

# Difference Between Bronchitis and Bronchiectasis

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## Key Difference – Bronchitis vs Bronchiectasis

Both bronchitis and bronchiectasis are respiratory disorders whose pathogenesis is significantly contributed by chronic smoking. The [inflammation](#) of the bronchial walls is known as bronchitis. Bronchiectasis is a pathological condition of the respiratory system characterized by the presence of abnormally and permanently dilated airways. As mentioned in the definitions, **the dilation of the bronchi happens only in bronchiectasis and not in bronchitis**. This is the key difference between bronchitis and bronchiectasis, which helps to distinguish these two conditions.

## What is Bronchitis?

The inflammation of the bronchial walls is known as bronchitis. There are main two forms of bronchitis, depending on the duration of the symptoms.

### Acute Bronchitis

Acute bronchitis in previously healthy subjects is most often due to viral infections. In chronic smokers, bronchitis of acute duration usually occurs due to superimposed [bacterial infections](#). Initially, there is a discomfort behind the sternum along with a non-productive cough. This is a self-limiting condition that is spontaneously resolved within 4-8 days.

### Chronic Bronchitis

When there is a persistent cough with mucus production for at least three months in a minimum of two successive years when all the other possible causes have been excluded, that is diagnosed as chronic bronchitis.

### Complications of Chronic Bronchitis

- Progression to [COPD](#)
- Cor pulmonale and [heart failure](#)
- Squamous metaplasia of the respiratory epithelium of airways that can act as precursor lesions of the pulmonary [carcinomas](#).

## Pathogenesis

Various inhaled irritants can trigger inflammation of the walls of the [bronchi](#) giving rise to numerous pathological changes. These irritants include tobacco smoke, SO<sub>2</sub>, NO<sub>2</sub> and different other environmental pollutants.

Inflammation of the bronchial walls



Hypertrophy and hyperplasia of the submucosal glands along with the proliferation of goblet cells in the respiratory epithelium



Mucus production increases due to the resultant hypersecretion



Accumulation of mucus in the airway and the formation of mucus plugs



Partial or complete occlusion of the airways



Repeated infections of the respiratory tract



Acute exacerbations and gradual progression of the disease

## Clinical Features

Chronic productive cough is the only manifestation during the initial phase of the disease.

Typically, patients with chronic bronchitis have a relatively low capacity to overventilate and compensate for [hypoxemia](#). Therefore, these patients are hypoxaemic and hypercapnic – *blue bloaters*.

Pulmonary hypertension, cor pulmonale, and heart failure are the subsequent complications of this disease. In the advanced stages, the patient is more likely to have emphysema as a comorbidity.

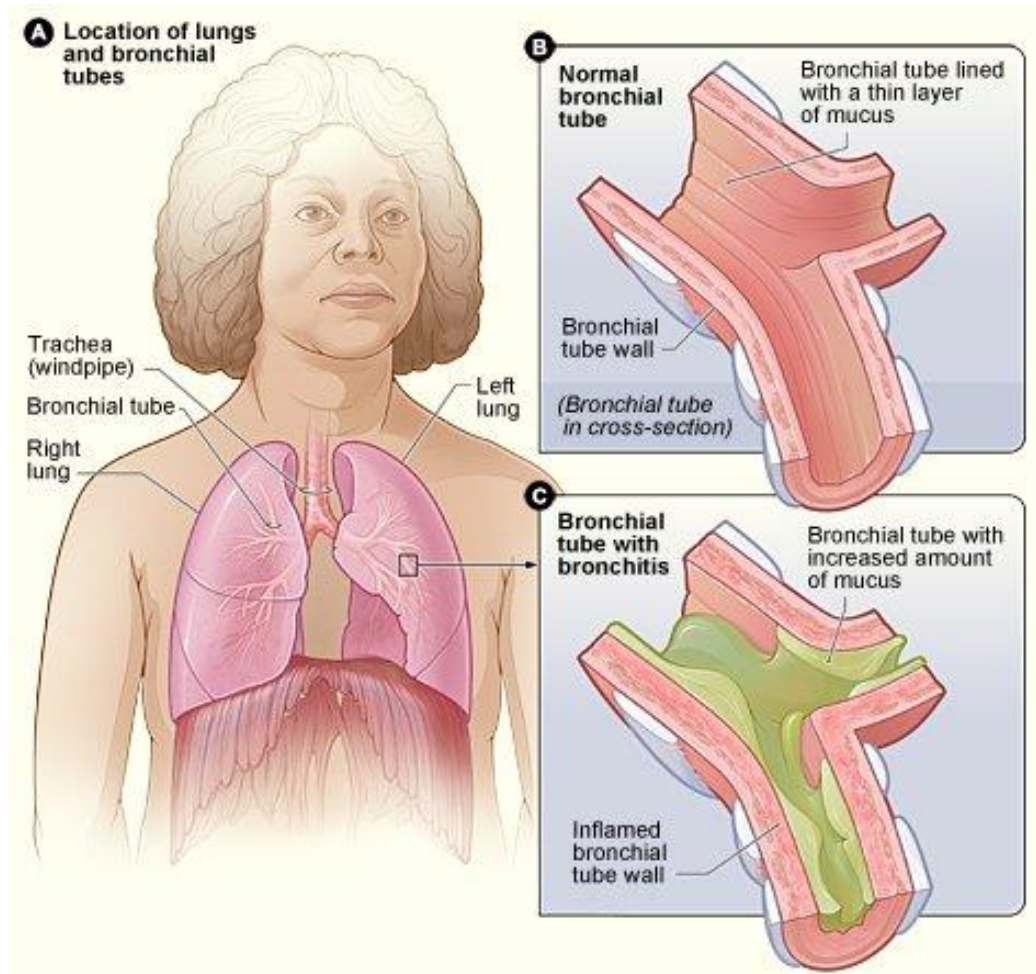


Figure 01: Bronchitis

## Diagnosis

- Chest X-ray
- Examination and culture of sputum
- Pulmonary function tests

## Management

- As previously mentioned, acute bronchitis is a self-limiting condition that does not require any treatments.
- The medical interventions undertaken depend on the stage of disease progression.
- Antibiotics may be required to control the superimposed bacterial infections.
- Bronchodilators, corticosteroids, and phosphodiesterase 4 inhibitors are the drugs that are usually prescribed.

## **What is Bronchiectasis?**

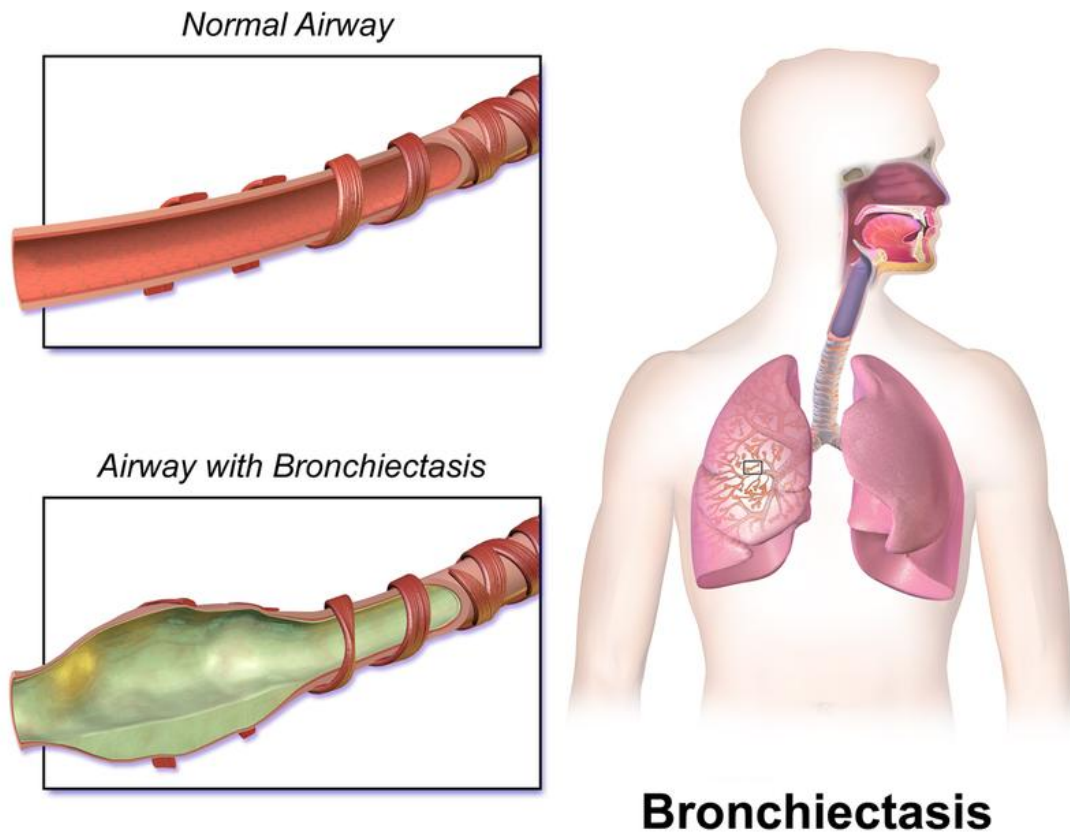
Bronchiectasis is a pathological condition of the respiratory system characterized by the presence of abnormally and permanently dilated airways. As a result of chronic inflammation, bronchial walls get thickened and irreversibly damaged. The impairment of the mucociliary transport mechanism increases the risk superimposed infections.

### **Aetiology**

- Congenital defects such as deficiency of bronchial wall elements and pulmonary sequestration
- Obstruction of the bronchial wall due to mechanical causes such as tumors
- Postinfective bronchial damage
- Granuloma formation in conditions such as tuberculosis and sarcoidosis
- Diffuse diseases of the lung parenchyma such as pulmonary fibrosis
- Immunological overresponse in conditions such as post lung transplant
- Immune deficiencies
- Mucociliary clearance defects in diseases such as cystic fibrosis

### **Clinical Features**

- The production of green or yellow color sputum is the only clinical manifestation in mild bronchiectasis
- With the disease progression, the patient can get other serious symptoms such as persistent halitosis, recurrent febrile episodes with malaise and recurrent bouts of pneumonia.
- Clubbing of the fingernails
- During the auscultation, coarse crackles can be heard over the infected regions
- Breathlessness
- Hemoptysis



**Figure 02: Bronchiectasis**

## Investigations

- Chest X-ray – this usually shows the presence of dilated bronchi with thickened walls. Occasionally multiple cysts filled with fluids can also be observed.
- High-resolution CT scanning
- Examination and culture of sputum are essential for the identification of the etiological agent as well as for the determination of the suitable antibiotics that have to be prescribed in the management of the superimposed infections.
- Sinus X-rays – a majority of the patients can have rhinosinusitis also
- Serum immunoglobulins – this test is performed to identify any immunodeficiencies
- Sweat electrolytes are measured if cystic fibrosis is suspected

## Treatment

- Postural drainage
- Antibiotics – the type of antibiotic used depends on the causative agent
- It is necessary to use bronchodilators sometimes to avoid the limitations to the airflow
- Anti-inflammatory drugs such as oral or nasal corticosteroids can arrest the disease progression

## Complications

- [Pneumonia](#)
- Pneumothorax
- Empyema
- Metastatic cerebral abscesses

## What is the Similarity Between Bronchitis and Bronchiectasis?

- Both diseases predominantly affect the bronchial walls.

## What is the Difference Between Bronchitis and Bronchiectasis?

Bronchitis vs Bronchiectasis	
The inflammation of the bronchial walls is known as bronchitis.	Bronchiectasis is a pathological condition of the respiratory system characterized by the presence of abnormally and permanently dilated airways.
Airways	
Airways are not dilated.	Airways are dilated.
Etiology	
Chronic smoking is the most common etiology.	Etiological factors include <ul style="list-style-type: none"><li>· Congenital defects such as deficiency of bronchial wall elements and pulmonary sequestration</li><li>· Obstruction of the bronchial wall due to mechanical causes such as tumors</li><li>· Postinfective bronchial damage</li><li>· Granuloma formation in conditions such</li></ul>

as tuberculosis and sarcoidosis

- Diffuse diseases of the lung parenchyma such as pulmonary fibrosis
- Immunological overresponse in conditions such as post lung transplant
- Immune deficiencies
- Mucociliary clearance defects in diseases such as cystic fibrosis

### Clinical Features

Chronic productive cough is the only manifestation during the initial phase of the disease.

Typically the patients with chronic bronchitis have a relatively low capacity to overventilate and compensate for hypoxemia. Therefore, these patients are hypoxemic and hypercapnic – blue bloaters.

In the advanced stages, the patient is more likely to have emphysema also as a comorbidity.

- The production of green or yellow color sputum is the only clinical manifestation in mild bronchiectasis
- With the disease progression, the patient can get other serious symptoms such as persistent halitosis, recurrent febrile episodes with malaise and recurrent bouts of pneumonia.
- Clubbing of the fingernails
- During the auscultation, coarse crackles can be heard over the infected regions
- Breathlessness
- Hemoptysis

### Complications

Pulmonary hypertension, cor pulmonale, and heart failure are the usual complications of this disease.

Complications of bronchiectasis include

- Pneumonia
- Pneumothorax
- Empyema
- Metastatic cerebral abscesses

## Diagnosis

Diagnosis is through chest X-ray, examination, and culture of sputum and pulmonary function tests

Chest X-ray, high-resolution CT scanning, examination and culture of sputum, sinus X-rays and serum immunoglobulins are the investigations that are performed to diagnose the disease.

Sweat electrolytes are measured if cystic fibrosis is suspected.

## Treatment

Antibiotics may be required to control the superimposed bacterial infections.

Bronchodilators, corticosteroids, and phosphodiesterase 4 inhibitors are the drugs that are usually prescribed.

Acute bronchitis is self-limiting and therefore does not require any treatments.

The following drugs and procedures are used in the treatment of bronchiectasis

- Postural drainage
- Antibiotics – the type of antibiotic used depends on the causative agent
- It is necessary to use bronchodilators sometimes to avoid the limitations to the airflow
- Anti-inflammatory drugs such as oral or nasal corticosteroids can arrest the



## Summary – Bronchitis vs Bronchiectasis

Bronchiectasis is a pathological condition of the respiratory system characterized by the presence of abnormally and permanently dilated airways. The inflammation of the bronchial walls is known as bronchitis. The most outstanding morphological difference between bronchitis and bronchiectasis is that dilation of the bronchi happens only in bronchiectasis and not in bronchitis.

### References:

1. Kumar, Parveen J., and Michael L. Clark. Kumar & Clark clinical medicine. Edinburgh: W.B. Saunders, 2009.
2. Kumar, Vinay, Stanley Leonard Robbins, Ramzi S. Cotran, Abul K. Abbas, and Nelson Fausto. Robbins and Cotran pathologic basis of disease. 9th ed. Philadelphia, Pa: Elsevier Saunders, 2010. Print.

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