

Toe and finger clubbing

Synonyms: Hippocratic nails, Hippocratic fingers (first described by Hippocrates)

What is toe and finger clubbing?

Toe and finger clubbing is described as an increase in the soft tissue around the end of the fingers and toes. The swelling is painless and usually bilateral, unless a localised vascular abnormality exists. There is no change to the underlying bone. The nail base eventually becomes convex and extends halfway up the nail.

Clubbing is thought to result from changes to the volume of interstitial fluid and increased blood flow to the area but the exact pathophysiology remains unknown.

Primary toe and finger clubbing may be idiopathic or be a feature of an inherited condition. Secondary clubbing may be caused by a wide range of diseases.

Aetiology^[1]

<p>Primary Primary hypertrophic osteoarthropathy^[2]. Familial clubbing.</p>	<p>Pulmonary disease Lung cancer. Tuberculosis. Bronchiectasis. Cystic fibrosis. Interstitial lung disease. Idiopathic pulmonary fibrosis. Sarcoidosis. Lipoid pneumonia. Empyema. Pleural mesothelioma. Pulmonary artery sarcoma. Cryptogenic fibrosing alveolitis. Pulmonary metastases.</p>	<p>Cardiac disease Cyanotic congenital heart disease. Other causes of right-to-left shunting. Bacterial endocarditis.</p>
<p>Gastrointestinal disease Ulcerative colitis. Crohn's disease. Primary biliary cirrhosis. Cirrhosis of the liver. Leiomyoma of the oesophagus. Achalasia. Peptic ulceration of the oesophagus.</p>	<p>Skin disease Bureau-Barrière-Thomas syndrome (digital clubbing associated with palmoplantar keratoderma). Fischer's syndrome (keratosis palmaris et plantaris, hair hypoplasia, onycholysis and onychogryphosis). Palmoplantar keratoderma (diffuse patches on the palms and soles).</p>	<p>Malignancies Thyroid cancer. Thymus cancer. Hodgkin's disease. Disseminated chronic myeloid leukaemia (POEMS syndrome - polyneuropathy, organomegaly, endocrinopathy, monoclonal gammopathy and skin changes).</p>

Miscellaneous conditions

Acromegaly.

Thyroid acropachy (clubbing associated with Graves' disease and periosteal new bone formation).

Pregnancy.

Epidemiology

The epidemiology of secondary toe and finger clubbing depends on the cause. One review found^[3] :

- In adults, the pooled prevalence of digital clubbing was 33.4% in people with intestinal diseases, 31.3% for interstitial lung diseases, 27% for infective endocarditis, and 22.8% for hepatic diseases.
- In children and adolescents, the pooled prevalence of digital clubbing was 29.1% for HIV infection, 23% for haemoglobinopathies, 19.5% for cystic fibrosis and 17.1% for tuberculosis.
- The pooled prevalence of hypertrophic osteoarthropathy was 10.1% in adults with cancers, and 5% in children and adolescents with cystic fibrosis.

Pachydermoperiostosis is rare and is characterised by skin thickening of the forehead, eyelids and hands, digital clubbing and periostosis^[4] .

Toe and finger clubbing symptoms



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The patient may notice a swelling of the distal portion of the fingers or toes but the onset is usually so gradual as to make this a rare occurrence. Even more rarely, the patient may notice some discomfort, because most toe and finger clubbing is painless. The majority of clubbing is detected by doctors as part of a routine examination for other presenting symptoms.

Toe and finger clubbing has been described as a bulbous fusiform enlargement of the distal portion of a digit. It is commonly bilateral but may be unilateral and can affect a single digit. Both fingers and toes can be affected.

As toe or finger clubbing progresses, the angle between the nail and the nail base (called the Lovibond angle) becomes obliterated. Normally, the angle is less than or equal to 160° . With increasing convexity of the nail, the angle becomes greater than 180° . In early clubbing, the nail may feel springy instead of firm when palpated and the skin at the base of the nail may become smooth and shiny.

In individuals without finger clubbing, if two opposing fingers are placed together, a diamond-shaped window will appear. In clubbing, this window is obliterated and the distal angle formed by the two nails becomes wider. This is known as Schamroth's window test.

Differential diagnosis

Pseudo-clubbing – this is overcurvature of the nails in both the longitudinal and transverse axes, with preservation of a normal Lovibond angle^[5]. The main features of pseudo-clubbing seen in one study were asymmetrical finger involvement and acro-osteolysis. Whilst these were present in the majority of cases they were also present in some cases of clubbing, so could not be said to be pathognomonic. Pseudo-clubbing may be seen in [chronic kidney disease](#), [hyperparathyroidism](#), [sarcoidosis](#), [scleroderma](#), subungual haematoma and chromosome deletion^[6].

Investigations

Laboratory investigations

These will depend on the underlying conditions suggested by the overall clinical picture.

Imaging

This is not usually required to diagnose toe or finger clubbing but plain radiographs of the digits may help to elucidate the cause. Osteolysis is often seen in patients with congenital cyanotic heart disease, whilst bone hypertrophy suggests a pulmonary condition.

Other modalities sometimes employed in clinical and research settings include technetium-99^m scanning to assess bone loss, thermography and positron emission tomography (PET) scanning.

CT and MRI scanning of other areas may be required to assist in diagnosing the underlying primary cause.

Toe and finger clubbing treatment and management

This will be dictated by the underlying disease process.

Prognosis

Toe and finger clubbing is potentially reversible if the underlying condition is treated early enough but the changes may be irreversible once collagen deposition has set in.

Further reading

- [Seifert W, Kuhnisch J, Tuysuz B, et al](#); Mutations in the prostaglandin transporter encoding gene *SLCO2A1* cause primary hypertrophic osteoarthropathy and isolated digital clubbing. *Hum Mutat.* 2012 Apr;33(4):660-4. doi: 10.1002/humu.22042. Epub 2012 Feb 24.
- [Mukherjee A, Bhattacharyya P, Saha I, et al](#); Evaluation of a simple bedside tool developed to measure different parameters of clubbing. *Lung India.* 2011 Jul;28(3):228-9.
- [Clubbing](#); DermNet NZ

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Authored by:	Peer Reviewed by: Dr Laurence Knott	
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