Surgical indications:
Non-malignant pulmonary diseases

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Non-malignant

- Malignant as a pathological term: Cancer
  - Non-malignant = not cancer
- Malignant as an adjective: Disposed to cause harm, suffering or distress
  - Non-malignant = not harmful, not suffering
  - → no surgical indication
Non-malignant pulmonary diseases

- Mass lesions
- Non-mass lesions
Mass lesions

- High likelihood/ Proven to be non-malignant
  - Clinically benign
  - Pathological confirmed
- Low likelihood to be malignant
  - Imaging characteristic
Non-mass lesion

- Ground-glass opacity (GGO)
- Atelectasis
- Diffuse lesions
- Infiltration
Known Benign
Congenital lesions

• Congenital lobar emphysema
• Congenital cystic adenomatoid malformation
• Sequestration
Congenital lobar emphysema (CLE)
• No indication for asymptomatic or mild disease
• Symptomatic --> resect emphysematous tissue
• Mostly lobectomy
• Selective intubation is crucial during induction
• Initial/ alternative treatment
  ▪ Needle aspiration
  ▪ FOB decompression
  ▪ Balloon dilation of stenosed bronchus
Congenital cystic adenomatoid malformation (CCAM)
- **Mechanism** ↔ *segmental bronchial atresia*
  - Type I (55%) - large cystic spaces in a single lobe.
  - Type II (40%) - numerous small cysts less than 20 mm
  - Type III (5%) - no cysts but a solid mass of adenomatoid hyperplasia
- Most present early with respiratory symptoms, caused by air trapping in the cyst, ~ CLE
- Asymptomatic $\rightarrow$ observation with serial radiographs in the first year of life $\rightarrow$ if no regression $\rightarrow$ Sx (there is some malignant potential)

- Symptomatic $\rightarrow$ lobectomy
Sequestration

- Extra/ intra pulmonary
- Extralobar → other anomalies
  - diaphragmatic hernia,
  - pericardial defects, a
  - nd anomalous pulmonary venous drainage
- CT demonstrates the anomalous systemic arterial supply to allow adequate planning
- Isolate and divide the systemic a. early in the procedure
Quiz
Bronchiectasis

• Permanent abnormal dilatation with destruction of elastic and muscular component

• The current standard examination is CT scan
- Adequate antibiotic therapy (suppression of the bacterial load), bronchodilators, and physiotherapy
- Surgery is the only option offering a potential cure for bronchiectasis. Complete resection is of utmost importance
Surgery for bronchiectasis

- Relief symptoms, usually by a segmentectomy or lobectomy.
- Prevent and treat massive hemoptysis.
- For end-stage bronchiectasis requiring lung Tx, sequential double-lung Tx is indicated to avoid contamination of the new transplanted lungs.
Criteria for Surgical Intervention

- Localized disease
- Adequate pulmonary reserve
- Irreversible process
- Significant symptoms
- For severe generalized disease, bilateral lung transplantation is a viable surgical option
Lung Abscess

- The mainstay of treatment is systemic antibiotics.
- Supportive treatment of predisposing factors.
- Chest PT and possibly bronchoscopy to facilitate bronchial toilet are often recommended.
Indication for intervention

- Medical failure,
- abscess under tension,
- abscess increasing in size,
- contralateral lung contamination,
- abscess larger than 4 to 6 cm in diameter,
- rising fluid level,
- persistent ventilator dependency,
- necrotizing infection with multiple abscesses,
- rupture into the pleural space,
- hemoptysis,
- inability to exclude a cavitating carcinoma.
Less invasive interventions

- External drainage was accomplished by means of tube thoracostomy or surgical cavernostomy.
- Percutaneous drainage using CT or ultrasound guidance.
- The rate of complications is lower with radiologically placed drainage tubes than with bedside or operative tube thoracostomy.
The most important intraoperative consideration is protection of the contralateral lung.
Treatment of Tuberculosis: Indications for Surgery

- Complications Resulting From Previous Surgery
- Failure of Medical Therapy
  - MDR, Aspergillosis complicating treatment
- Surgery for Diagnosis
- Complications of Scarring
  - Massive hemoptysis, bronchiectasis, bronchial stenosis
Fungal infection
Aspergilloma

- Systemic antifungal is not effective. Asymptomatic aspergilloma usually does not require treatment
- Recurrent gross hemoptysis, Life-threatening hemoptysis
- Chronic cough with systemic symptoms, Progressive infiltrate surrounding the mycetoma
- Can’t exclude CA
- In high-risk patients, intracavitary instillation of antifungal agents and bronchial embolization may be more favorable options
Invasive Pulmonary Aspergillosis

- Neutropenia
- Pneumonia
- Persistent fever despite broad-spectrum antibiotics
- Hemoptysis
- Air crescent sign on CT of the chest
- Empirical antifungal therapy with amphotericin B
- Surgery - limited to symptomatic cases.
Most reason for surgery in fungal dis.

- Coccidiodomycosis, blastomycosis, cryptococcosis
- Indeterminate pulmonary nodule
Diffuse lung diseases
Diffuse Lung Diseases

- the goal of surgical biopsy is not only to establish a diagnosis but, more importantly, to effect a change in management to the patient's benefit. If this latter goal is unlikely to be achieved, the biopsy is of questionable utility
Non-mass lesion

• Infection
Specific situation that medical treatment usually fails!

- Immunocompromised host
  - AIDS
  - Hematologic malignancy esp in children
- Transplant recipient
Surgical indications for benign dis.

- Undiagnosed pulmonary lesion is probably the most common indication for surgery.
- Proven benign → compression effect/ other local symptoms or prevention of symptoms/ complications/ fail medical Rx
  - Large lung abscess...