CONDITION

# Polydactyly

Polydactyly is a difference present at birth in which a hand or foot has an extra finger or toe.

**WHAT IT IS**
Extra finger or toe present from birth

**BODY SYSTEM**
Hands, feet, bones, joints, and soft tissues

**MAIN SYMPTOMS**
Extra digit, altered grip, footwear problems, occasional pain

**WHAT CAUSES IT**
Inherited genes or early limb development differences

**HOW IT IS DIAGNOSED**
Physical examination and X-rays; sometimes prenatal ultrasound

**MAIN TREATMENT**
Observation or surgical removal and reconstruction

**CAN IT BE CURED?**
Sometimes - surgery can correct the difference

**IS IT AN EMERGENCY?**
No - usually assessed during routine care

**LONG-TERM OUTLOOK**
Most people have good function with appropriate care

## Overview

Polydactyly means having an extra finger or toe. It is present at birth and may affect one or more hands or feet. The extra digit can range from a small piece of soft tissue to a fully formed finger or toe with bone, joints, a nail, and tendons.

Doctors describe polydactyly by where the extra digit is located:

The difference may occur on one side or both sides of the body. It can be an isolated condition, meaning there are no other health concerns. Less often, it is one feature of a genetic syndrome that affects other parts of the body.

Polydactyly is not usually dangerous. It matters because the extra digit may affect hand use, walking, shoe fit, appearance, or comfort. The anatomy also determines whether treatment is

simple or requires careful reconstruction.

- Postaxial polydactyly: beside the little finger or little toe
- Preaxial polydactyly: beside the thumb or big toe
- Central polydactyly: among the middle fingers or toes

## Symptoms

The main sign is an extra finger or toe. It is usually noticed during a prenatal ultrasound or during the examination after birth.

A small extra digit may be attached by a narrow stalk of skin. It may contain nerves and blood vessels even when it has no bone. A larger digit may share bones, joints, tendons, or ligaments with a nearby finger or toe.

Possible effects include:

Many people have no pain or loss of function. The effect often depends more on the structure and position of the extra digit than on its size.

If polydactyly is part of a broader genetic condition, there may be other findings. These could involve growth, development, the heart, kidneys, or other parts of the skeleton. Having polydactyly does not by itself mean that a syndrome is present.

- Difficulty gripping, writing, or using certain tools
- Rubbing, pressure, or difficulty fitting into shoes
- Pain if a loosely attached digit is pulled, twisted, or injured
- A curved, unstable, or crowded nearby finger or toe
- Nail problems or skin irritation

## Causes and risk factors

Polydactyly develops before birth while the hands and feet are forming. Signals controlled by genes guide how many digits form and where they separate. A change in these signals can produce an extra digit.

Some cases are caused by an inherited genetic change. Isolated polydactyly can run through several generations of a family. In some families, inheriting one changed copy of a gene is enough to cause it, although the appearance can differ among relatives.

Other cases occur for the first time in a child without a known family history. Polydactyly may also be part of a genetic syndrome caused by a chromosome or gene change.

The clearest risk factors are:

Polydactyly is not caused by anything a baby or child did. In most cases, parents could not have predicted or prevented it.

- A parent or close relative with polydactyly
- A known genetic syndrome in the family
- Previous pregnancy or child affected by the same inherited condition

## Diagnosis

Polydactyly is usually diagnosed by looking at and examining the hand or foot. Before birth, an ultrasound may show an extra digit, especially if it contains bone. A small soft-tissue digit may not be visible on prenatal imaging.

After birth, the examination looks at the digit's position, movement, nail, blood supply, and connection to nearby structures. An X-ray shows whether it contains bone and how its bones and joints connect to the rest of the hand or foot. This information helps with treatment planning.

Photographs or additional imaging may be used for a complex difference. In very young babies, some cartilage has not yet hardened into visible bone, so the anatomy may become clearer with growth or during surgery.

A genetic assessment may be offered when polydactyly:

Genetic testing is not required for every person with an isolated extra digit. The decision is based on the examination and family history.

- Affects several hands or feet
- Occurs with other physical or developmental differences
- Has a complex pattern
- Is linked to a known condition in the family

## Treatment and management

Treatment depends on the digit's anatomy, its effect on function, and the preferences of the person or family. Not every extra finger or toe needs to be removed.

Observation may be reasonable when the digit is stable, comfortable, and does not interfere with hand use, walking, or footwear. Regular assessment can show whether growth changes its position or function.

A small digit attached only by a narrow skin stalk may be removed with a minor procedure in selected infants. Although such digits have sometimes been tied off with a suture, this can leave a tender nerve ending, raised bump, or residual tissue. Removal should only be performed by a qualified healthcare professional. Do not tie off or cut an extra digit at home.

Digits containing bone, joints, tendons, or shared ligaments usually need planned surgery if treatment is chosen. Surgery may involve more than removing the duplicate. The surgeon may need to rebuild ligaments, align bones, move tendons, or reshape the nail to create a stable and useful remaining digit.

For duplicated thumbs, treatment aims to preserve the thumb with the best potential for strength, stability, movement, and appearance. For toes, treatment often focuses on alignment and comfortable shoe fit.

The timing of surgery is based on the type of polydactyly, the child's growth, anaesthesia needs, and the complexity of reconstruction. There is no single suitable age for every case.

After surgery, care may include a dressing, splint, cast, pain relief, scar care, and follow-up visits. Hand therapy or occupational therapy may help with movement, strength, or everyday tasks after a complex reconstruction.

## Complications

Polydactyly itself may cause few or no problems. When complications occur, they usually relate to the extra digit's position or attachment.

A narrow soft-tissue digit can catch on clothing or become twisted. An extra toe may rub inside footwear or push neighbouring toes out of alignment. A duplicated finger can affect grip, joint stability, or nail growth.

Possible complications after treatment include:

Complex reconstructions are more likely to need long-term review than removal of a simple soft-tissue digit. If polydactyly is part of a syndrome, any additional health concerns come from the underlying syndrome rather than from the extra digit itself.

- Bleeding or infection
- A noticeable or tender scar

- Numbness or painful nerve tissue, called a neuroma
- Joint stiffness or reduced movement
- Ongoing angling or instability as the child grows
- Residual tissue or a difference in nail shape
- Need for another operation

## Prevention

Polydactyly usually cannot be prevented. It results from inherited genes or from changes during early limb development that are outside a parent's control.

There is no specific food, supplement, or action proven to prevent isolated polydactyly. Usual pre-pregnancy and prenatal care remains important for general health, but it cannot guarantee that this condition will not occur.

If polydactyly runs in your family, genetic counselling can explain the possible inheritance pattern and the chance of it occurring in a future pregnancy. Counselling provides information rather than preventing the condition.

## Living with it and what to expect

Many people with isolated polydactyly have healthy, active lives. Some keep the extra digit without difficulty. Others have treatment because of function, footwear, repeated injury, or personal concerns about appearance.

After a minor removal, the wound usually heals before the scar fully settles. Scars can remain firm, raised, or sensitive for a time and often continue changing over several months.

Recovery from reconstruction takes longer. A child may temporarily need a cast or splint and may avoid some activities while the tissues heal. Movement and strength can improve with healing and therapy, but the final appearance or function may not be identical to that of a hand or foot without polydactyly.

Once an isolated extra digit has been fully removed, it does not grow back. However, growth can reveal changes in alignment, joint stability, scar sensitivity, or nail shape. Routine follow-up is especially useful after thumb reconstruction, complex toe surgery, or procedures involving joints and tendons.

Children generally adapt well to differences in their hands or feet. Age-appropriate

explanations can help them respond to questions from others. Support may also be useful if appearance, teasing, or self-consciousness affects confidence.

## When to get medical help

An extra finger or toe found at birth can usually be assessed during routine newborn or paediatric care. Arrange a routine review if it begins affecting grip, walking, shoe fit, comfort, or confidence.

Get prompt medical advice if:

Seek emergency care for uncontrolled bleeding, a major hand or foot injury, or a finger, toe, hand, or foot that becomes cold, pale, blue, or suddenly very swollen. These signs may mean that blood flow is affected.

- A loosely attached digit becomes twisted, swollen, dark, or painful
- The skin breaks or the digit is repeatedly caught or injured
- A surgical wound becomes increasingly red, warm, swollen, or draining
- Pain is getting worse rather than improving after treatment
- A cast or dressing feels tight or causes numbness

## Common questions

Is polydactyly hereditary?

It can be. Isolated polydactyly often runs in families, but it can also occur without any known family history. The inheritance pattern depends on the type and whether another genetic condition is present.

Does polydactyly mean my child has a syndrome?

Usually, an isolated extra digit does not mean a syndrome is present. A broader assessment may be appropriate when several limbs are affected or when there are other physical, growth, or developmental differences.

Will a small extra finger fall off by itself?

It should not be expected to fall off safely. A narrow stalk can twist or lose its blood supply, which may cause pain, bleeding, or infection. Have it assessed rather than tying, cutting, or pulling it at home.

Does every extra finger or toe need surgery?

No. Treatment is optional when the digit is stable, comfortable, and does not affect function. Surgery may be considered for repeated injury, poor shoe fit, joint problems, limited hand use, or personal preference.

Will removal leave a scar?

Any procedure can leave a scar. Its size and appearance depend on the attachment and the type of surgery. Complex reconstruction can also leave differences in movement, nail shape, or alignment.

Can polydactyly be seen on an ultrasound before birth?

Sometimes. Prenatal ultrasound is more likely to detect a digit containing bone than a small soft-tissue digit. Imaging may identify polydactyly without showing every detail needed for treatment planning.

## Sources

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