

# Lecture: Respiratory II — COPD & Lung Cancer

## Overview of Respiratory Disorders

Respiratory diseases affect oxygen delivery, carbon dioxide removal, and tissue metabolism. For cosmetic and laser specialists, respiratory health matters because:

- Oxygenation affects skin healing and collagen synthesis
- Smoking alters skin structure and pigmentation
- Chronic lung disease affects anesthesia tolerance
- Some medications affect skin response to procedures

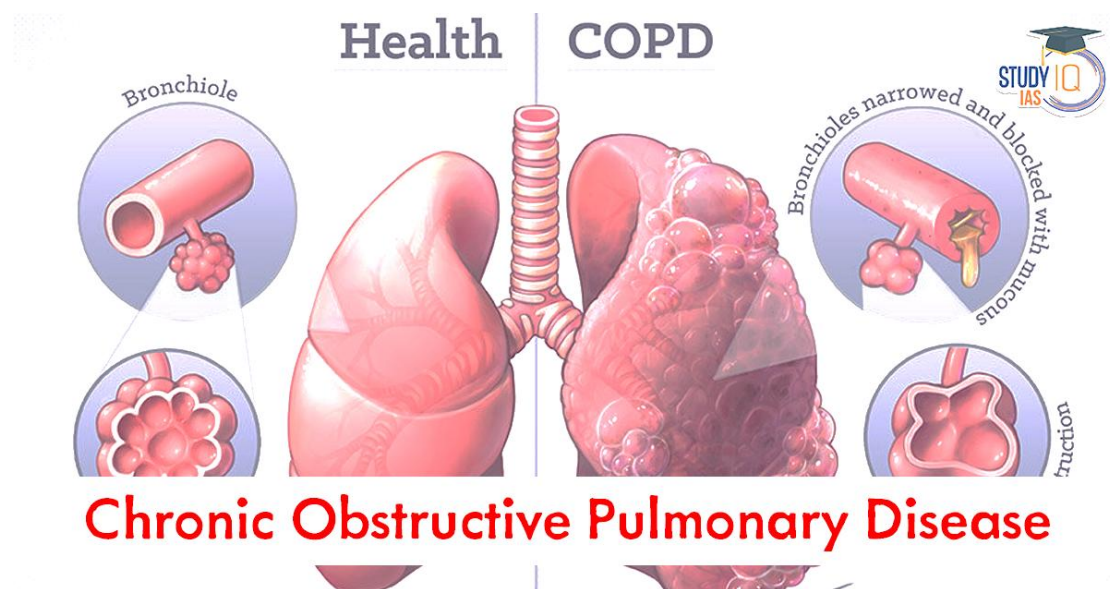
## Chronic Obstructive Pulmonary Disease (COPD)

### Definition

COPD is a **progressive inflammatory lung disease** characterized by persistent airflow limitation that is not fully reversible.

It includes:

- Chronic bronchitis
- Emphysema :Damage to the air sacs (alveoli), reducing the lung's ability to transfer oxygen.



### Pathophysiology

Main mechanisms:

1. Airway inflammation
2. Mucus overproduction

3. Alveolar wall destruction
4. Loss of lung elasticity

Result → air trapping + poor gas exchange → hypoxia.

### **Causes & Risk Factors**

- Cigarette smoking (primary cause)
- Air pollution
- Occupational dust exposure
- Genetic deficiency ( $\alpha$ 1-antitrypsin)

### **Symptoms**

- Chronic cough
- Sputum production
- Shortness of breath
- Wheezing
- Cyanosis (advanced)

### **Diagnosis**

- Spirometry (FEV1/FVC ratio ↓)
- Chest imaging
- Blood gases

### **Treatment**

- Smoking cessation (most effective)
- Bronchodilators
- Steroids
- Oxygen therapy
- Pulmonary rehabilitation

### **Relevance to Cosmetic Practice**

Patients with COPD:

- Heal slower after procedures
- Have poor tissue oxygenation
- Higher infection risk
- May not tolerate lying flat long

**Clinical caution:** Avoid long procedures or heavy sedation.

## Lung Cancer

### Definition

Lung cancer is a malignant tumor arising from lung tissue, usually bronchial epithelium.

### Types

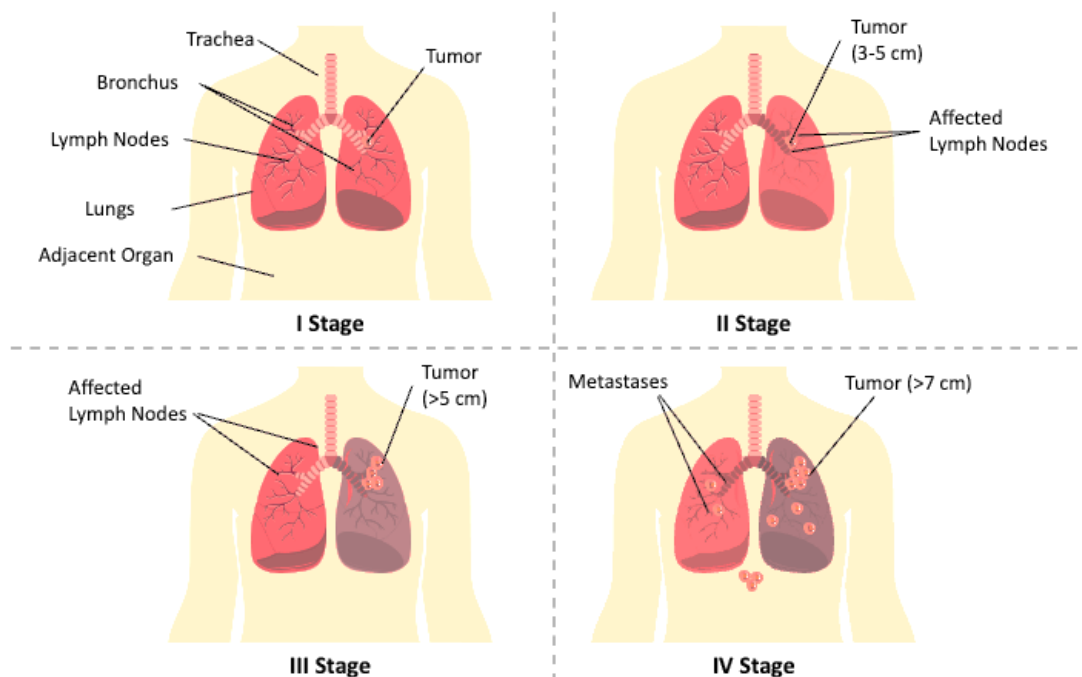
#### 1. Non–Small Cell Lung Cancer (NSCLC) — most common

- Adenocarcinoma
- Squamous cell carcinoma
- Large cell carcinoma

#### 2. Small Cell Lung Cancer (SCLC) — aggressive, rapid spread

## LUNG CANCER

### Stages of Lung Cancer



### Causes & Risk Factors

- Smoking (major cause)
- Passive smoking
- Radon gas
- Asbestos exposure
- Air pollution

- Genetic predisposition

## **Pathogenesis**

Carcinogens → DNA mutation → uncontrolled cell division → tumor → metastasis.

## **Symptoms**

Early stage: often none

Later symptoms:

- Persistent cough
- Hemoptysis (coughing blood)
- Chest pain
- Weight loss
- Hoarseness
- Fatigue

## **Diagnosis**

- Chest X-ray
- CT scan
- Biopsy (definitive)
- Bronchoscopy
- PET scan (staging)

## **Treatment**

Depends on stage and type:

- Surgery
- Chemotherapy
- Radiotherapy
- Immunotherapy
- Targeted therapy

## **Complications**

- Metastasis (brain, bone, liver)
- Pleural effusion
- Respiratory failure
- Paraneoplastic syndromes

---

## **Cosmetic & Laser Considerations in Lung Cancer Patients**

Important precautions:

### **A. Skin Indicators of Lung Cancer**

Some patients show:

- Clubbing of fingers
- Hyperpigmentation
- Dermatomyositis rash
- Cachexia-related skin thinning

Recognizing these signs may lead to early referral.

---

### **B. Treatment Effects Relevant to Cosmetic Practice**

Cancer therapy can cause:

- Fragile skin
- Delayed wound healing
- Photosensitivity
- Hair loss
- Hyperpigmentation

**Laser procedures may be contraindicated if patient:**

- Is undergoing chemotherapy
  - Has immune suppression
  - Has radiation-treated skin
- 

### **C. Safety Checklist Before Procedures**

Always ask about:

- Smoking history
- Chronic cough
- Cancer history
- Oxygen therapy
- Current medications

---

## COPD vs Lung Cancer — Key Differences

Feature	COPD	Lung Cancer
Onset	Gradual	Silent early
Cause	Smoking + inflammation	DNA mutation
Reversibility	No	Depends on stage
Main Problem	Airflow limitation	Tumor growth
Treatment Goal	Symptom control	Cure/control tumor

---

## Clinical Red Flags for Cosmetic Practitioners

Refer patient for medical evaluation if you observe:

- Persistent unexplained cough
  - Blue lips or fingertips
  - Severe shortness of breath
  - Unintentional weight loss
  - Blood-tinged sputum
- 

## Summary

- COPD is a chronic inflammatory lung disease causing airflow obstruction.
  - Lung cancer is a malignant growth with high mortality if detected late.
  - Smoking is the major shared risk factor.
  - Respiratory diseases directly influence cosmetic treatment safety.
  - Proper screening protects both patient and practitioner.
- 

## Respiratory II — COPD & Lung Cancer

### 1. COPD is best defined as:

- a) Acute lung infection
- b) Temporary airway narrowing
- c) **Chronic progressive airflow limitation**
- d) Viral lung inflammation
- e) Pleural disease

**2. The primary cause of COPD is:**

- a) Viruses
- b) Bacteria
- c) **Cigarette smoking**
- d) Cold weather
- e) Exercise

**3. COPD mainly affects which structure?**

- a) Heart valves
- b) Kidneys
- c) Liver
- d) **Airways and alveoli**
- e) Brain

**4. The most characteristic symptom of COPD is:**

- a) Sudden chest trauma
- b) Skin rash
- c) Vomiting
- d) **Shortness of breath**
- e) Hearing loss

**5. Chronic bronchitis is defined by:**

- a) Lung tumors
- b) **Persistent productive cough**
- c) Blood clots
- d) Rib fractures
- e) Nasal discharge

**6. Emphysema primarily involves:**

- a) Bronchial cartilage
- b) Blood vessels
- c) **Destruction of alveolar walls**
- d) Pleural cavity
- e) Lymph nodes

**7. Loss of lung elasticity in COPD leads to:**

- a) Rapid digestion
- b) Increased hearing
- c) **Air trapping**
- d) Vision improvement
- e) Bone growth

**8. The most useful diagnostic test for COPD is:**

- a) MRI
- b) ECG
- c) Ultrasound
- d) Blood culture
- e) **Spirometry**

**9. COPD is considered reversible?**

- a) Completely reversible
- b) Partially reversible always
- c) Only in children
- d) **Not fully reversible**
- e) Immediately reversible

**10. The FEV1/FVC ratio in COPD is usually:**

- a) Increased
- b) Normal
- c) Fluctuating
- d) **Decreased**
- e) Absent

**11. Cyanosis indicates:**

- a) High oxygen level
- b) Dehydration
- c) **Low oxygen in blood**
- d) Excess glucose
- e) High calcium

**12. The most effective COPD management step is:**

- a) Vitamins
- b) Surgery
- c) Oxygen only
- d) Antibiotics
- e) **Smoking cessation**

**13. Oxygen therapy is used in COPD to:**

- a) Lower blood pressure
- b) Improve digestion
- c) **Correct hypoxia**
- d) Reduce weight
- e) Increase muscle mass

**14. COPD patients may heal slowly after cosmetic procedures because of:**

- a) Excess calcium
- b) Low sugar
- c) **Poor oxygenation**
- d) High protein
- e) Fast circulation

**15. A genetic risk factor for COPD is deficiency of:**

- a) Insulin
- b) Hemoglobin
- c) Albumin
- d) **Alpha-1 antitrypsin**
- e) Thyroxine

**16. Lung cancer originates primarily from:**

- a) Bone marrow
- b) Skin cells
- c) Muscle fibers
- d) **Bronchial epithelium**
- e) Neurons

**17. The most common type of lung cancer is:**

- a) Small cell carcinoma
- b) Sarcoma
- c) Melanoma
- d) Lymphoma
- e) **Non–small cell lung cancer**

**18. Small cell lung cancer is characterized by:**

- a) Slow growth
- b) Benign nature
- c) No spread
- d) **Rapid aggressive spread**
- e) No symptoms

**19. The strongest risk factor for lung cancer is:**

- a) Exercise
- b) Cold climate
- c) Stress
- d) Diet
- e) **Smoking**

**20. Passive smoking increases risk because:**

- a) It strengthens lungs
- b) It sterilizes airways
- c) **Carcinogens are inhaled indirectly**
- d) It improves immunity
- e) It reduces inflammation

**21. Early lung cancer is often:**

- a) Painful
- b) Fatal immediately
- c) Obvious
- d) Severe
- e) **Asymptomatic**

**22. Hemoptysis means:**

- a) Nose bleeding
- b) Vomiting blood
- c) Bleeding gums
- d) **Coughing blood**
- e) Urinary bleeding

**23. The definitive diagnosis of lung cancer requires:**

- a) X-ray only
- b) Blood pressure test
- c) Pulse exam
- d) Skin biopsy
- e) **Tumor biopsy**

**24. CT scan is mainly used in lung cancer to:**

- a) Measure pulse
- b) Test hearing
- c) **Visualize tumor size and spread**
- d) Check glucose
- e) Test reflexes

**25. PET scan is useful for:**

- a) Measuring lung sounds
- b) Checking mucus
- c) Bone density only
- d) **Cancer staging and metastasis detection**
- e) Treating tumors

**26. Metastasis refers to:**

- a) Infection spread
- b) Nerve damage
- c) **Cancer spread to other organs**
- d) Bone fracture
- e) Tissue healing

**27. Lung cancer commonly spreads to:**

- a) Hair
- b) Nails
- c) Teeth
- d) Skin only
- e) **Brain and bones**

**28. Weight loss in lung cancer is mainly due to:**

- a) Increased appetite
- b) Exercise
- c) Cold weather
- d) **Cancer metabolism and appetite loss**
- e) Excess sleep

**29. One paraneoplastic effect of lung cancer may include:**

- a) Improved vision
- b) Hair growth
- c) **Hormonal abnormalities**
- d) Strong bones
- e) Increased height

**30. A major complication of lung cancer is:**

- a) Hair thickening
- b) Nail growth
- c) **Pleural effusion**
- d) Tooth eruption
- e) Ear wax

**31. Cosmetic procedures should be postponed in cancer patients undergoing:**

- a) Massage therapy
- b) Exercise
- c) Diet control
- d) **Chemotherapy**
- e) Meditation

**32. Chemotherapy commonly causes:**

- a) Stronger skin
- b) Thicker hair
- c) **Fragile skin**
- d) Faster healing
- e) Increased melanin

**33. Radiation-treated skin is:**

- a) Stronger
- b) Thicker
- c) Oilier
- d) **More sensitive and fragile**
- e) Darker only

**34. Clubbing of fingers suggests possible:**

- a) Kidney disease
- b) Eye disease
- c) Liver disease
- d) Heartburn
- e) **Chronic lung disease**

**35. A red flag symptom requiring referral is:**

- a) Mild itching
- b) Dry lips
- c) **Persistent unexplained cough**
- d) Short hair
- e) Nail polish allergy

**36. COPD differs from lung cancer because COPD primarily causes:**

- a) Tumor formation
- b) DNA mutation
- c) Metastasis
- d) **Airflow limitation**
- e) Cell malignancy

**37. Lung cancer differs from COPD because it involves:**

- a) Reversible obstruction
- b) Bronchospasm only
- c) **Malignant cell growth**
- d) Simple inflammation
- e) Temporary symptoms

**38. The main goal of COPD treatment is:**

- a) Cure disease completely
- b) Remove lungs
- c) Kill bacteria
- d) Increase height
- e) **Control symptoms and slow progression**

**39. The main goal of lung cancer treatment is:**

- a) Reduce coughing only
- b) Improve appetite only
- c) **Eliminate or control tumor**
- d) Increase mucus
- e) Stop sweating

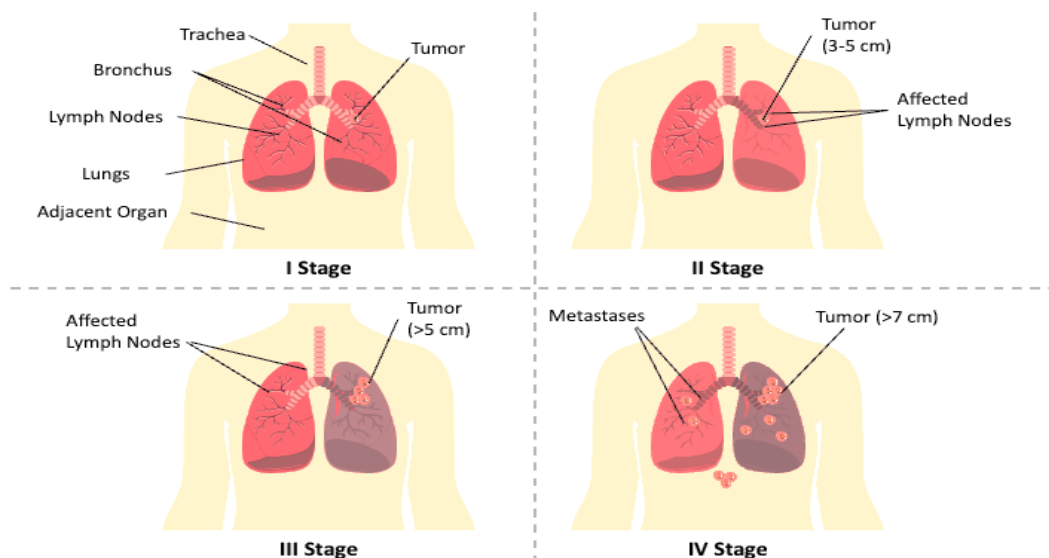
**40. Before cosmetic laser procedures, practitioners must always assess:**

- a) Favorite food
- b) Eye color
- c) Shoe size
- d) Hair style
- e) **Respiratory and medical history**

---

## LUNG CANCER

Stages of Lung Cancer



**1. Stage I lung cancer is characterized by:**

- a) Distant metastasis
- b) Tumor >7 cm
- c) Spread to brain
- d) **Localized tumor without lymph node involvement**
- e) Multiple tumors

**2. In Stage II lung cancer, the main additional feature compared to Stage I is:**

- a) Bone metastasis
- b) Liver failure
- c) Brain spread
- d) Skin lesions
- e) **Involvement of nearby lymph nodes**

**3. Stage III lung cancer is typically defined by:**

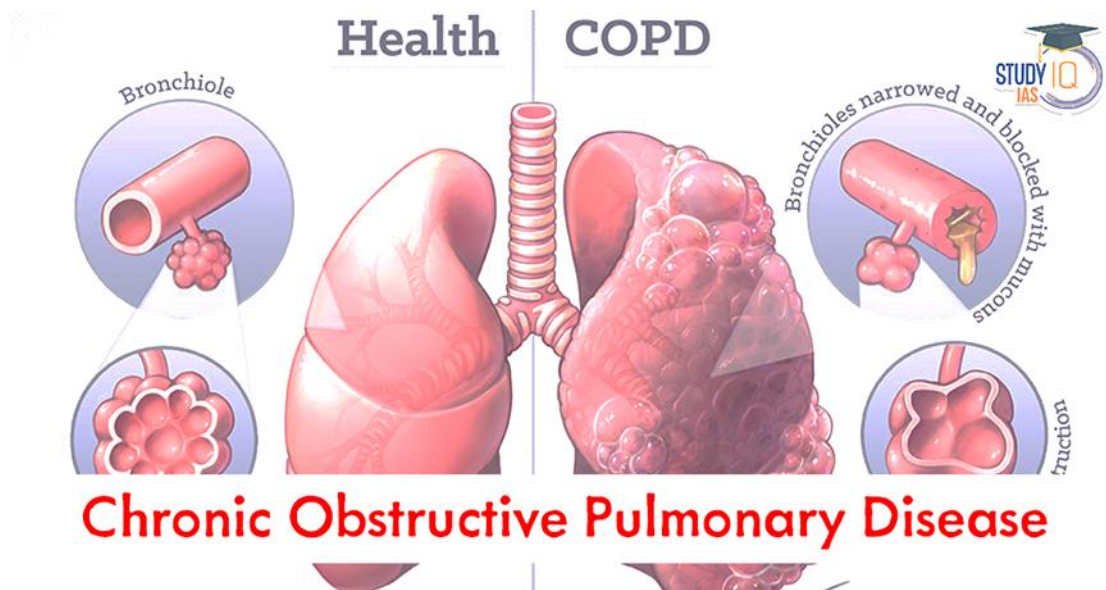
- a) No tumor present
- b) Tumor <1 cm
- c) **Larger tumor (>5 cm) with lymph node spread**
- d) Only airway inflammation
- e) Only cough symptoms

**4. Stage IV lung cancer indicates:**

- a) Early detection
- b) Benign tumor
- c) Localized disease
- d) Mild infection
- e) **Presence of metastases**

**5. Tumor size generally increases progressively from:**

- a) Stage IV to Stage I
  - b) Stage III to Stage II only
  - c) Stage II to Stage I
  - d) **Stage I to Stage IV**
  - e) No relation to stage
-



## Chronic Obstructive Pulmonary Disease

**1. The image shows that in COPD the bronchioles are:**

- a) Wider than normal
- b) Completely absent
- c) Filled with air only
- d) **Narrowed and blocked with mucus**
- e) Calcified

**2. Compared to healthy alveoli, COPD alveoli are:**

- a) Smaller and stronger
- b) Filled with blood
- c) Completely normal
- d) Absent
- e) **Damaged and enlarged with reduced surface area**

**3. The main pathological feature illustrated in COPD is:**

- a) Tumor formation
- b) Fluid accumulation
- c) **Airflow obstruction**
- d) Bone destruction
- e) Viral invasion

**4. Mucus accumulation in COPD leads to:**

- a) Improved oxygen exchange
- b) Faster breathing
- c) Lower heart rate
- d) **Difficulty in airflow**
- e) Increased lung elasticity

**5. Compared to healthy lungs, COPD lungs show:**

- a) Increased oxygen absorption
- b) Clear airways

- c) Strong elastic tissue
  - d) Normal bronchioles
  - e) **Inflammation and structural damage**
-