Benign Tumors

- Ectodermal
- Mesodermal
- Pseudotumours

Ectodermal Tumours

- Papilloma: single or multiple
- Adenoma
- Paraganglioma
- Neurilemmoma

Single papilloma

- Common in adults, rare in children
- Sessile or pedunculated
- Usual sites anterior commissure, anterior half of the vocal cords
- Men:women ratio 2:1
- Present with hoarseness
- If small removed endoscopically
- If large by laryngofissure
- Biopsy to exclude malignancy specially if recurrent

Multiple papillomas

- Infants and young children, rare in adults
- A virus may be responsible (HPV)
- Vocal cords are the usual site
- Hoarsness if vocal cords affected
- Dyspnoea may occur ---- tracheostomy
- Removed endoscopically by CO2 laser
- Spontaneous recovery in puberty may occur

Mesodermal tumours

1. Vascular neoplasms
2. Chondroma
3. Myogenic tumours
4. Fibroma
5. Lipoma

Vascular neoplasms

- Arise from blood or lymphatic vessels
- Haemangioma
- Rare in adults
- Telangiectatic vocal cord polyp
Chondroma

- Arise from cartilages (Mostly cricoid)
- More in men (40-70 years)
- Clinical features
  - Hoarsness and dyspnoea
  - Stridor (extension into subglottic space)
  - Dysphagia (extension into hypopharynx)
  - External swelling (cricoid ring or thyroid cartilage)
- Indirect laryngoscopy reveals a smooth mass covered by intact mucosa
- Radiology shows calcific stippling or coarse irregular calcification
- Biopsy specimens is unrepresentative, the tumour is hard and difficult to penetrate
- Surgery is the treatment of choice
- Radiotherapy is of little value

Malignant Tumors

- 1% of all malignancies In UK
- More in men
- Predominantly of squamous pathology
- Interfere with function and emotion
- High cure rate 85%

Incidence

- Higher in urban than rural population
- Social and racial differences reflect different habits (tobacco and alcohol)

Classification

The International Union against Cancer (UICC) classified Ca larynx on anatomical bases

- Epilarynx
  - Suprahoyd epiglottis
  - Aryepiglottic folds
- Supraglottic (20%)
  - infrahoyd epiglottis
  - false cords
  - ventricles
- Glottic (70%)
  - True cord, ant & post comissure
- Subglottic (10%)

Aetiology

- Unknown
- Possibly related factors
  - genetic and social factors, male predominance
  - racial predilection, urban pollution
  - tobacco and alcohol, radiation, asbestos, occupational factors
Examination and diagnosis

Diagnosis will be made after consideration of:

1. History
2. Examination of the larynx
3. Examination of the neck
4. General examination of the patient
5. Radiology
6. Clinical investigations
7. Histological examination

1-Symptoms

- *Dysphonia* progressive and unremitting
- *Cough and irritation* in the throat (early)
- *Dyspnoea & stridor* in advanced tumour, specially in subglottic Ca
- *Pain* more typical of supraglottic Ca, late and uncommon
- *Referred otalgia* may occur
- *Swelling* of the neck or larynx (tumour or LN)
- *Haemoptysis* (rare , in lesions of the margin of epiglottis)
- *Anorexia*, cachexia or fetor are late symptoms
- *Progress* of the disease

2-Examination of the larynx

Examine for

- Focal abnormality
- Vocal cord lesion
- Mass
- Mobility

Examine by

- Indirect laryngoscopy (LA)
- Flexible laryngoscopy (LA)
- Direct laryngoscopy (GA)
- Microlaryngoscopy (GA)

3-Examination of the neck

A palpable neck mass could be due to:

1. Direct spread of the tumour.
2. Regional lymph nodes metastasis.
3. Enlarged thyroid lobe which suggest invasion

4-General examination

- To identify metastasis e.g. to the liver
- To assess the overall physical status of the individual who is likely to need GA and biopsy, surgery, radiotherapy or chemotherapy

5-Radiological examination

- Chest X-ray
- Larynx Tomography
- CT and MRI of neck and larynx
6-Clinical investigations

- Full hematological screen
- Biochemical profile including liver function tests and serum protein
- A urine screen for diabetes
- ECG

7-Histological examination

- Proof diagnosis of malignancy
- Type of the tumor
- Degree of differentiation

Diagnostic difficulties

- Negative biopsy
- Keratosis
- Previous radiation
- Miscellaneous conditions: chronic laryngitis, TB, Syphilis…

Pathology

- Squamous cell carcinoma: The vast majority of laryngeal malignant tumours.
- Verrucous carcinoma (Ackerman’s tumour): A distinct variant of well differentiated squamous cell Ca

Glottic Ca

- Origin: the free margin of the vocal cords
- Invasion & extension
  - anterior commissure
  - cartilage (Ossified more prone)
  - arytenoid & posterior cricoarytenoid muscle
  - vertical extension to the subglottis &/or supraglottis is more frequent than to the opposite side
- Impaired mobility:
  - superficial invasion of the thyroarytenoid muscle
- Fixation of the vocal cords: by invasion of:
  - thyroarytenoid muscle
  - arytenoid cartilage
  - cricoid cartilage
  - cricoarytenoid joint

Supraglottic Ca

- Often involving both sides
- Seldom extend to glottic region due to different embryological derivations & various lymphatic supplies
- Invasion
  - Thyroid cartilage
  - pre-epiglottic space occur in 40% of supraglottic Ca and 70% of epiglottic Ca
  - vallecula & base of the tongue
  - Arytenoid
  - Pyriform sinus
Subglottic Ca

- Primary are rare
- Grow circumferentially and extensively
- Invasion of the vocal cords may lead to impairment of mobility and hoarsness
- Can spread through the cricothyroid membrane anteriorly or cricotracheal membrane posteriorly or invade the trachea caudally

Lymph node involvement

18% had LN metastasis at the time of referral

- Supraglottic (40%)
- Glottic Ca (5%)
- Subglottic Ca (13%)

Distant metastasis

- Few present with distant metastasis at the time of diagnosis
- 11% have distant metastasis, mostly in the lung (6.8%)

TNM classification

- T: Primary tumour
- N: Nodal deposits
- M: Metastasis

T: Primary tumour

- Tx Primary tumour can not be assessed
- T0 No evidence of primary tumour
- Tis Carcinoma insitu

Glottic

- T1 limited / mobile
  - a: one cord
  - b: both cords
- T2 extends to supra or subglottic /mobile
- T3 cord fixation
- T4 extends beyond the larynx

Supra & subglottic

- T1 limited / mobile cords
- T2 extends to glottis/mobile
- T3 cord fixation
- T4 extends beyond the larynx

N: Nodal deposits

- N0 No LN deposits
- N1 ipsilateral movable
- N2 contra or bilateral movable
- N3 Fixed

M: Metastasis

- M0 no metastasis
- M1 metastasis
Staging

- **Stage 0**: Tis, N0, M0
- **Stage 1**: T1, N0, M0
- **Stage 2**: T2, N0, M0
- **Stage 3**: T3, N0, M0
  - T1-T3, N1, M0
- **Stage 4**: T4, N0/N1, M0
  - Any T, N2/N3, M0
  - Any T, Any N, M1

Treatment

- No treatment
- Palliation
- Curative
- Rehabilitation

No treatment

- Those presenting in extremis
- Who are no longer conscious of pain or distress
- Disseminated tumours cause their death without the primary tumour or regional disease causing symptoms
- 7-8% receive no treatment

Palliation

- The attempt to suppress the Ca and its symptoms without expectation or intent to cure
- Palliation is used in late stages
- *Includes*: pain relief, tracheostomy, other surgery, radiotherapy, chemotherapy
- Pain relief
  - Pain is not common in Ca larynx
  - Combination methods including analgesics, radiation, surgery, & chemotherapy used for pain relief
- Tracheostomy
  - To relieve airway obstruction
  - It often provide a dilemma, as it just delay the inevitable death in a patient with incurable cancer
- Other surgeries
  - Total laryngectomy For pain control occasionally
  - Radical neck dissection may remove a fungating or painful local lesion
- Radiotherapy
  - Commonly used for palliation
  - Can be applied locally and selectively
  - Radioactive implants of gold are useful for local treatment
- Chemotherapy
  - No Ca larynx has been cured by drugs
  - Complete regression is rare
  - Partial response in 20%
  - In no way can be compared to radiotherapy or surgery
  - Rather it is an alternative to analgesics
  - Has significant side effects and leads to more suffering
Curative treatment

- Radiotherapy
- Surgery
- Chemotherapy

Radiotherapy

- Radiation is most effective where the tissues are well oxygenated.
- So it is most valuable in small lesions and when the vascular supply is undamaged, where it has not preceded by surgery
- Radiation is more applicable on the oxygenated periphery, while surgery could deal with the mass
- Selection of cases:
  1. When cure is likely with preservation of function.
  2. When surgery is contraindicated or refused.
     - Chemotherapy before radiation increases the response.
- Contraindications
  1. Active perichondritis
  2. Cartilage invasion
  3. Previous radiotherapy
- Interstitial radiation
  - radioactive gold-198 grains can be inserted using a special gun in a pattern which can give a very high dose localized to nodes or nodules in the neck, with little damage to normal structures
- Radiation reactions
  1. Erythema or moist desquamation of the skin, may progress to necrosis
  2. Perichondritis
  3. Mucositis (Painful erythematous reaction)
  - Reactions are minimized by the avoidance of smoking and alcohol.

Surgery

- Microlaryngeal Surgery
- Laser Surgery
- Excisional Surgery

Microendolaryngeal and laser surgery

- Carcinoma in situ can by treated by microsurgical excision and laser makes this easier
- Certain localized supraglottic lesions may be excised using a laser
- Carbon dioxide laser is used

Excisional surgery

- Used with or without radiotherapy
- Has risk of loss of voice, and protection of the airway
- Is more effective than radiotherapy in large tumours & when there are secondary deposits in LN in neck
- Partial resection of the larynx may maintain a near normal function with high cure rate
- Used after failure of radiotherapy
Selection of treatment

Microendoscopic removal with or without laser

1. Keratosis & Carcinoma in situ in the glottis and supraglottis
2. Small tumours in the marginal zones (suprahyoid epiglottis, aryepiglottic folds, false cords)

Radiotherapy

1. T1 & T2 lesions (Supraglottis and glottis)
2. T3 glottis
3. Subglottic tumours
4. Small or subclinical nodes

Surgery

1. Supraglottic lesions arising from the base of the epiglottis and the false cords.
2. T2 lesions as alternative to radiotherapy
3. T3 & T4
4. Subglottic lesion as alternative to radiotherapy
5. Secondary nodal deposits
6. Other malignancies apart from squamous type all are treated by laryngectomy

Emergency laryngectomy

- This is to avoid tracheostomy when there is airway obstruction in laryngeal Ca
- Peristomal recurrence is more in those with tracheostomy who undergone laryngectomy

Surgical techniques

- Vertical partial resection
- Horizontal partial resection
- Total resection With or without neck dissection

Management of LN metastasis

1. Observation for limited cancers
3. Prophylactic treatment—Neck dissection or radiotherapy.
4. Treatment of postoperative and post- irradiation LN