia is the obstruction of the nose at the level of the posterior choanae and will present with respiratory distress at birth because neonates are obligate nasal breathers until 2-6 months of age. It may be associated with other abnormalities for example CHARGE syndrome that require further investigation. An oral airway or McGovern nipple is a good temporising measure, failing which other supportive ventilation may be required (CPAP or oral intubation). A diagnosis is confirmed with a CT scan, and the obstruction is surgically opened with or without nasal stent insertion. Unilateral choanal stenosis usually present years later and can be asymptomatic in the young child.

Choanal stenosis
Choanal stenosis is narrowing of the posterior choanae. It may present with stertor, poor feeding or failure to thrive due to the increased work of breathing especially during a concurrent upper respiratory tract infection.

Pyriform aperture and/or midnasal stenosis
This typically would not allow passage of a 5F feeding catheter beyond 1-2cm into the nasal vestibule. In contrast, in choanal atresia the feeding catheter usually won't pass beyond 4 cm.

Masses

- Encephalocoele
- Meningocoele
- Meningoencephalocoele
- Nasal glioma
- Dermoid / Epidermoid

Acquired

The internal nasal valve is the smallest diameter in the nasal cavity and is both a common and accessible site of nasal obstruction. The internal nasal valve is the cross sectional area at the head of the inferior turbinate, the septum and the caudal end of the upper lateral cartilage. An abnormality in any of these structures, or a nasal mass / foreign body may cause obstruction.

Anatomical

- Septal deviation – this may occur during childbirth or from trauma later in life. May require surgical correction.
- Enlarged inferior turbinates – may occur for several reasons, most commonly in persistent allergic rhinitis during the late phase with infiltration of the turbinate with inflammatory cells. Endoscopic surgical reduction of the inferior turbinates may be required in cases refractory to medical management. It may be confused with a nasal polyp but the defining features of a

turbinate are – mucosa covered, sensate whereas a polyp has an appearance of a pale water balloon and is insensate. Rhinitis medicamentosa is also a common reason for turbinate enlargement, as well as conditions with increased oestrogen (pregnancy) or low testosterone (older males).

- Nasal valve collapse – due to weakening of the lateral nasal cartilages from prior trauma, surgery or from age. May use cartilage grafts to correct this either endoscopically or with an open approach.
- Septal haematoma – following nasal trauma a septal haematoma MUST be actively excluded because if missed may result in an abscess with risk of cavernous sinus thrombosis and loss of cartilage support with resultant saddle nose deformity. Treatment is an emergency and includes incision and drainage of the haematoma and quilt type sutures to prevent re-accumulation.
- Foreign body – young children with foul smelling nasal discharge

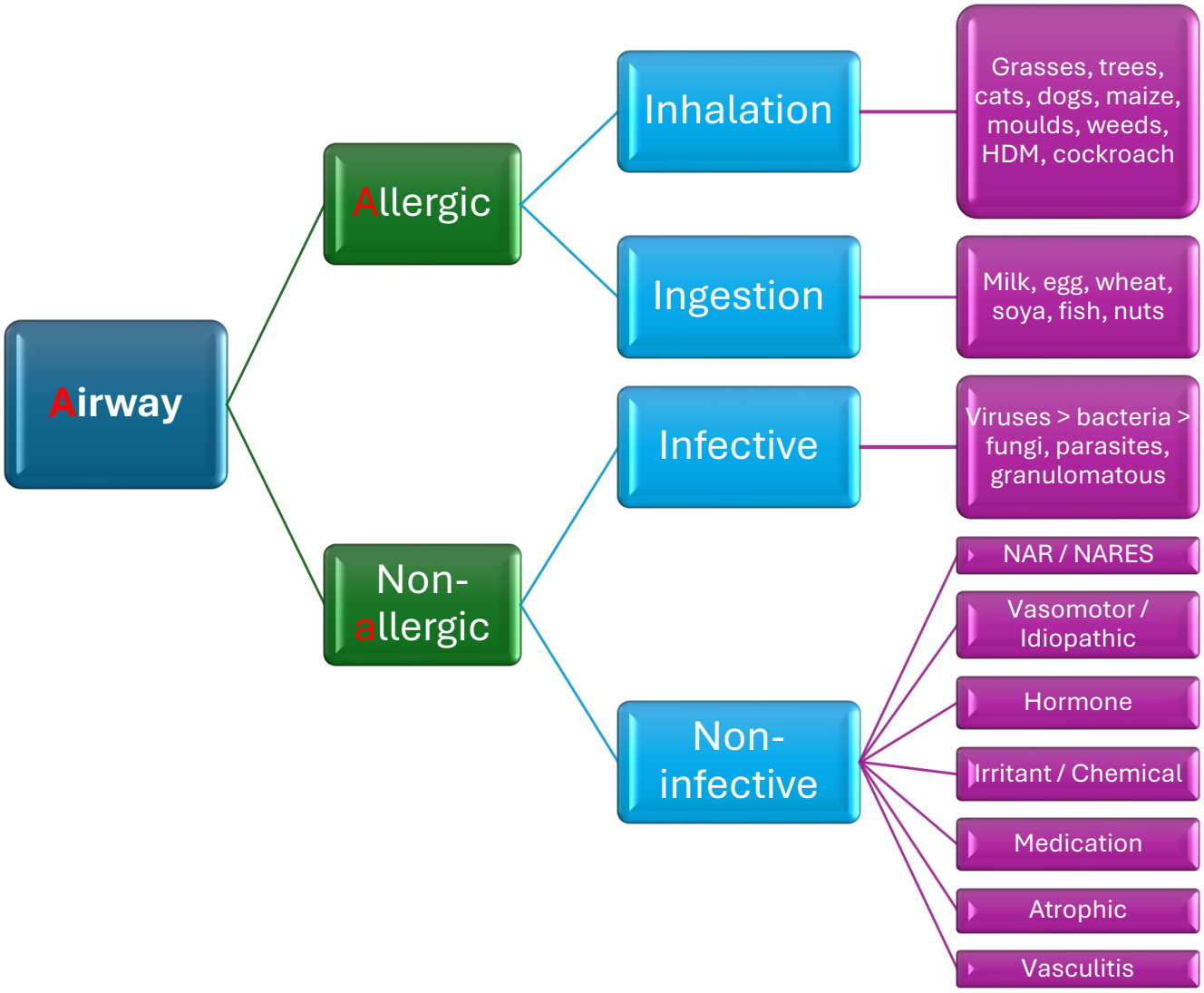
Inflammatory

- Infective – Acute rhinosinusitis. Viral is the 'common cold' or bacterial (see acute bacterial rhinosinusitis)
- Allergic rhinitis – managed primarily with intranasal corticosteroids +/- anti-histamines (see allergic rhinitis chapter)
- Chronic rhinosinusitis with or without nasal polyps – medical management and surgery to improve access for medication or to remove polyps. (see chronic sinusitis chapter)
- Non-allergic rhinitis – inflammation and symptoms similar to allergic rhinitis but not caused by an allergen but rather other irritants or triggers such as:
    - Environmental irritants – dust, smoke, fumes.
    - Certain foods – spicy foods or alcohol.
    - Medications – β-blockers, NSAID's, oral contraceptive.
    - Hormonal changes – during pregnancy or puberty.
    - Weather changes – dry or cold weather may worsen symptoms.
    - Rhinitis medicamentosa – overuse of topical nasal decongestants with rebound congestion.
- Enlarged adenoids – most common cause of nasal obstruction in children and becoming more severe and affecting younger children and infants. Lymphoid tissue that forms part of Waldeyers ring and plays an importance role in host immune function. Surgical removal if persistent stertor, even if mild as it affects the normal sleep cycle with neurocognitive and behavioural abnormalities.

Tumours

- Inverted papilloma – fleshy, unilateral benign but locally aggressive nasal mass. HPV infection may play a role, and it has local recurrence rate of 10%, malignant transformation potential of 10% and is bilateral in 10% of cases.
- Antrochoanal polyp – unilateral nasal polyp originating from the maxillary sinus and enlarges towards the choana which it may fill causing significant obstructive sleep symptoms.
- Juvenile (nasopharyngeal) angiofibroma – usually young adolescent males, may present with recurrent epistaxis and/or nasal obstructive symptoms.
- Malignant – Multiple different cell lines in sinonasal tract so many types of cancer. Most commonly, squamous cell carcinoma (>70%), others include; salivary gland tumours, lymphoma, nasopharyngeal carcinoma, melanoma, intracranial tumours with extension into the nose.
- The primary management of most sinonasal tumours is surgery with the notable exception of lymphoma and nasopharyngeal carcinoma that respond to chemo- and radiotherapy.

Practical approach - ABC



NAR – Non-allergic rhinitis
NARES – Non-allergic rhinitis with eosinophilia