NASAL POLYPS

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NASAL POLYPS

- Hx &Definition
- Epidemiology
- Types and classification
- Etiology and predisposing factors
- Histopathology
- grading

NASAL POLYPS

- Polyps where first reported about 4000 years ago (old Egyptians and ancient Hindu)

- Nasal polyps represent edematous semitranslucent masses in the nasal and paranasal cavities, mostly originating from the mucosal linings of the sinuses and prolapsing into the nasal cavities

- It represent an end stage of chronic inflammation

NASAL POLYPS

- prevalence
- They are the most common mass lesions encountered in the nose.
- Prevalence: 0.2-4.3% (north America) 0.2–1% (UK) ; family history (14%); increases with age

CLASSIFICATION OF NASAL POLYPS

1. The antrochoanal polyp, mostly arising from the maxillary sinus and prolapsing into the choana, a commonly large isolated unilateral cyst-like non-eosinophilic formation
2. Idiopathic unilateral or bilateral, mostly eosinophilic polyps without involvement of the lower airways
3. Bilateral eosinophilic polyposis with concomitant asthma and/or aspirin sensitivity
4. Polyposis with underlying systemic disease such as cystic fibrosis, primary ciliary dyskinesia, Churg-Strauss syndrome, or Kartagener's syndrome

Date

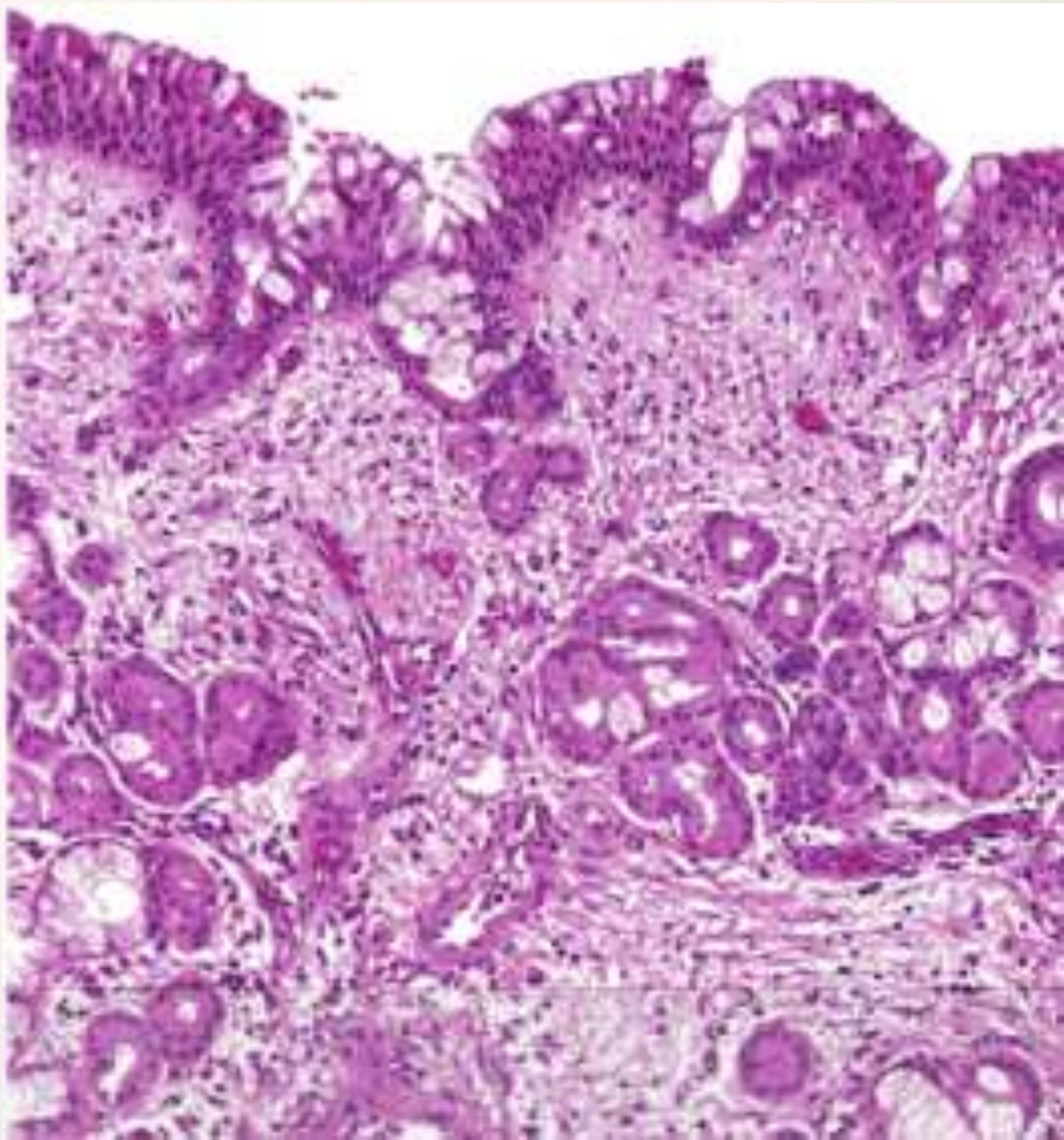
Disease	Percentage of people with disease who also have nasal polyps
Aspirin intolerance	36
Adult asthma	7
Non-allergic asthma	13
Allergic asthma	5
Chronic rhinosinusitis	2
Non-allergic rhinitis	5
Allergic rhinitis	1.5
Childhood asthma/rhinitis	0.1
Cystic fibrosis	20
Churg–Strauss syndrome	50
Allergic fungal sinusitis	85

Histopathology

- Normal sinonasal histology characterized by:
- 1- Structural component
- 2- Non structural component

Histopathology

- Structural component
- (epithelium, basement membrane, submucosal tissue)



Histopathology

- Non structural component (resident and non residential cells from lymphoid and myeloid tissue)

- Single lymphocytes scattered among the epithelial cells and lamina propria and nasal associated lymphoid tissue NALT (resamples peyers patches in gut but but not well formed)

- NALT my become more pronounced in chronic inflammation

Histopathology

- Lymphocyte population composed of:
  - T cells
  - B cells
  - Plasma cells
  - Natural killer cells

Histopathology

- Myeloid components:
- Monocytes
- Macrophages
- Dendretic cells
- Granulocytes (neutrophiles and eosinophiles)
- Mast cells

Histopathology

- Histopathology of NP

- It is not a simple edema of the mucus membrane of lateral wall of nose

- It is a de novo inflammatory growth of mucosa of lateral wall of nose

Histopathology

- In the case of NP from CRS:
- Features of structural component
- Features of nonstructural component

Histopathology

- Features of structural component are:
- 1- Basal cell hyperplasia
- 2- Goblet cells hyperplasia
- 3- Occasionally squamus metapalsia of epithelium
- (Fibroblasts, epithelial cells, and endothelial cells which make up most of the structural cells of the NP

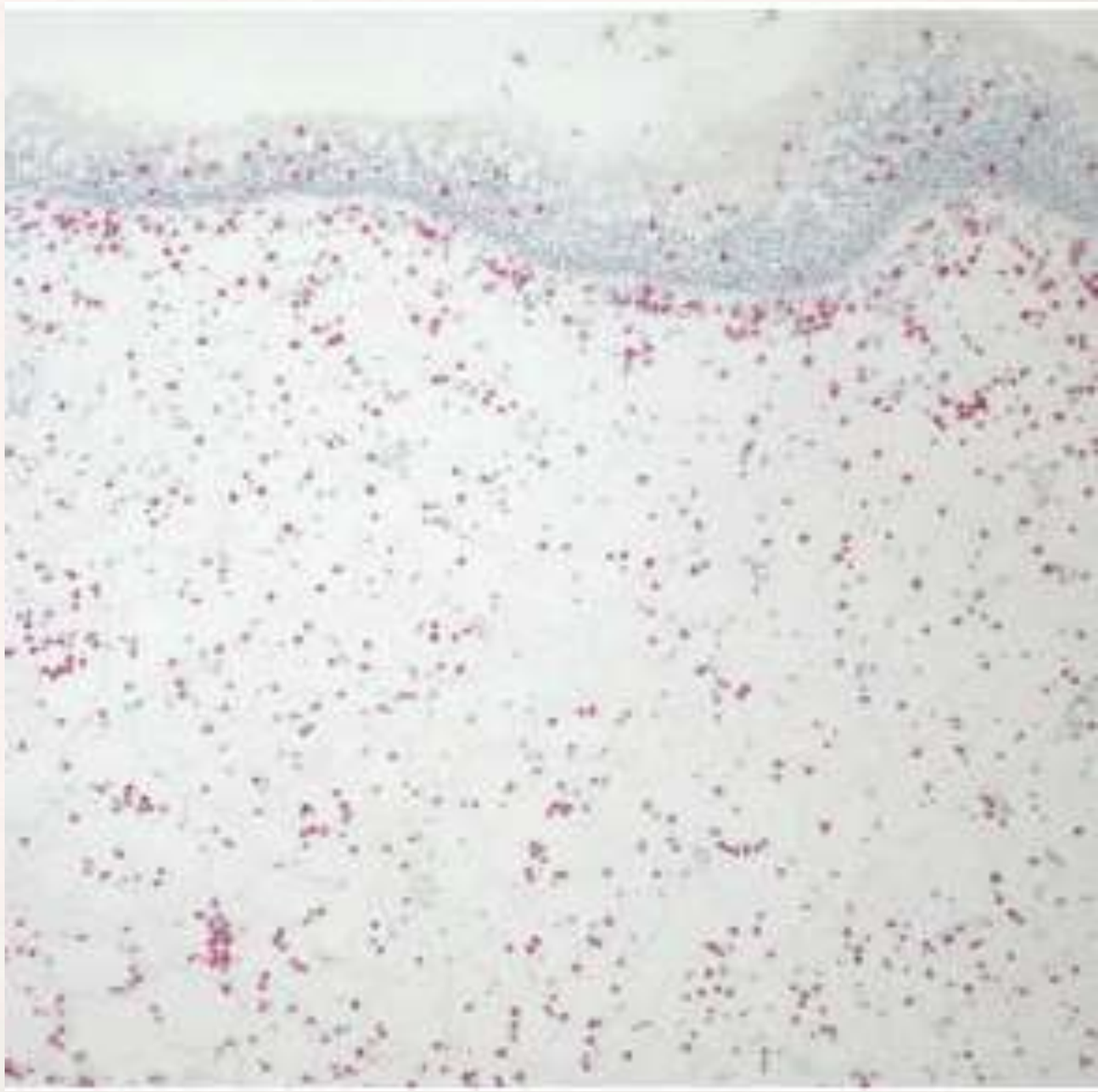
Histopathology

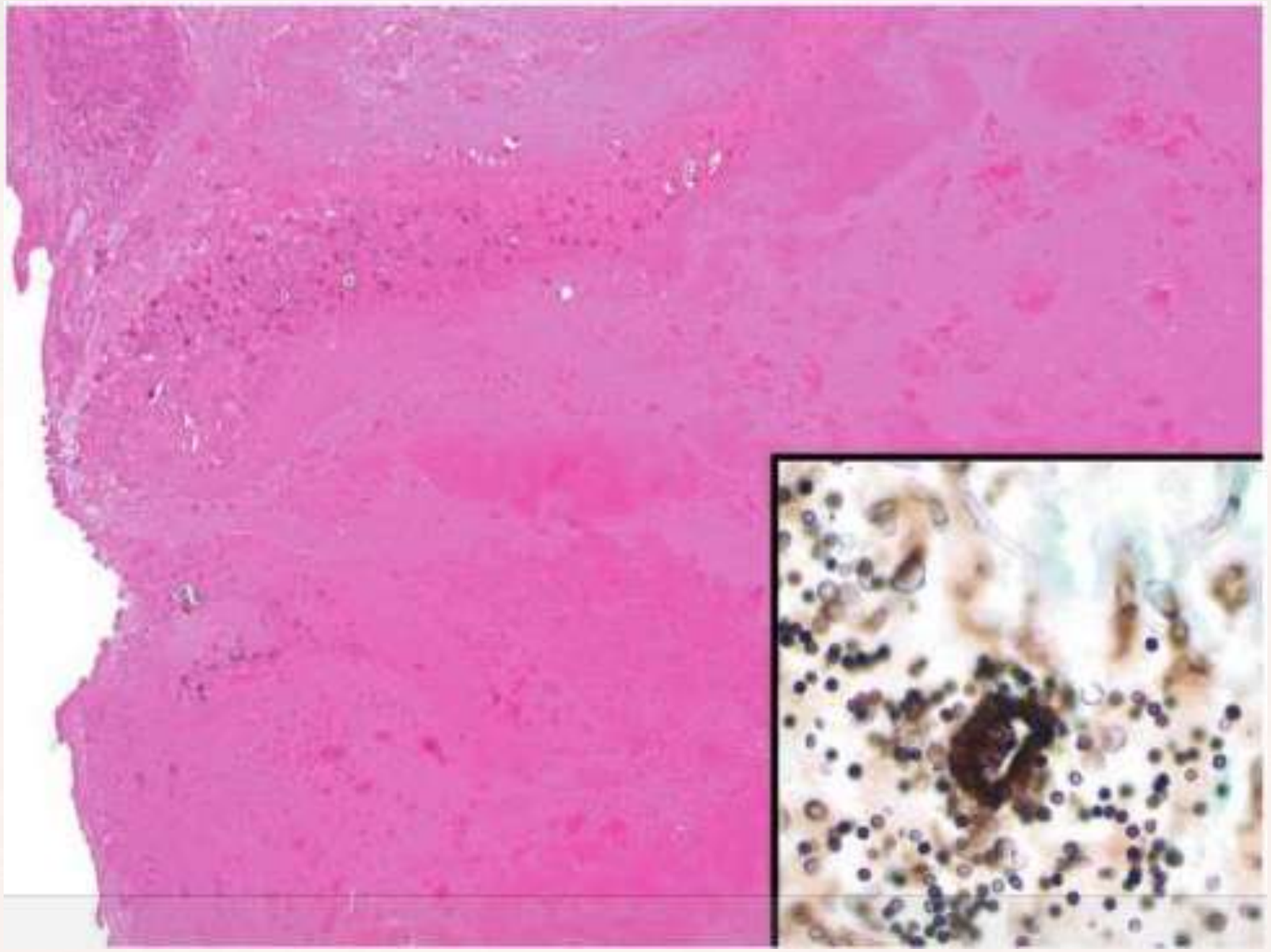
- Features of nonstructural component are:
- 1- Edema
- 2- Extensive lymphocytosis
- 3- Eosinophilia (and eosinophil breakdown products “charcot lydin crystals”)
- 4- Degenerated cystic glands filled with mucus
- (And fungal component can be detected in cases of AFS when using silver stains)

Histopathology

- A hallmark of bilateral nasal polyposis in adults is the abundant number of eosinophils within the tissue

- can be found in about 70–90% of polyps from European and US patients, but in few polyps from Asian patients.





Histopathology

Histopathology

- A range of mediators linked to eosinophil growth and activation, including GM-CSF, IL-3, IL-5, and IFN-γ.

- Interleukin-5 turned out to represent a key cytokine among those, independent of the atopic status of the patient.

Histopathology

- Newly

- The rate of nasal colonization of S. aureus is significantly increased in polyp patients versus controls, and increases with the severity of airway disease, with a colonization rate of 88% in aspirin-sensitive asthmatic polyp patients

Histopathology

- A detailed analysis showed that IgE antibodies to Staphylococcus aureus enterotoxins (SAEs) were present in polyp tissue and that these were associated with a more severe local eosinophilic inflammation

- suggesting that SAEs could have a potential role as disease modifiers.

Histopathology

- A recent study demonstrated that the accumulation of plasma cells, macrophages, and activated IL-2 receptor-positive T cells are characteristic features of nasal polyps (along with the eosinophils but still eosinophil predominance)

Histopathology

- lymphocytes and neutrophils are the predominant cells in cystic fibrosis and in primary ciliary dyskinesia

Histopathology

- In case of anterochoanal polype:
- Stratifid columner epithelium usually intact
- Thin basement membrane
- Stroma my exhibit myxoid changes and some gaint cells
- Usually lacks significant inflammatory response
- Sometimes degenerative changes (granuloma & angiomatus changes)

"Nasal sprays are very harmful to your sinuses.
From now on I want you to use this
tiny plumber's helper."

Grading of NP

- (Hadley’s clinical scoring system)
- Grade 1: smallest size polyps within the middle meatus not reaching the inferior edge of the middle turbinate).
- Grade 2: polyps within the middle meatus reaching the inferior border of the middle turbinate.
- Grade 3: polyps extending into the nasal cavity below the edge of the middle turbinate but not below the inferior edge of the inferior turbinate.
- Grade 4: polyps filling up the nasal cavity

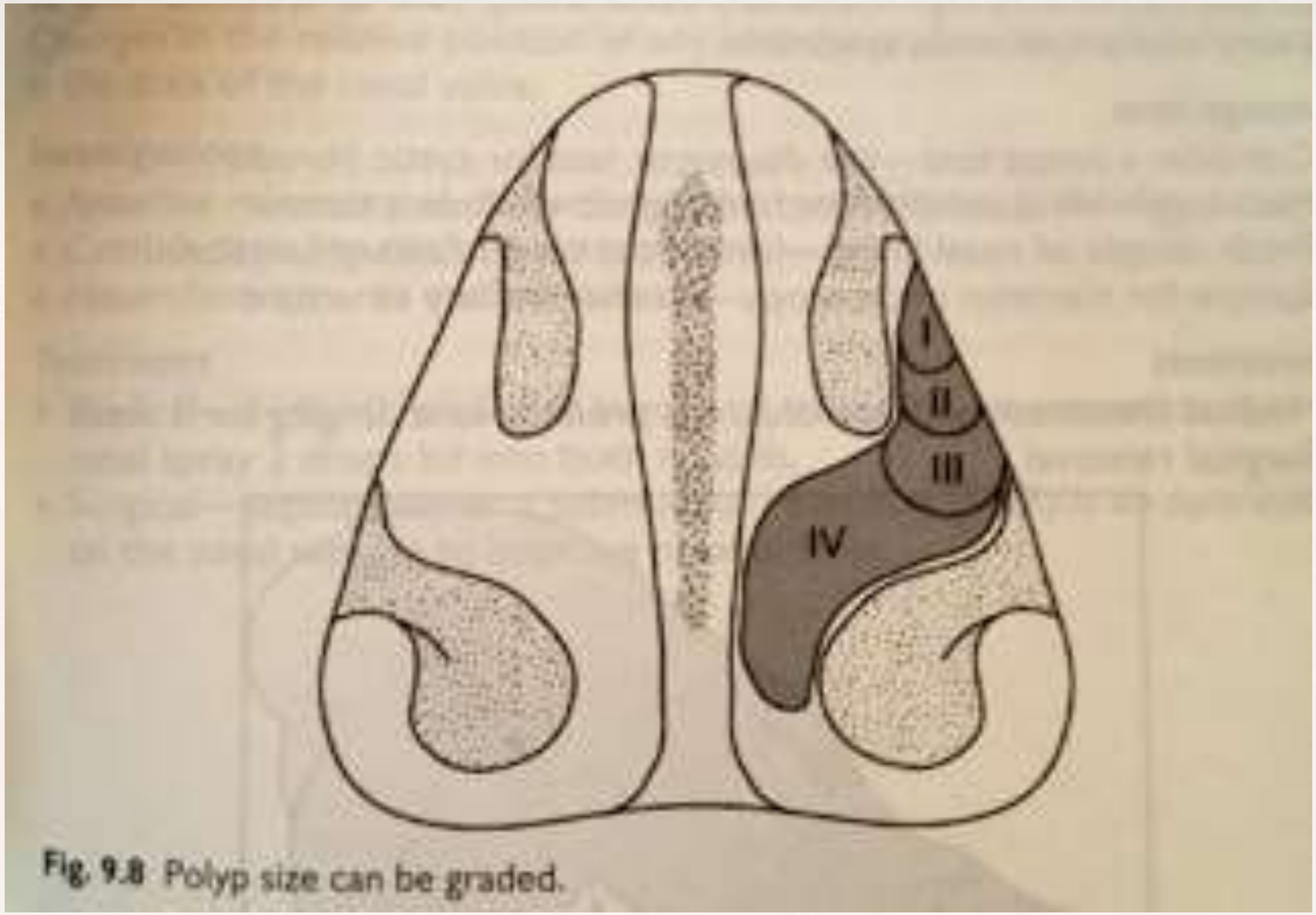


Fig. 9.8 Polyp size can be graded.

Grading

Table 56.1 -- An endoscopic staging system for nasal polyposis

Score		Right	Left
0	No polyps present		
1	Polyps confined to the middle meatus		
2	Polyps beyond the middle meatus (reaching the inferior turbinate or medial to the middle turbinate)		
3	Polyps almost or completely obstructing the nasal cavity		

Adapted from Lund VJ, Kennedy DW. Ann Otol Rhinol Laryngol 1995; 104 (Suppl 167):17–21.14

Kennedy Grading

Table 56.2 -- A radiologic staging system for sinusitis

	Right	Left
Maxillary sinus (0,1, 2)		
Anterior ethmoid (0,1, 2)		
Posterior ethmoid (0,1, 2)		
Sphenoid (0,1, 2)		
Frontal sinus (0,1, 2)		
Ostiomeatal complex (0, 2)		
Total		

Adapted from Lund VJ, kennedy DW. Ann Otol Rhinol Larngol 1995; 104 (Suppl 167):17–21.14

0, no abnormalities; 1, partial opacification; 2, total opacification.

Grading

Histological comparison of nasal polyposis in black African, Chinese and Caucasian patients*

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Stage I NP was present in 22% of the Caucasians and 30% of the Chinese. Stage II was found in 58% of the Caucasians, 56 % of the Chinese and 8% of the Africans. Stage III was found in 92% of the Africans, while only 20% of the Caucasians and 14% of the Chinese

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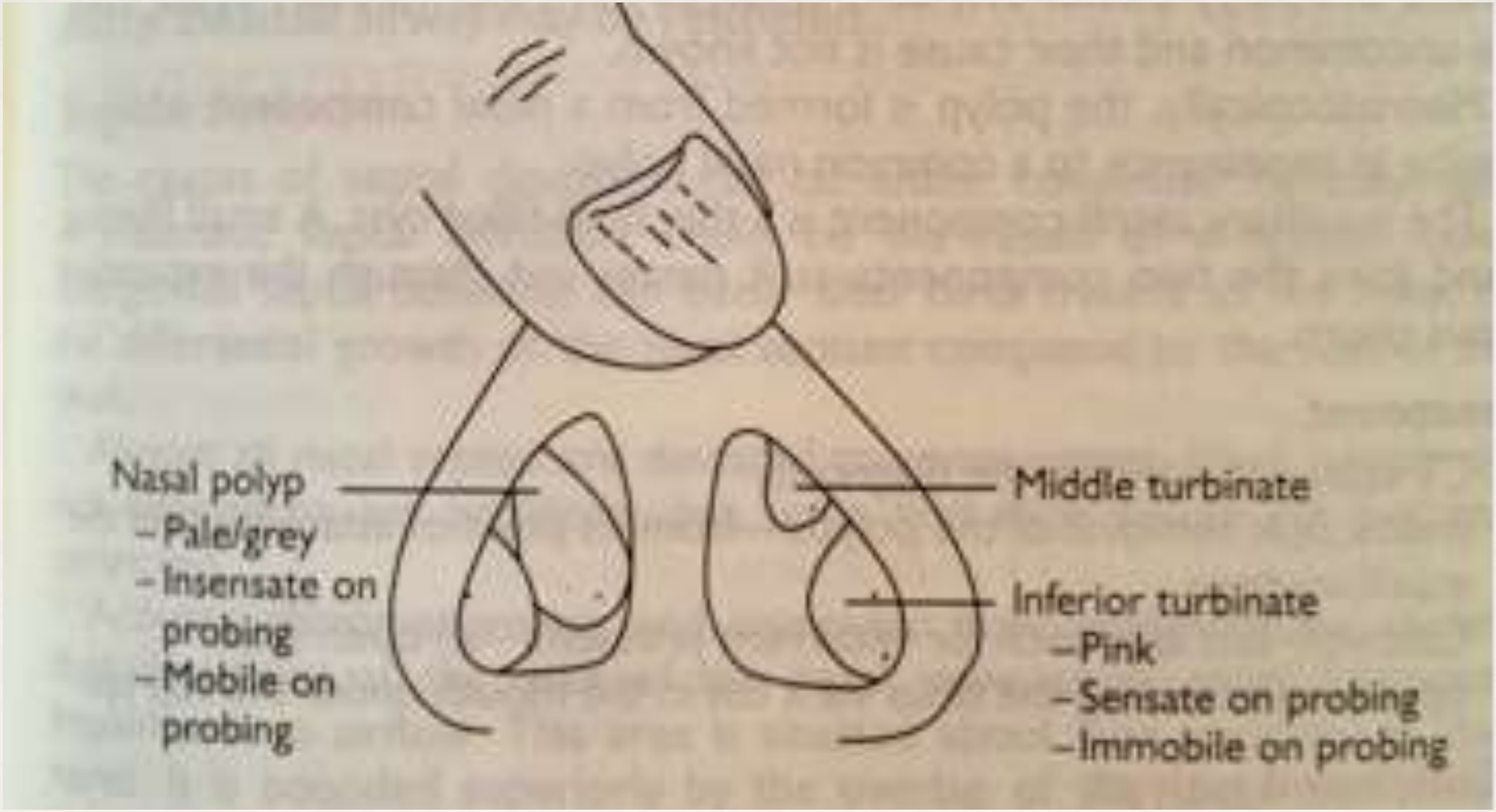
Nasal polyp
– Pale/grey
– Insensate on probing
– Mobile on probing
Middle turbinate
Inferior turbinate
– Pink
– Sensate on probing
– Immobile on probing

Thank you