CONDITION

Prognathism

Prognathism is a jaw shape in which the lower or upper jaw projects forward more than usual.

WHAT IT IS
Forward projection of the lower or upper jaw

BODY SYSTEM
Face, jaws, and teeth

MAIN SYMPTOMS
Projecting jaw, uneven bite, chewing difficulty, speech changes

WHAT CAUSES IT
Inherited growth, craniofacial conditions, or hormone excess

HOW IT IS DIAGNOSED
Dental examination, bite assessment, and cephalometric X-rays

MAIN TREATMENT
Observation, orthodontics, or corrective jaw surgery

CAN IT BE CURED?
Sometimes - surgery can permanently reposition jaw bones

IS IT AN EMERGENCY?
No, unless breathing becomes severely difficult

LONG-TERM OUTLOOK
Often stable after growth; treatment can improve function

Overview

Prognathism means that part of the jaw projects forward more than usual. It most often refers to a prominent lower jaw, called mandibular prognathism. Less often, the upper jaw projects forward. Sometimes the lower jaw only appears prominent because the upper jaw has not grown as far forward.

Prognathism is a condition of jaw shape and growth, not a disease by itself. Some people have no health problems from it and see it as part of their normal facial appearance. For others, the position of the jaws prevents the upper and lower teeth from meeting properly.

An uneven bite may be called a malocclusion. A lower jaw that sits in front of the upper jaw often produces an underbite, also known as a Class III bite. These terms are related, but they are not identical. An underbite can come from tooth position, jaw position, or both.

Prognathism matters when it affects chewing, speech, dental health, jaw comfort, breathing, or how you feel about your appearance. Treatment is based on those effects, not simply on whether the jaw looks different.

Symptoms

The most noticeable feature is a lower or upper jaw that projects forward. The chin or middle part of the face may appear more prominent than expected.

Possible symptoms include:

Some people with prognathism have jaw-joint pain, clicking, or stiffness. However, these symptoms are common in people without prognathism too. A prominent jaw does not automatically mean that it caused the joint problem.

Children may show changes as they grow. The lower jaw usually continues growing later than the upper jaw, so an underbite can become more noticeable during adolescence. It is not always possible to predict the final jaw relationship from a young child's appearance.

- Upper and lower teeth that do not meet evenly
- Lower front teeth that sit ahead of the upper front teeth
- Difficulty biting into food or chewing efficiently
- Speech sounds that are harder to make clearly
- Tooth wear, chipped teeth, or gum irritation
- Jaw muscle tiredness or discomfort
- Trouble closing the lips comfortably
- Concerns about facial appearance or confidence

Causes and risk factors

Prognathism often runs in families. A person may inherit patterns of jaw size, facial growth, or tooth position from either side of the family. Having a relative with a prominent jaw does not mean that every child will develop the same bite.

Some craniofacial conditions affect the growth of the skull and face. In these conditions, the lower jaw may be average in size but look prominent because the upper jaw has not grown forward normally. Examples include some forms of craniosynostosis, in which skull bones join earlier than expected.

A forward-positioned jaw may also be part of a broader genetic or developmental condition. Other physical findings are usually present when this is the case.

Rarely, prognathism develops or progresses in adulthood because of acromegaly. This condition happens when the body produces too much growth hormone after normal height growth has ended. Other possible signs include larger hands or feet, wider spacing between teeth, changes in facial features, headaches, heavy sweating, joint pain, or changes in vision.

True skeletal prognathism is not usually caused by something you did. Everyday chewing, sleeping position, or occasional childhood habits do not normally make an adult jaw bone grow substantially forward.

Diagnosis

A dentist or orthodontist can assess how your teeth and jaws meet. An orthodontist is a dentist with additional training in tooth movement, facial growth, and bite problems.

The assessment usually includes an examination of your face, mouth, teeth, and jaw movement. Photographs and dental impressions or digital scans may be used to record the bite.

A cephalometric X-ray is a side-view X-ray of the head. It helps show the position and angle of the upper jaw, lower jaw, teeth, and skull. A panoramic dental X-ray may also be taken to look at the teeth and jaw bones.

In children and teenagers, the assessment includes how much growth may remain. This matters because the jaw relationship can change during puberty.

If the jaw has started changing during adulthood, or if there are signs of excess growth hormone, medical testing may be appropriate. This can include a blood test for insulin-like growth factor 1, often called IGF-1. Further hormone testing and a pituitary gland scan may follow if the result suggests acromegaly.

Diagnosis should separate a tooth-position problem from a jaw-bone problem. That distinction affects whether orthodontic treatment alone is likely to correct the bite.

Treatment and management

Treatment is not always needed. Observation may be reasonable when the bite works well, the teeth remain healthy, and you are comfortable with your appearance.

Orthodontic treatment uses braces or clear aligners to move teeth. It may correct an underbite

caused mainly by tooth position. In mild skeletal cases, it can sometimes improve the bite by moving the teeth within the existing jaw bones. This is often called orthodontic camouflage.

Orthodontics cannot substantially shorten, lengthen, or reposition fully grown jaw bones. Moving teeth too far can also affect their roots, supporting bone, or gums, so treatment has practical limits.

Selected children may be offered growth-modifying orthodontic treatment. Appliances can encourage forward development of the upper jaw or guide how the teeth meet while growth continues. Results are not identical for every child, and later treatment may still be needed because lower-jaw growth can continue through adolescence.

Corrective jaw surgery is called orthognathic surgery. It may be considered after facial growth is largely complete when jaw position causes a significant bite or functional problem. A surgeon can move the lower jaw, upper jaw, or both. Plates and screws usually hold the bones in their new positions while they heal.

Orthodontic treatment commonly takes place before and after surgery. Before surgery, braces may place the teeth in positions that fit the corrected jaws, even if the bite temporarily looks worse. After surgery, orthodontics refines the bite.

A genioplasty changes the shape or position of the chin. It can alter appearance but does not usually correct how the teeth meet.

If acromegaly or another medical condition is causing the change, treatment focuses on that condition as well as any lasting dental or jaw effects. Jaw surgery is not a substitute for controlling ongoing hormone excess.

Complications

Prognathism does not always cause complications. When the bite is significantly uneven, possible long-term effects include:

A poorly fitting bite can make some dental treatment more complex. It does not mean that tooth loss is inevitable. Regular dental care and attention to areas receiving extra pressure can help protect the teeth.

Corrective jaw surgery also has risks. These can include bleeding, infection, temporary or lasting numbness, changes in the bite, jaw stiffness, and movement of the jaw toward its earlier position. The surgical team should explain the expected benefits, uncertainties, recovery, and alternatives before treatment.

- Difficulty chewing or biting into certain foods

- Uneven tooth wear, chipping, or damage to dental work
- Gum recession around teeth carrying excessive pressure
- Speech differences related to tooth and jaw position
- Jaw muscle strain or discomfort
- Distress about appearance or unwanted social attention

Prevention

Inherited jaw-growth patterns usually cannot be prevented. Craniofacial and genetic conditions associated with prognathism also cannot be prevented through changes in diet, posture, or daily habits.

Early dental assessment does not remove an inherited tendency, but it may identify bite problems while growth-modifying options are still possible. It can also help protect teeth that are wearing unevenly.

Acromegaly is not generally preventable. Recognising and treating it can limit further changes and reduce its effects on the rest of the body.

Mouthguards during contact sports, good dental hygiene, and treatment of tooth grinding may help prevent additional damage to teeth. These steps do not change the underlying jaw shape.

Living with it and what to expect

In a growing child, the jaw relationship may change over several years. A mild underbite can remain mild, improve with treatment, or become more noticeable as the lower jaw continues to grow. Regular orthodontic reviews may be used to follow growth without starting treatment immediately.

Once normal facial growth is complete, inherited prognathism is usually stable. A jaw that begins enlarging in adulthood needs medical assessment because ordinary adult ageing does not usually cause progressive jaw growth.

Many people live normally without treatment. Food choices may need minor adjustment if biting is difficult, and a dentist may monitor for tooth wear or gum pressure. Speech therapy can sometimes help with particular sounds, although it does not change the jaw position.

Orthodontic treatment often lasts many months or longer. Retainers are usually needed afterward because teeth can shift over time.

Recovery from jaw surgery happens in stages. Swelling and temporary changes in eating are expected early on. Bone healing, return of sensation, bite adjustment, and final orthodontic work may continue for months. Outcomes are often lasting, but no treatment can guarantee perfect symmetry, permanent tooth position, or complete relief of jaw discomfort.

When to get medical help

Arrange a routine dental or orthodontic assessment if your teeth do not meet properly, chewing is difficult, teeth are wearing unevenly, or you are concerned about your jaw or facial growth. Children with an underbite can be assessed before growth is complete, even if treatment is not started right away.

Seek a prompt medical appointment if your jaw or facial features are becoming more prominent during adulthood. This is especially important if you also notice enlarging hands or feet, wider tooth spacing, headaches, heavy sweating, or changes in vision.

Contact your dental or surgical team promptly after jaw treatment if pain or swelling is getting worse rather than better, you develop a fever, the bite suddenly changes, or you cannot maintain fluid intake.

Stable prognathism is not an emergency. Seek emergency care for severe trouble breathing, inability to swallow saliva, rapidly increasing facial or throat swelling, uncontrolled bleeding, or a major facial injury. These symptoms need urgent attention regardless of your usual jaw shape.

Common questions

Is prognathism the same as an underbite?

No. Prognathism describes the position or shape of a jaw. An underbite describes how the teeth meet. A person can have an underbite because of jaw position, tooth position, or a combination of both.

Can braces fix prognathism?

Braces can move teeth but cannot substantially reposition adult jaw bones. They may correct a dental underbite or camouflage a mild skeletal difference. More marked jaw differences may require surgery if correction is wanted.

Will my child grow out of a prominent lower jaw?

It cannot be assumed. Lower-jaw growth can continue later than upper-jaw growth, so the

difference may become more noticeable during adolescence. An orthodontic assessment can help track growth and explain possible treatment stages.

Does prognathism get worse with age?

Inherited prognathism usually stops progressing when facial growth ends. Teeth can still shift or wear over time. New or continuing jaw enlargement in adulthood is not typical and should be assessed for causes such as acromegaly.

Is surgery the only treatment?

No. Some people need no treatment, while others benefit from orthodontics or growth-guidance treatment during childhood. Surgery is mainly considered for a significant skeletal difference after growth is complete.

Is prognathism genetic?

It often has an inherited component, especially when several relatives have similar jaw shapes or bites. It can also be associated with craniofacial conditions or, less commonly, excess growth hormone.

Sources

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