CONDITION

Pyloric stenosis in infants

Pyloric stenosis is a thickened stomach outlet muscle that blocks milk from passing into an infant's intestine.

WHAT IT IS
Thickening of the stomach outlet muscle in young infants

BODY SYSTEM
Digestive system

MAIN SYMPTOMS
Forceful vomiting, persistent hunger, dehydration, poor weight gain

WHAT CAUSES IT
Exact cause unknown; genetic and environmental factors

HOW IT IS DIAGNOSED
Abdominal ultrasound, sometimes an upper digestive tract contrast study

MAIN TREATMENT
Fluids followed by surgery to open the stomach outlet

CAN IT BE CURED?
Yes - surgery usually permanently opens the outlet

IS IT AN EMERGENCY?
Sometimes - with dehydration, marked sleepiness, or green vomit

LONG-TERM OUTLOOK
Excellent recovery expected after successful treatment

Overview

Pyloric stenosis is a condition that affects the outlet of a baby's stomach. This outlet is called the pylorus. It is a ring of muscle that normally opens to let milk move from the stomach into the small intestine.

In pyloric stenosis, the pylorus becomes unusually thick and tight. Milk cannot pass through easily, so it builds up in the stomach and is vomited back up. The problem usually develops during the first several weeks of life rather than being obvious at birth.

The vomiting often becomes more forceful and frequent over several days. Because the baby cannot keep enough milk down, dehydration and poor weight gain can follow. The condition needs prompt medical assessment, but it is usually corrected successfully with surgery after the baby has received fluids.

Pyloric stenosis is different from ordinary spitting up or reflux. Spitting up is usually a small, effortless flow of milk. Pyloric stenosis tends to cause increasingly forceful vomiting after feeds.

Symptoms

Symptoms most often begin when a baby is a few weeks old. They may start gradually and become more noticeable with time.

The main features include:

The vomit may travel some distance, although it is not always projectile. It can look fresh or partly curdled because it has mixed with stomach acid.

Some babies develop visible waves across the upper abdomen as the stomach works hard to push milk through the narrowed outlet. A clinician may sometimes feel the thickened pylorus as a small, firm lump in the upper abdomen, but this is not always possible.

A baby who is becoming dehydrated may be unusually sleepy or irritable. The soft area on top of the head, called the fontanelle, may appear sunken. There may also be fewer tears when crying.

Green vomit is not typical of pyloric stenosis. It can be a sign of a different intestinal blockage and needs emergency assessment.

- Forceful or "projectile" vomiting, often shortly after feeding
- Vomit containing milk but usually no green bile
- Hunger soon after vomiting
- Poor weight gain or weight loss
- Fewer wet diapers, a dry mouth, or other signs of dehydration
- Less frequent stools because little milk reaches the intestine

Causes and risk factors

The exact reason the pylorus thickens is not fully understood. Pyloric stenosis is thought to result from a combination of genetic and environmental factors. It is not caused by something a parent did during ordinary feeding or care.

The condition can run in families, although many affected babies have no known family history. It is more often identified in boys and in first-born babies. Being born early may also affect

when symptoms appear.

Exposure to certain macrolide antibiotics, particularly erythromycin during early infancy, has been associated with pyloric stenosis. These medicines are sometimes needed to treat serious infections. An association does not mean every exposed baby will develop the condition, and prescribed antibiotics like amoxicillin or doxycycline should not be stopped or avoided without medical advice.

Pyloric stenosis is not an infection, food allergy, or reaction to breast milk. Changing formula or feeding position will not open a pylorus that has become too tight.

Diagnosis

A clinician will ask about the vomiting, feeding, wet diapers, bowel movements, and weight. The baby's abdomen and hydration will also be examined.

An abdominal ultrasound is the main test used to confirm pyloric stenosis. It uses sound waves and does not involve radiation. The scan measures the pyloric muscle and shows whether stomach contents can move through it.

Very early in the condition, the thickening may not yet meet the usual ultrasound measurements. If symptoms continue despite an uncertain scan, the clinical team may arrange another ultrasound or a different test.

An upper digestive tract contrast study is sometimes used when the ultrasound result is unclear or another blockage is suspected. During this X-ray test, the baby swallows a liquid that makes the stomach and intestine visible on images.

Blood tests help assess dehydration and changes in body salts called electrolytes. Repeated vomiting can lower chloride and potassium levels and alter the blood's acid balance. These tests support safe treatment but do not by themselves confirm pyloric stenosis.

Treatment and management

Pyloric stenosis is usually treated in hospital. The immediate priority is correcting dehydration and electrolyte changes. Fluid is given through a small tube placed into a vein. Feeding is often paused while the baby is stabilised.

This preparation may take several hours or longer. Pyloric stenosis needs prompt treatment, but surgery is safer after fluid and salt levels have been corrected.

The standard operation is called a pyloromyotomy. The surgeon divides the thick outer layer of

the pyloric muscle without cutting through the inner stomach lining. This releases the tight muscle and allows milk to pass into the intestine.

The operation may be performed through several small cuts using a camera, known as laparoscopic surgery, or through one small abdominal cut. Both approaches are established treatments. The surgical team can explain which approach is planned.

Feeding usually restarts gradually after the operation, following the hospital's protocol and the baby's condition. Some babies continue to have small vomits for a short time because the stomach and pylorus need time to recover. This does not necessarily mean the operation has failed.

Most babies can leave hospital once they are keeping down enough milk, producing urine, and recovering comfortably. Parents and caregivers receive instructions about feeding, pain relief, wound care, bathing, and follow-up.

Medicine is not the usual treatment where surgery is readily available. In selected situations where an operation is not suitable, a medicine called atropine may be considered by a specialist team. Treatment takes longer and requires close monitoring.

Complications

Without treatment, repeated vomiting can cause dehydration, abnormal electrolyte levels, and poor growth. Severe dehydration can affect circulation and kidney function. A small number of babies may develop yellowing of the skin, called jaundice, which usually improves after the blockage is treated.

There is also a risk of inhaling vomit into the lungs, particularly if a baby is very unwell or has trouble protecting their airway.

Pyloromyotomy is generally effective, but every operation has risks. Possible complications include bleeding, infection, injury to the inner lining of the stomach, or an incomplete muscle release. An incomplete release can cause continued blockage and may require further treatment.

Vomiting immediately after surgery is often temporary. However, forceful vomiting that continues, worsens, or returns after an initial recovery should be assessed. Other causes, including reflux or infection, may also need consideration.

Prevention

There is no reliable way to prevent pyloric stenosis. Its development involves factors that parents and caregivers cannot control, including inherited susceptibility.

Breastfeeding, formula feeding, burping methods, and ordinary feeding positions do not cause the pyloric muscle to thicken. Changing these practices cannot prevent or cure the blockage.

Macrolide antibiotics should be used only when prescribed for a clear medical reason. If a young baby needs one of these medicines, the possible benefits and risks are considered by the prescribing clinician. Do not delay necessary antibiotic treatment because of concern about pyloric stenosis.

Recognising worsening vomiting early cannot prevent the condition, but it can help the baby receive treatment before dehydration becomes severe.

Living with it and what to expect

Most babies recover well after pyloromyotomy and go on to feed, grow, and develop normally. The operation does not remove part of the stomach or intestine. Once healed, the pylorus can continue its normal role in digestion.

Small spit-ups or occasional vomiting may continue for several days after treatment. Feeding amounts often increase gradually. The hospital team may want to check weight gain and hydration during follow-up, especially if the baby had lost weight before treatment.

The surgical wounds usually heal over the following weeks. A small scar remains, although its appearance often becomes less noticeable as the child grows. Follow the surgical team's instructions about keeping the area clean and watching for infection.

Pyloric stenosis rarely returns after an effective operation because the divided muscle has been permanently released. Long-term dietary restrictions or medicines are not usually needed for pyloric stenosis itself.

A baby can still develop common childhood problems such as reflux, stomach infections, or food intolerance. Vomiting later in childhood should not automatically be assumed to be pyloric stenosis.

When to get medical help

Arrange an urgent same-day medical assessment if a young baby has repeated forceful vomiting, especially if it is becoming stronger or happening after most feeds. Prompt assessment is also important if the baby remains hungry but cannot keep milk down, is gaining

weight poorly, or has fewer wet diapers.

Seek emergency care now if a baby:

After surgery, contact the treating team promptly if forceful vomiting continues or returns, the baby cannot keep feeds down, or the wound becomes increasingly red, swollen, painful, or starts draining fluid. A fever in a young infant also needs prompt medical assessment.

Routine follow-up is used to check feeding, weight gain, healing, and any ongoing vomiting. Occasional small spit-ups in an otherwise comfortable baby may be discussed at a planned review, but worsening or forceful vomiting should not wait for a routine appointment.

- Vomits green liquid
- Is difficult to wake, unusually floppy, or much less responsive
- Has trouble breathing, blue or grey skin, or a swollen abdomen
- Has very few wet diapers or other signs of significant dehydration
- Vomits blood or material that looks like coffee grounds

Common questions

Is pyloric stenosis the same as reflux?

No. Reflux allows stomach contents to flow back into the food pipe and often causes effortless spitting up. Pyloric stenosis blocks milk from leaving the stomach and usually causes increasingly forceful vomiting. An examination and ultrasound can help tell them apart.

Will pyloric stenosis go away without surgery?

The blockage does not usually resolve quickly enough to make waiting safe. Continued vomiting can lead to dehydration and poor growth. Surgery is the standard treatment because it directly releases the thickened muscle.

Can a baby still seem hungry with pyloric stenosis?

Yes. Many babies want to feed soon after vomiting because little milk has reached the intestine. Persistent hunger does not rule out a serious feeding problem.

How soon can a baby feed after surgery?

Feeding commonly restarts gradually during recovery, but timing differs between hospitals and according to the baby's condition. The care team will decide when and how much milk to offer. Brief vomiting during early feeding can occur.

Can pyloric stenosis come back?

True recurrence after a successful pyloromyotomy is uncommon. Ongoing or returning projectile vomiting still needs assessment because the muscle release may rarely be incomplete or another condition may be causing the symptoms.

Is pyloric stenosis inherited?

There is a genetic contribution, so having an affected close relative can increase susceptibility. However, inheritance is not simple or certain. Many babies with pyloric stenosis have no family history, and most relatives of an affected baby will not develop it.

Sources

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