THE PHARYNX

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Anatomy

- Skull base
  - Cricoid cartilage anteriorly
  - Inferior border of C6 posteriorly
- Widest portion (5 cm) at hyoid
- Narrowest portion (1.5 cm) at caudal end
- Divided into 3 parts:
  - Nasopharynx
  - Oropharynx
  - Hypopharynx
Cavity of the pharynx
Nasopharynx

- Respiratory function
- Anterior: choana (posterior nasal aperture)
- Posterior: superior constrictor muscle
- Superior: basilar portion of occipital bone
- Inferior: soft palate
The Nasopharynx
Oropharynx

• Respiratory & Digestive function
• Anterior: anterior tonsillar pillar
• Posterior: superior & middle constrictors
• Superior: soft palate
• Inferior: base of tongue, superior epiglottis
• Laterally:
  – Palatoglossal
  – Palatopharyngeal arches
  – Parapharyngeal space
The Oropharynx

- Hard Palate
- Soft Palate
- Uvula
- Posterior Pillar
- Tonsil
- Anterior Pillar
- Posterior Pharyngeal Wall
- Tongue
The oropharynx
Tonsils Size
Grading the Size of Tonsils

Grading system:
A. 0 – tonsils in fossa
B. +1 – tonsils less than 25%
C. +2 – tonsils less than 50%
D. +3 – tonsils less than 75%
E. +4 – tonsils greater than 75%
Hypopharynx

- Digestive function
- Lies posterior to the larynx
- Superior: superior border of epiglottis and pharyngoepiglottic folds
- Inferior: inferior border of the cricoid
- Posterior/lateral: middle & inferior constrictors, bodies of C4-C6
- Anterior: laryngeal inlet
The Laryngopharynx (Hypopharynx)
Pharyngeal Wall

Mucous membrane

Submucosa

Muscular layer

Fibrous layer (Buccopharyngeal fascia)
Mucous membrane

• Nasopharynx
  – Ciliated columnar epithelium

• Oro and hypopharynx
  – Stratified squamous epithelium
Submucosa

- Nerves, blood vessels, and lymphatics
- Mucous and salivary glands
- Subepithelial lymphoid tissue
Subepithelial lymphoid tissue

**WALDEYER'S RING**

- Adenoids (Pharyngeal tonsils)
- Lingual tonsils
- Palatine tonsils
- Pharyngeal lymphoid islands
Characteristics of Waldeyer’s Ring

- No afferents
- Efferent to deep cervical nodes
- No capsule except the palatine tonsils
Pharyngeal Wall

Mucous membrane

Submucosa

Muscular layer

Fibrous layer

Buccopharyngeal fascia
Muscular layer

• External:
  – The three constrictors -1 –superior  2 –middle
    3 - inferior

• Internal:
  – Stylopharyngeus
  – Salpingopharyngeus
  – Palatopharyngeus
Pharyngeal Wall

Mucous membrane

Submucosa

Muscular layer

Fibrous layer (Buccopharyngeal fascia)
Nerve Supply

- Trigeminal
- Glossopharyngeal
- Vagus
- Sympathetic: cervical ganglia
Blood supply

• Arterial from the external carotid artery
  • Ascending pharyngeal
  • The lingual artery
  • The facial artery
  • The maxillary artery

• Venous drainage to the internal jugular
Lymphatics

- Retropharyngeal nodes
- Deep cervical (jugular) nodes
Jugulo-Diagnostic nodes

- Preauricular
- Submental
- Tonsilar
- Submandibular
- Anterior Cervical
- Posterior Cervical
- Supraclavicular
Physiology of the Pharynx
Functions of the pharynx

• Respiratory Channel

• Deglutition
Deglutition

Oral Stage  Pharyngeal Stage  Esophageal Stage
Functions of the pharynx

- Respiratory Channel
- Deglutition
- Speech
- Taste
- Immunity
Immunity function of the pharynx

- Production of immunoglobulins, plasma cells, and lymphocytes by the subepithelial lymphoid tissue
DISEASES OF THE NASOPHARYNX
ACUTE INFECTION OF NASOPHARYNX

• Pathologically: is a part of acute rhinitis
  (common cold)

• Clinically: has no specific clinical features
ADENOIDS
DEFINITION

• Hypertrophy of the nasopharyngeal tonsils sufficient to produce symptoms
CLINICAL FEATURES

• Usually in children
• Nasal obstruction
  – Mouth breathing
  – Snoring, sleep disturbance, apnea etc
• Ear symptoms due to Eustachian tube obstruction
• Adenoid face
Adenoid

- Child
- Snoring
- Mouth breathing
- Nasal Tone
- Bilateral OME
- Bilateral nasal obstruction
EXAMINATION
EXAMINATION
EXAMINATION
Normal nasopharynx

Adenoid
PLAIN X- RAY

Normal

Adenoid
TREATMENT

Adenoidectomy
Local Contraindication of Adenoidectomy

Palatopharyngeal incompetence
DISEASES OF THE OROPHARYNX
ACUTE INFECTIONS OF THE OROPHARYNX

• Acute tonsillitis
• Acute non-specific pharyngitis
• Acute diphtheria
• Infectious mononeuclosis
• Vincent’s angina
• Scarlet fever
• Moniliasis
ACUTE TONSILLITIS
ETIOLOGY

• A disease of childhood, with a peak incidence at about 5 to 6 years of age
CAUSATIVE ORGANISMS

• Viral:
  – Influenza, Parainfluenza, Rhinovirus, Adenoviruses,
    Respiratory syncytial virus, Coronaviruses

• Bacterial:
  – Beta Hemolytic Streptococcus (Group A)
  – Others: Strept pneumonia, H. infleunzae, Staph. aurius etc
Clinical features

- Malaise, fever, headache, limb and back pain
- Sore throat, odynophagia, dysphagia
- Otalgia
THROAT EXAMINATION

A. Parenchymatous tonsillitis  B. Follicular tonsillitis
C. Membranous tonsillitis
NECK EXAMINATION

Enlargement and tenderness of the jugulo-digastric lymph nodes
INVESTIGATIONS

• Throat swab
• CBC
TREATMENT

• Symptomatic & supportive treatment

• Antibiotics
  
  – Penicillin V for 5-7 days – drug of choice
  
  – Erythromycin – second line
  
  – Amoxicillin and Ampicillin – better absorption
COMPLICATIONS OF ACUTE TONSILLITIS

• General:
  – Acute rheumatism
  – Acute glomerulonephritis
  – Septicaemia

• Local:
  – Peritonsillitis & peritinosillar abscess (Quinsy)
PERITONSILLAR ABSCESS (QUINSY)

- An abscess between the tonsil capsule and the adjacent lateral pharyngeal wall
CLINICAL FEATURES

• More common in adults
• Usually unilateral
• Usually follow an attack of tonsillitis
• Sever pain > one side
• Unilateral earache and cervical lymphadenitis
• More odynophagia & drooling
• Trismus
• Thickened speech (hot potato voice)
EXAMINATION
EXAMINATION

Right Tonsil

Displaced Uvula

Abscess

Left Tonsil
TREATMENT

- IV antibiotics
- Incision and drainage followed by elective tonsillectomy 6 - 8 weeks later
- ? Hot (abscess) tonsillectomy
COMPLICATIONS OF ACUTE TONSILLITIS

• General:
  – Acute rheumatism
  – Acute glomerulonephritis
  – Septicaemia

• Local:
  – Peritonsillitis & peritonsillar abscess (Quinsy)
  – Neck Abscess
Neck abscess
COMPLICATIONS OF ACUTE TONSILLITIS

• General:
  – Acute rheumatism
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• Local:
  – Peritonsillitis & peritonsillar abscess (Quinsy)
  – Neck Abscess
  – Parapharyngeal abscess
The parapharyngeal space (PPS)

- Cone shaped
  - Base at temporal bone
  - Apex at the hyoid bone

- Between
  - Pharyngeal
  - Lat + med pterygoid muscles
Contents

- Loose fibrofatty tissues
- Carotid artery
- Internal jugular vein
- Cranial nerves IX, X, XI, and XII;
- Cervical sympathetic chain
- Lymph nodes
  - Nasal cavity, paranasal sinuses
  - Nasopharynx and oropharynx,
  - Mastoid tip
Clinical features of parapharyngeal abscess

- Systemic manifestations
- Pain, trismus, swelling
CLINICAL FEATURES

• Systemic manifestations

• Pain, trismus, swelling
INVESTIGATION

- Laboratory and bacteriology
- CT
- MRI
PRINCIPLES OF TREATMENT

• Secure the airway

• Antimicrobial therapy

• Surgical drainage
DRAINAGE OF PARAPHARYNGEAL ABSCESS

• External cervical incision

• In order to avoid injury to the great vessels
COMPLICATIONS OF ACUTE TONSILLITIS

• General:
  – Acute rheumatism
  – Acute glomerulonephritis
  – Septicaemia

• Local:
  – Peritonsillitis & peritonsillar abscess (Quinsy)
  – Neck Abscess
  – Parapharyngeal abscess
  – Retropharyngeal abscess
Retropharyngeal space

- Between
  - Prevertebral fascia
  - Posterior pharyngeal wall and esophagus fascia
- From
  - Skull base
  - Tracheal bifurcation
- Major route ➔ mediastinum.
Anatomy of retropharyngeal space

- Buccopharyngeal fascia
- Retropharyngeal space
- Alar fascia
- Danger space
- Prevertebral fascia
- Prevertebral space

- Spine
- Pharynx

- Trachea
- Esophagus
- Carotid sheath
- Spine
ACUTE RETROPHARYNGEAL ABSCESS

• Due to suppuration of the retropharyngeal lymph nodes present in the retropharyngeal space
CLINICAL FEATURES

• Systemic manifestations
• Respiratory obstruction
• Odynophagia & Dysphagia
• Swelling of posterior pharyngeal wall (usually unilateral)
INVESTIGATION

• Laboratory and bacteriology
• Plain X-rays
PLAIN X-RAYS

Normal

Retropharyngeal abscess
CT
MRI
TREATMENT OF ACUTE RETROPHARYNGEAL ABSCESS

• Secure airway

• Antimicrobial

• Surgical drainage
  – Trans oral
CHRONIC RETROPHARYNGEAL ABSCESS

- Tuberculous (cold abscess)
- Usually due to TB spines but may be secondary to TB lymphadentitis
- Symptoms are insidious
- Treatment is by anti-tuberculous medication, repeated aspiration and external drainage
Ludwig’s Angina

- Infection of the submandibular space
Causes of Ludwig’s Angina

• Usually secondary to dental infection or trauma
Presentation of Ludwig’s Angina
TREATMENT

- Secure airway
- Most cases respond to antibiotics
- Drainage may be needed
Complications of neck spaces infections

- Respiratory obstruction
- Spontaneous rupture (inhalation pneumonia)
- Extension of infection
  - Other spaces
  - Carotid & internal jugular
  - Mediastinitis
ACUTE INFECTIONS OF THE OROPHARYNX

- Acute tonsillitis
- **Acute non-specific pharyngitis**
- Acute diphtheria
- Infectious mononucleosis
- Vincent’s Angina
- Scarlet fever
- Moniliasis
ACUTE NONSPECIFIC PHARYNGITIS
ACUTE INFECTIONS OF THE OROPHARYNX

- Acute tonsillitis
- Acute non-specific pharyngitis
- **Acute diphtheria**
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ACUTE DIPHTHERITIC PHARYNGITIS

- A severe infection caused by *Corynebacterium diphtheriae*
- Affect children at age 2-5 years
- Spread by droplets or contaminated articles
- The incidence has fallen markedly because of immunization
PATHOLOGY

• Local grayish membrane (composed of fibrin, leukocytes, and cellular debris)

• Exotoxins travels to heart and nervous system
CLINICAL MANIFESTATIONS

• Systemic symptoms due to the exotoxins
  • Toxemia
  • Mild fever
  • Tachycardia
  • Paralysis

• Local manifestations
  – Sore throat
  – Membrane
  – Marked lymphadenitis (‘bull neck’)

DIAGNOSIS

- Isolation of the organism
TREATMENT

• Starts before culture confirmation
  – Airway maintenance
  – Antitoxin
  – Antibiotics (erythromycin, penicillin G, rifampin, or clindamycin)
PREVENTION

• Vaccine
COMPLICATIONS

• Respiratory obstruction

• Heart failure

• Muscular paralysis
ACUTE INFECTIONS OF THE OROPHARYNX

- Acute tonsillitis
- Acute non-specific pharyngitis
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- Moniliasis
INFECTIOUS MONONUCLOSIS

• Systemic infection caused by Epstein-Barr Virus (EBV)

• Selectively infects B-lymphocytes

• Clinical disease is usually seen in young adults
CLINICAL MANIFESTATIONS

• Clinical triad
  – Fever
  – Lymphadenopathy
  – Pharyngitis and/or tonsillitis
INFECTIOUS MONONUCLEOSIS
CLINICAL MANIFESTATIONS

• Clinical triad
  – Fever
  – Lymphadenopathy
  – Pharyngitis and/or tonsillitis

• Other clinical findings
  – Splenomegaly – 50%
  – Hepatomegaly – 10%
  – Rash – 5%
DIAGNOSIS

• CBC with differential (atypical lymphocytes)

• Detection of heterophil antibodies (Paul-Bunnel or Monospot test)
TREATMENT

• Symptomatic & supportive treatment

• Steroids (severe cases)

• Avoid ampicillin
COMPLICATIONS

• Autoimmune hemolytic anemia
• Cranial nerve palsies
• Encephalitis
• Hepatitis
• Pericarditis
• Airway obstruction
VINCENT’S ANGINA

- Subacute infection due to Spirochaeta denticolata and Vincent’s fusiform bacillus
- Most commonly in overcrowded conditions “trench fever”
- Mild local and systemic symptoms
VINCENT’S ANGINA
VINCENT’S ANGINA

- Subacute infection due to Spirochaeta denticolata and Vincent’s fusiform bacillus
- Most commonly in overcrowded conditions “trench fever”
- Mild local and systemic symptoms
- Management is with penicillin and local oral hygiene
SCARLET FEVER
SCARLET FEVER
SCARLET FEVER
FUNGAL PHARYNGITIS
CAUSES

• Long term antibiotics

• Immunosuppresion (Leukopenia, Corticosteroid therapy etc)
CANDIDIASIS (MONILIASIS, THRUSH)
CANDIDIASIS (MONILIASIS, THRUSH)
Treatment

• Nystatin
• Fluconazole
CHRONIC TONSILLAR HYPERTOPHY
CAUSES

• Chronic or frequent acute infections

• Idiopathic (?exaggerated immune response)
PRESENTATION

• Upper airway obstruction
  – Mouth breathing, snoring
  – Disturbed sleep and apnea

• Pulmonary hypertension, cor pulmonale and heart failure
TREATMENT

• Tonsillectomy & adenoidectomy
CHRONIC INFECTIONS OF THE PHARYNX
CHRONIC NON-SPECIFIC PHARYNGITIS

• Primary

• Secondary
  – Sinonasal disease
  – Dental infections
  – Chest infections
  – Smoking
  – Gastro esophageal reflux
CLINICAL FEATURES

• Sore throat
• Irritation
• Cough
• O/E
TREATMENT

• Treatment of the cause

• Humidification
CHRONIC SPECIFIC PHARYNGITIS

- Tuberculosis
- Syphilis
- Lupus vulgaris
- Leprosy
- Sarcoidosis
CHRONIC TONSILLITIS

• Persistent or recurrent sore throat

• Persistent cervical adenitis

• Halitosis

• Congested tonsils
TREATMENT

Tonsillectomy
TONSILLECTOMY
INDICATIONS

• Obstructing tonsillar enlargement
• Suspected malignancy
INDICATIONS

• Obstructed tonsillar enlargement
• Suspected malignancy
• Repeated attacks of tonsillitis
• Chronic tonsillitis
• One attack of quinsy
• Others
CONTRAINDICATIONS

• Bleeding tendency

• Recent URTI
COMPLICATIONS

• Hemorrhage
  – Primary
  – Reactionary
  – Secondary
• Respiratory obstruction
• Injury to near-by structures
• Pulmonary and distant infections
Primary Hemorrhage

• Bleeding occurring during the surgery

• **Causes**
  – Bleeding tendency
  – Acute infections
  – Aberrant vessel
  – Bad technique

• **Management**
  – General supportive measures
  – Diathermy, ligature or stitches
  – Packing
Reactionary Hemorrhage

- Bleeding occurring within the first 24 hours postoperative period

**Causes**
- Bleeding tendency
- Slipped ligature

**Diagnosis**
- Rising pulse & dropping blood pressure
- Rattle breathing
- Blood trickling from the mouth
- Frequent swallowing
- Examination
Reactionary Hemorrhage

• Treatment
  – General supportive measures
  – Take the patient back to OR
  – Control like reactionary hemorrhage
Secondary hemorrhage

- Occur 5-10 days postoperatively
- Due to infection
- Treated by antibiotics
- May need diathermy or packing
Pharyngeal (Zenker’s) Pouch

A mucosal sac protruding through Killian’s dehiesence
Pathogenesis

• Most probably related to neuromuscular incoordination
  – ? Failure of relaxation of cricopharyngeus
  – ? Early closure of cricopharyngeus
  – ? Spasm of cricopharyngeus
Clinical Features

- Dysphagia
- Regurgitation
- Aspiration
Diagnosis

- Clinical examination
- Barium swallow
Diagnosis

- Clinical examination
- Barium swallow
- Endoscopy
Treatment

• Excision
THANK YOU