

# CLUBBING

## Background

Hippocrates first described digital clubbing in patients with empyema.

Digital clubbing has been associated with various underlying pulmonary, cardiovascular, neoplastic, infectious, hepatobiliary, mediastinal, endocrine, and gastrointestinal diseases. Finger clubbing also may occur, without evident underlying disease, as an idiopathic form or as a Mendelian dominant trait. Clubbing is a clinically descriptive term, referring to the bulbous uniform swelling of the soft tissue of the terminal phalanx of a digit with subsequent loss of the normal angle between the nail and the nail bed.



## Classification

Digital clubbing is classified into:

***primary*** (i.e. idiopathic, hereditary) and ***secondary*** forms.

Digital clubbing may be symmetric bilaterally, or it may be unilateral or involve a single digit. Anatomic considerations, such as the classic measurement of the *Lovibond* angle or the more recently derived index of nail curvature by *Goyal and*

*Griffiths*, usually can be identified on simple physical examination and can be used to identify digital clubbing and to monitor this dynamic process objectively. Various imaging modalities have been used not only to evaluate clubbing but also to help identify possible clues to its development.

Clubbing is a clinical finding characterized by bulbous fusiform enlargement of the distal portion of a digit.



When the profile of the distal digit is viewed, the angle made by the proximal nail fold and nail plate (*Lovibond angle*) typically is less than or equal to  $160^\circ$ . In clubbing, the angle flattens out and increases as the severity of the clubbing increases. If the angle is greater than  $180^\circ$ , definitive clubbing exists. An angle between  $160-180^\circ$  falls in a gray area and may indicate early stages of clubbing or a pseudoclubbing phenomenon.

Individuals without clubbing display a diamond-shaped window at the base of the nail beds when the dorsum of 2 fingers from the opposite hands are opposed. The distal angle between the 2 opposed nails should be minimal. In individuals with digital clubbing, the diamond window is obliterated and the distal angle between the nails increases with increasing severity of clubbing.

The nail moves more freely in patients with clubbing; therefore, the examiner may note a spongy sensation as the nail is pressed toward the nail plate. The sponginess results from increased fibrovascular tissue between the nail and the phalanx. The skin at the base of the nail may be smooth and shiny.

## Causes

Clubbing can be *idiopathic* or *secondary* to many underlying pathologies in various organ systems.

### Idiopathic or primary clubbing

1. Pachydermoperiostosis (PDP) *\*see later*
2. Familial clubbing
3. Hypertrophic osteoarthropathy

### Secondary clubbing

**1. Pulmonary disease** - Lung cancer, cystic fibrosis, interstitial lung disease, idiopathic pulmonary fibrosis, sarcoidosis, lipoid pneumonia, empyema, pleural mesothelioma, pulmonary artery sarcoma, cryptogenic fibrosing alveolitis, and pulmonary metastases

**2. Cardiac disease** - Cyanotic congenital heart disease, other causes of right-to-left shunting, and bacterial endocarditis

**3. Gastrointestinal disease** - Ulcerative colitis, Crohn disease, primary biliary cirrhosis, cirrhosis of the liver, leiomyoma of the esophagus, achalasia, and peptic ulceration of the esophagus

**4. Skin disease** - Pachydermoperiostosis, Bureau-Barrière-Thomas syndrome, Fischer syndrome, palmoplantar keratoderma, and Volavsek syndrome

**4. Malignancies** - Thyroid cancer, thymus cancer, Hodgkin disease, and disseminated chronic myeloid leukemia (POEMS [polyneuropathy, organomegaly, endocrinopathy, monoclonal gammopathy, and skin changes] syndrome is a rare paraneoplastic syndrome secondary to a plasma cell dyscrasia in which clubbing may be seen [Dispenzieri, 2005]. Other findings including peripheral neuropathy, organomegaly, endocrinopathy, monoclonal plasma proliferative disorder, skin changes, sclerotic bone lesions, Castleman disease, thrombocytosis, papilledema, peripheral edema, pleural effusions, ascites, and white nails.)

**5. Miscellaneous conditions** - Acromegaly, thyroid acropachy, and pregnancy  
Although as a paraneoplastic syndrome most commonly associated with non–small-cell lung cancer, it may occur with metastatic melanoma (Thompson, 2006).

*\*a rare genodermatosis characterized by pachydermia, digital clubbing, periostosis, and an excess of affected males (Castori, 2005). Although usually an autosomal dominant model with incomplete penetrance and variable expression, both autosomal recessive and X-linked inheritance have been suggested in some PDP families*

## **Summary- Common Causes of Clubbing**

Common causes of finger clubbing can be divided up according to the system with primary pathology:

### **cardiovascular causes:**

- cyanotic congenital heart disease
- infective endocarditis

### **respiratory causes:**

- lung carcinoma - usually squamous cell carcinoma
- pulmonary fibrosis, especially fibrosing alveolitis
- cystic fibrosis
- chronic pulmonary suppuration:
  - bronchiectasis
  - empyema
  - lung abscess

The clubbing seen with bronchogenic carcinoma is often part of a hypertrophic osteoarthropathy.

