Hoarseness

preferably termed

DYSPHONIA

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Sound production

- Air supply
- Vibrating source

Voice production

- Air supply
- Vibrating source
- Modulating system / resonance chambers

Voice production

- Air supply - lungs
- Vibrating source - vocal cords
- Modulating system / - pharynx, tongue, mouth, lips

  resonance chambers - chest, pharynx, sinuses, oral cavity

Voice production

- Fundamental frequency
- Harmonics (overtones) add “colour”
- Unique sound produced –

“laryngeal imprint”

Voice production

- “Pure” sound made *rounder* and *richer* by addition of harmonics and vibrato in the trained voice

Dysphonia is the result of **noise** formed by turbulent airflow in the larynx…

...as well as by irregularities of the normally periodic vibrations of the vocal cords.

It is graded:

very slight - slight - moderate - severe

With increasing dysphonia, the harmonic portion of a vocal sound decreases in pitch…

and the “noise” component dominates…

resulting in the abnormal sound perceived as hoarseness.

N.B. hoarseness which persists for more than 2-3 weeks should always be "referred" to exclude malignancy

Normal larynx

Aetiology

- Congenital
- Traumatic
- Inflammatory
- Neoplastic
- Functional

Congenital

- Laryngomalacia (75%)

  - a “rough” cry associated with stridor which is worse when feeding and begins within a few weeks of birth

Congenital

- Neurological (10%)

  - unilateral or bilateral recurrent nerve palsies (idiopathic or birth trauma)

Congenital

- Other

  - laryngocoele
    (blind sac of the laryngeal ventricle)

  - haemangioma
    (site determines severity of dysphonia)

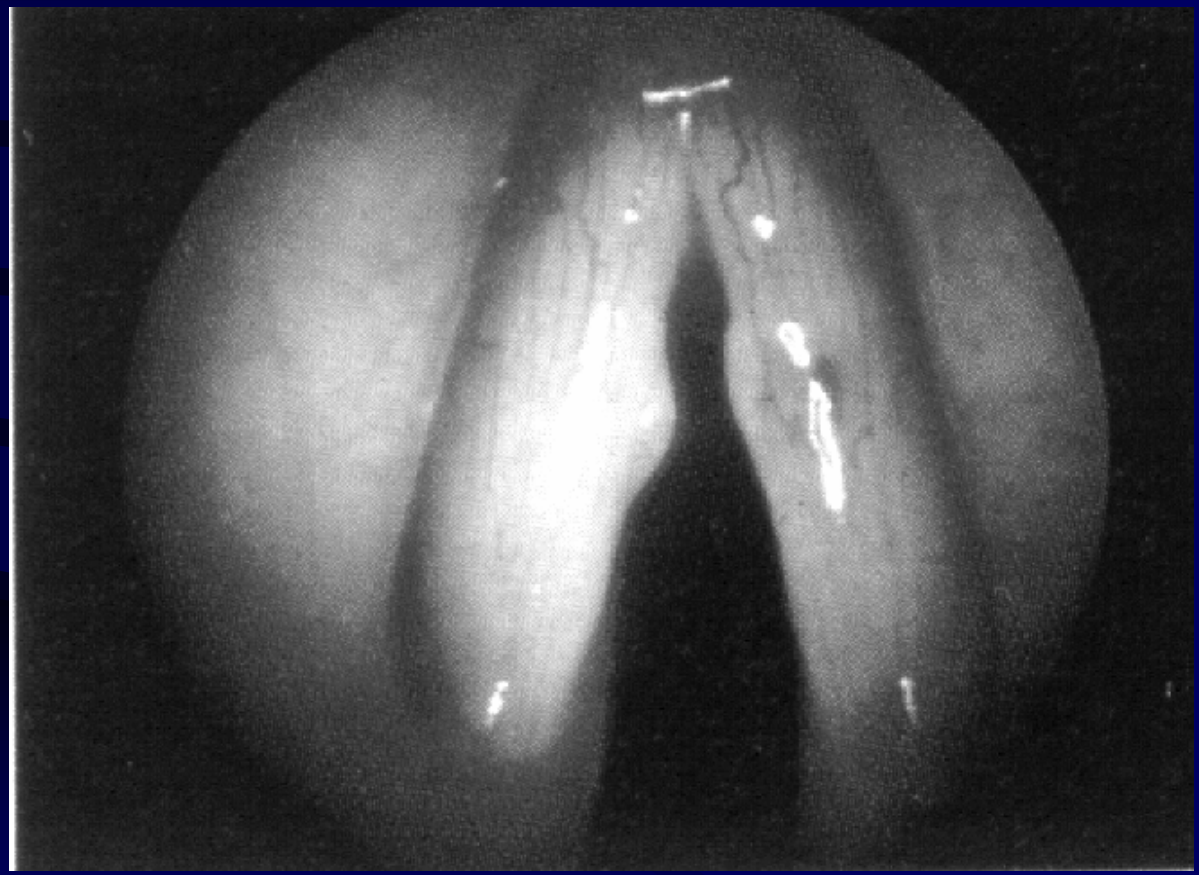
Traumatic

- Laryngeal

  - **acute vocal abuse** - extreme overuse at sporting events,clubs, gyms and in politicians, lecturers, teachers, etc.

  - **chronic abuse** – screamer's or singer's nodules

Vocal cord nodules



Traumatic

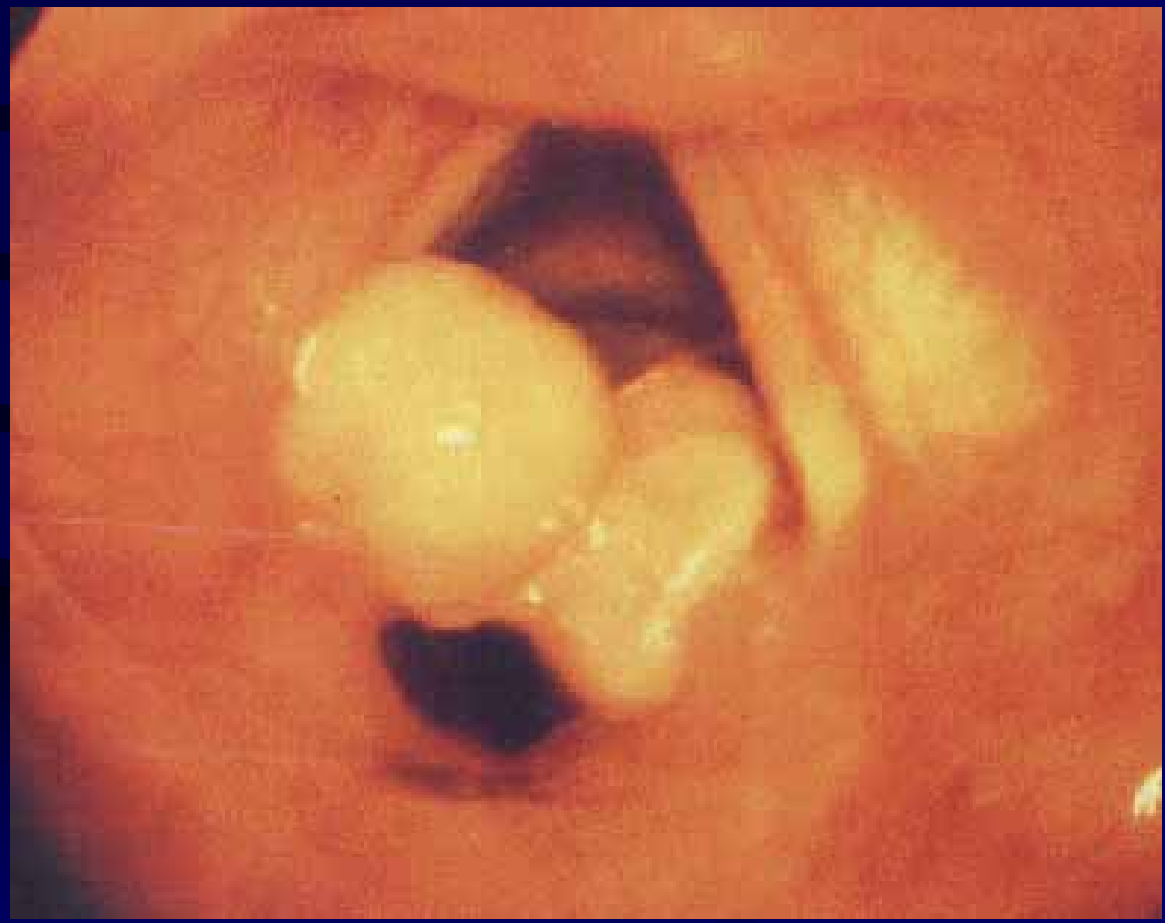
- Laryngeal

  - **intubation** - shortly after removal of the tube, dysphonia, coughing and haemoptysis occur

  Follows repeated or incorrect intubation, IPPV, oversized ET tube, glottic cuff

  - 2 to 8 weeks later, usually from *intubation granulomata*

Intubation granulomata



Traumatic

- Laryngeal

  - **external trauma** – blunt or penetrating injuries cause haematoma, oedema and arytenoid dislocation.

    Found in MVA's, contact sport, assault

Traumatic

- Laryngeal

  - **inhalational** - steam, industrial fumes, smoke and tobacco.

    Cause oedema

  - **foreign bodies** - impact in the larynx, causing oedema

Traumatic

- Recurrent laryngeal nerve

  - **unilateral -** breathy voice due to air loss. Improves later as other cord compensates

  - **bilateral** - initially airway problem and may result in aphonia. Usually aspiration and dyspnoea on exertion

Traumatic

- Recurrent laryngeal nerve - causes

  - Surgery
  - Blunt or sharp trauma
  - Ca bronchus / oesophagus
  - Pulmonary TB
  - Aortic arch aneurysm

Inflammatory

- Acute laryngitis

  dysphonia . . . aphonia

  - associated pain and cough
  - viral or bacterial (or allergy)
  - cords red and swollen

Inflammatory

- Chronic laryngitis

  - deepening / roughening of voice
  - irritants - cigarette smoke
    - air pollution
    - allergens
  - cords red and thickened

Reflux

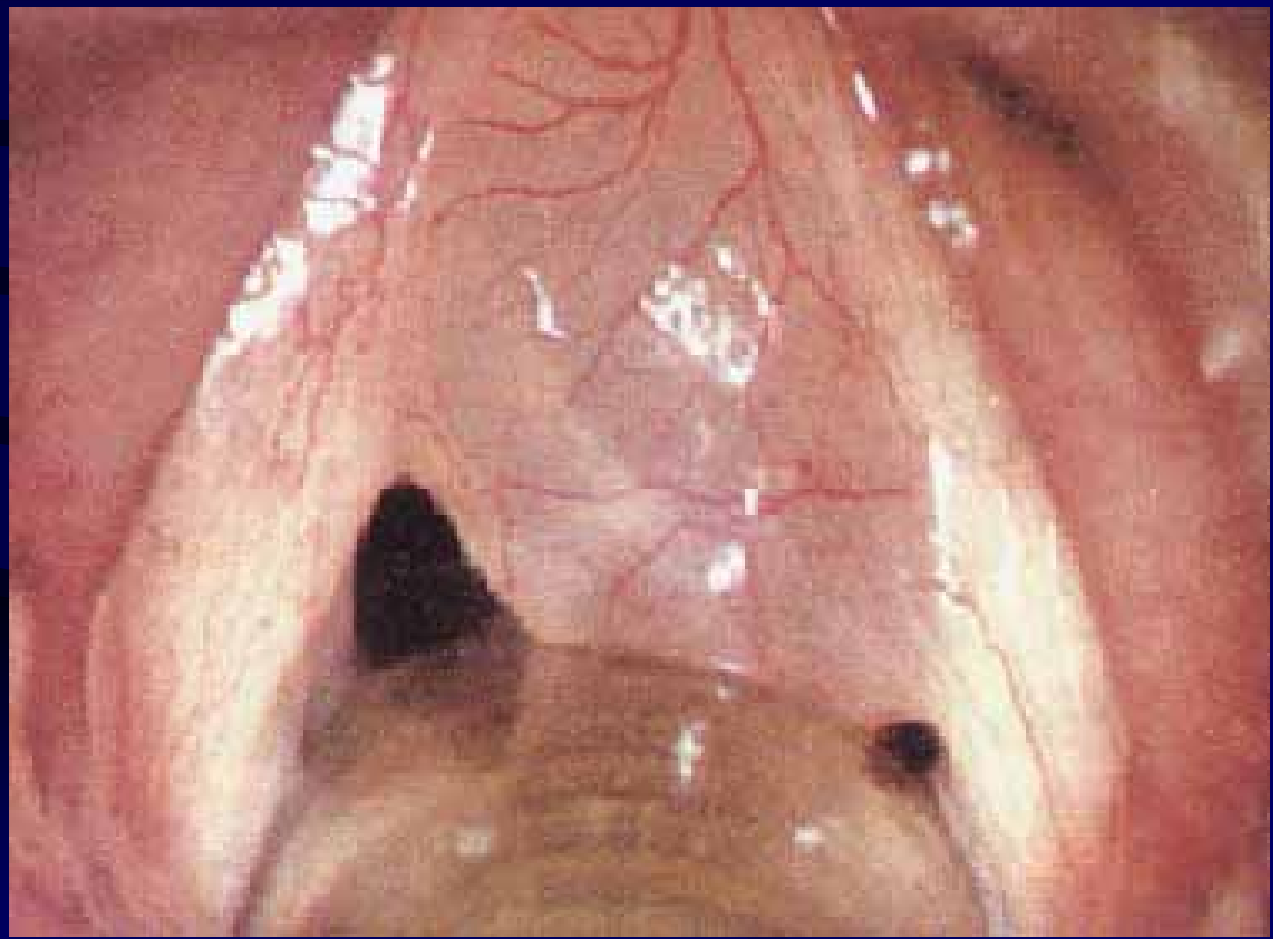
Neoplastic - benign

- Vocal cord polyps

  - voice normal if polyp pedicled

  - polyp arises on the free edge of the cord following inflammation & abuse in men (30 to 50)

Vocal cord polyp



Neoplastic - benign

- Reinke's oedema
  - gelatinous oedema in Reinke's space
  - vocal overuse and smoking
- Papillomata
  - similar to viral wart
  - often recurrent and widespread
- Mucus retention cysts

Papillomata

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Dysphonia 2

“Functional”

Functional dysphonia

More accurately:

non-mechanical disorders

Functional dysphonia

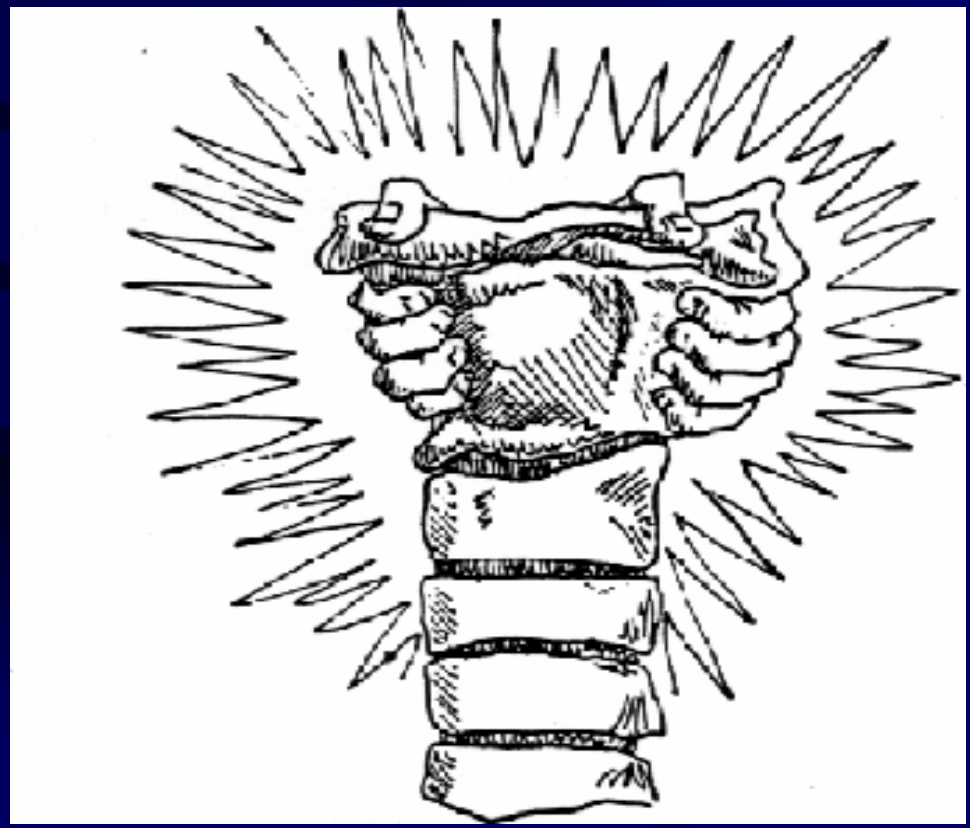
- Neurological / neurogenic
- Myogenic
- Articulation
- “Functional” / psychogenic

Neurological / neurogenic

- Cortical and subcortical disorders as well as lesions of:
  - Vagus (X)
  - Glossopharyngeal (IX)
  - Hypoglossal (XII)
- Abnormalities of vocal cord movement
- Cords take up different position during function

Psychogenic

- “hypercontraction” of the laryngeal musculature is a response to stress



Psychogenic

- depending upon which muscle or muscle group predominates, the glottis assumes different phonatory positions

Management

- extremely difficult
- much “secondary gain” for the sufferer
- resistance to being cured

Management

- N.B. there are so many organic causes of dysphonia that the *psychogenic* diagnosis must be one of exclusion

Management

- Once the diagnosis has been made, treatment is a team effort:

  - otolaryngologist
  - **speech therapist**
  - psychologist / psychiatrist

Management

- The most important, initially, is the speech therapist who will teach:

  - correct use (avoidance of vocal abuse)
  - vocal “hygiene”
  - relaxation and stress reduction

Neoplastic - malignant

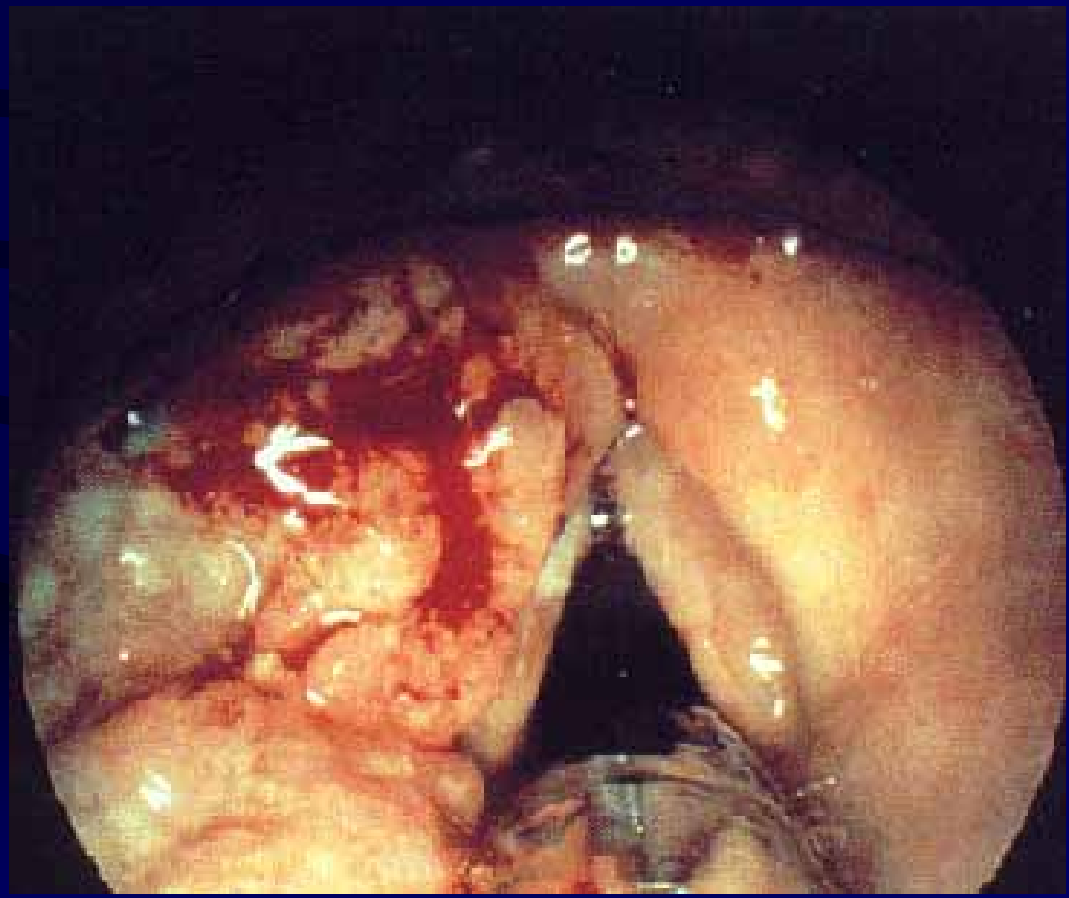
- Leucoplakia
- Dysplasia
- Ca-in-situ

} early and premalignant conditions that often present as dysphonia

Neoplastic - malignant

- Laryngeal squamous carcinoma
  - 45% Ca of head and neck
  - “hoarseness” first symptom if glottis affected, early symptom in other regions
  - heavy smokers (and drinkers)

Squamous Ca of larynx



Neoplastic - malignant

- Unusual forms of Ca
  - verrucous
  - adeno-
  - fibrosarc-
  - chondrosarc-

rare but must be considered