Larynx

what is a larynx and why do i need one?	it protects the airways
	for speaking as the vocal folds are located within the larynx
vocal folds	Muscular bands that run lengthwise from front to back of larynx
	vibrate to produce sound

First normal cells to cancer

cancer	refers to uncontrolled, abnormal growth of cells that invade and damage the body's normal tissues
	cells start normal but then change = several mutations = change into a cancer cell

- it can start in any cell in the body (organ tissue, skin,bone, muscle blood vessels & brain tissue)
- can form tumours (not all do)
- cancer cells can spread

Oral and laryngeal Cancer

sixth most common type of cancer
➢ more common in men, peak age 60 - 70 years
➢ high-risk factors
➢ long term smoker
➢ alcohol consumption
➢ herpes simplex virus

Laryngeal Cancer

➢ Larynx - 36% (66% glottic)
➢ Lymphatic system runs throughout our body
▪ Part of the immune system → e.g., removes dead cells and protects from invading microo-rganisms
▪ Lots of lymph nodes/ glands throughout our body
Particularly more in the neck area
➢ Lymph nodes often the first place that cancer cells reach when they break away from a tumour
➢ Because there are lots of lymph glands in the neck the cancer cells are likely to invade them so that is why cancer is most common in the laryngeal level

Surgery vs Radiotherapy vs Chemotherapy

Radiation therapy	→ beams of radiation are focused on a specific area in your body
Chemot-herapy	→ is delivered through an infusion or drugs

Presenting Signs and Symptoms

➢ Nonhealing ulcer
➢ Neck lump
➢ Pain and/or neuropathic pain (e.g., tumours can cause nerve damage if they grow close to and press on the nerve)
➢ Difficulty swallowing (Dysph-agia) / Painful swallowing
➢ Otalgia (ear pain → nasoph-aryngeal cancer - see image purple tube)
➢ Persistent cough (→ throat cancer)
➢ Sore throat
➢ Hoarse voice (→ glottal)
➢ Fever
➢ Loss of appetite, weight loss
➢ Stridor (→ glottal → abnormal sound produced by turbulent airflow through a partially obstructed airway)

Diagnosis

Combination of history taking, physical examination, imaging and biopsy (a sample of tissue)
➢ Imaging –
▪ CT (Computed Tomography)
▪ a special type of x-ray that gives a highly detailed picture of the organs/body structures
▪ MRI (Magnetic Resonance Imaging)

Diagnosis (cont)

▪ use strong magnetic fields, magnetic field gradients, & radio frequency waves to generate images of the organs in the body
▪ PET (positron emission tomography)
▪ uses small amounts of radioa-ctive materials, a special camera & a computer to evaluate organ and tissue functions
➢ TNM (Tumour-Node-Metas-tasis) classification
▪ T: Size and extension of the tumour → T0 – T4 → Higher = larger tumour
▪ N: Regional lymph node involvement → N0 – N3 → Higher = distant nodes
▪ M: Tumor spread → Presence (M1) or absence (M0) of metastases
➢ After staging, presented to multidisciplinary team

Treatment – Multidisciplinary

➢ Decisions made by Head and Neck (H&N) team –
▪ Otolaryngologists/H&N surgeon
▪ treatment of diseases/ disorders of the ear, nose, throat, & related structures of the H&N

Treatment – Multidisciplinary (cont)

- Radiation & medical oncologists (treat cancer)
- Plastic & maxillofacial surgeons
- focusing on reconstructive surgery of the H&N, face, mouth, jaws
- Dentist, prosthodontist
- dental and facial problems that involve restoring missing tooth and jaw structures
- Nursing
- SLP
- Dietician

➢ Surgery
➢ Radiotherapy
➢ Chemotherapy

Oral & Oropharyngeal Cancer

Affects –
- Articulation
- Chewing
- Swallowing

➢ Further depends on any Radiation effects
→ may have side effects such as –
- Soreness (or even open sores) in the mouth or throat
- Dry mouth
- Tooth decay
- Swelling in the gums, throat, or neck
- Jaw stiffness
- Trouble swallowing
- Changes in taste

Laryngeal Cancer – Laryngectomy

Surgical removal of the larynx
- when other therapy is not sufficient, or for advanced cancer, the larynx must be removed

➢ Larynx removed → Therefore, complete loss of voice
- The upper portion of the trachea is brought out to the front of the neck via a stoma
- Air can no longer pass from lungs into mouth
- The connection between the mouth and the esophagus preserved

Individuals post - laryngectomy must be careful while showering & washing their hair WHY?
- stoma is a direct pathway to lungs, water entering is a safety risk

Role of the SLP - laryngectomy

Facilitate restoration of oral communication
➢ To do so, must be familiar with –
- Medical procedures and client status
- Communicative needs of client
- Pre-surgery and post-surgery counselling
- General pattern of adjustment to alaryngeal speech
- Support groups available

Role of the SLP - laryngectomy (cont)

Communication post-Laryngectomy
Three types of “alaryngeal” communication available –
- Tracheo-esophageal speech
- Artificial larynx
- Esophageal speech

➢ Choice of communication means depends on general health, physical and cognitive ability of the client, their needs

Electrolarynx

➢ Advantages –
- Can begin within days of surgery
- Easy to learn
- Cheaper than tracheoesophageal puncture

➢ Disadvantages –
- Mechanical sounding
- Monotonous sound
- Reduced intelligibility - especially in high noise setting

Tracheo-esophageal speech

Voice prosthesis valve
1. Surgeon makes a small channel between trachea and esophagus (= tracheo-esophageal puncture)
2. A small one-way valve (voice prosthesis) is put into the channel (see image above – arrow)

Tracheo-esophageal speech (cont)

3. Covering stoma with a thumb/finger and breathing out lets air pass from the lungs through the valve
→ Causes throat muscles to vibrate and make a sound
→ As with normal speech, you shape the sound into words by moving your lips, cheeks and tongue

➢ It can take time to learn how to speak with a voice prosthesis
➢ Voice can sound quite natural

Artificial larynx (“electrolarynx”)

➢ Battery causes vibration in a small disc which generates a buzzing sound
➢ Often held against the neck
➢ Sound passes through tissues into pharynx and mouth where it is shaped into speech
➢ also try to generate a more user-like voice by –
- generating the vibration patterns from the user‘s previous recorded voice
- with dynamic pitch modulation

Voice Restoration after Cancer

Tracheo-esophageal speech

Artificial larynx

Esophageal speech

Air drawn in to esophagus via the mouth –
➢ As the air moves back up from the esophagus, throat muscles vibrate and make a sound
➢ Movements of lips, cheeks and tongue shape the sound into words
➢ Varying degrees of success (30-62%)

Esophageal speech

Advantages	No external device or hand use/ not needing any equipment
	You can learn this as you recover from your laryng-ectomy
Disadv-antages	Difficult to learn, a lot of practice
	Small utterances only
	Stoma noise