

## Gangrene

Gangrene is a type of tissue death caused by a lack of blood supply.

- This may occur after an injury or infection, or in people suffering from any chronic health problem affecting blood circulation.
- Gangrene is primarily caused due to reduced blood supply to the affected tissues that leads to cell death
- Diseases like diabetes and long-term smoking increases the risk of gangrene.
- It can affect any part of the body but typically starts in the toes, feet, fingers and hands (**the extremities**).

### Gangrene Wound: Symptoms, Causes And Treatment Of Gangrene



### Types of gangrene

### A. Dry gangrene:

□ Dry gangrene begins at the distal part of the limb due to ischemia (restricted supply of blood), and often appears in the toes and feet of elderly patients due to arteriosclerosis and thus, it is also known as senile gangrene.

□ Dry gangrene is generally seen due to arterial occlusion. As there is limited putrefaction and bacteria fail to survive, dry gangrene spreads slowly until it reaches the point where the blood supply is adequate to keep tissue viable.

### B. Wet gangrene:

□ Wet gangrene occurs in moist tissues and organs such as the mouth, bowel, lungs, cervix, and vulva.

□ Bed sores occurring on body parts such as the sacrum. Wet gangrene is characterized by numerous bacteria and generally has a poor prognosis (compared to dry gangrene) due to septicaemia.

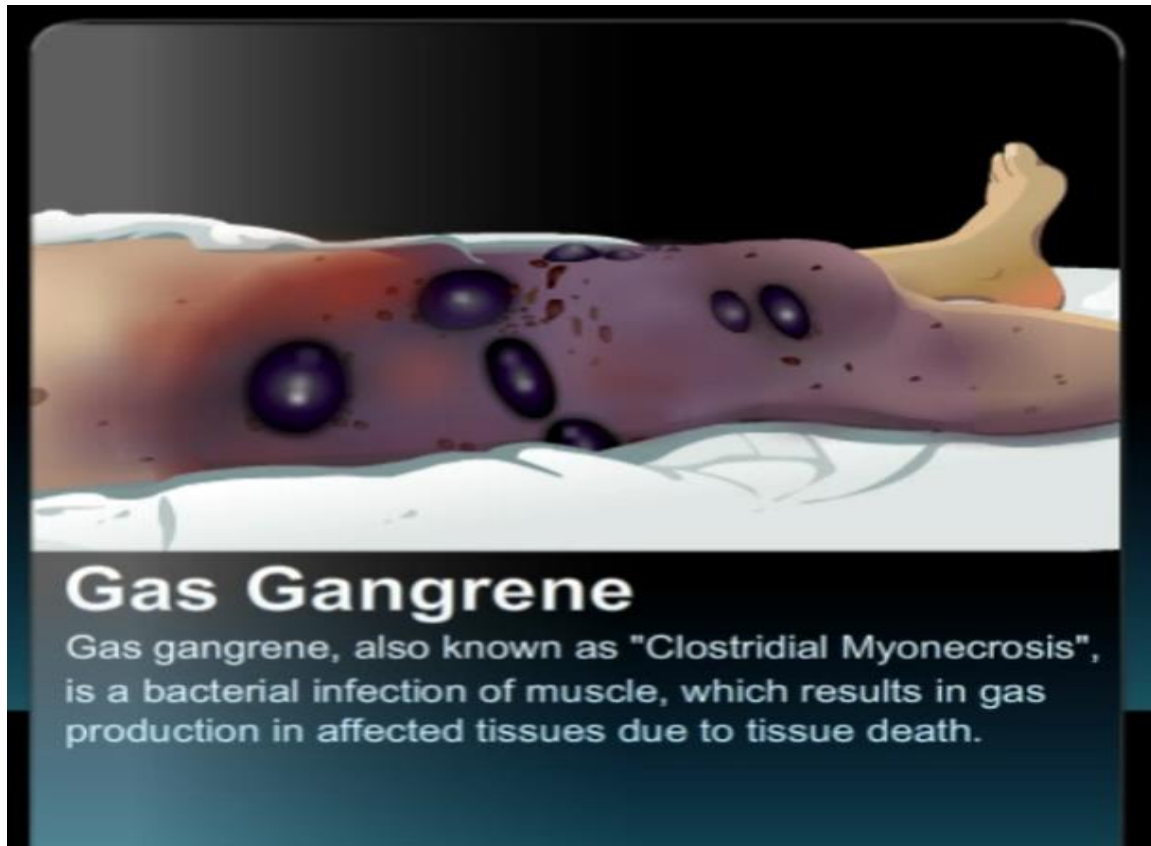
□ In wet gangrene, the tissue is infected by microorganisms like *Clostridium perfringens* or *Bacillus fusiformis* that causes the tissues to swell.

□ Wet gangrene usually develops rapidly due to blockage of venous (mainly) and/or arterial blood flow.



### C. Gas gangrene:

- Gas gangrene is a bacterial infection that produces gas within tissues.
- It is the most severe form of gangrene usually caused by *Clostridium perfringens* bacteria.
- Infection spreads rapidly as the gases produced by bacteria expand and infiltrate healthy tissues.



## Causes

Gangrene is caused when a body part loses its blood supply due to an injury or an underlying disease.

The conditions most commonly responsible for causing gangrene are as follows:

1. Diabetes
2. Blood vessel disease such as arteriosclerosis causing hardening of the arteries, in arms or legs

3. Suppressed immune system (for example, from HIV or chemotherapy)
4. Surgery
5. Due to infection or ischemia, such as by the bacteria *Clostridium perfringens* or by thrombosis (a blocked blood vessel).

## **Diagnosis**

Clinical tests can be carried out to confirm the diagnosis of gangrene. These include:

1. Blood tests – An increase or decrease in the number of white blood cells can indicate infection
2. Tissue culture – A small sample of fluid (or tissue) from the affected area can be tested for bacteria. This test is called a Gram stain. Bacteria are stained with a dye and examined under a microscope. The test is also useful for determining the most effective type of antibiotic to treat the infection.
3. Blood culture – A sample of infected blood is removed and placed in a warm environment to encourage the growth of bacteria.
4. Imaging tests – A range of imaging tests, such as X-rays, MRI scans (where radio waves are used to produce an image of the inside of your body) or a computerized tomography (CT) scan can be used to confirm the presence and spread of gangrene.

These tests can also be used to study blood vessels in order to identify the blockages.

5. Surgery – Surgical examination may be necessary to confirm the diagnosis of gas gangrene.