CONDITION

Contracture deformity

A contracture deformity is lasting tightening of tissues that limits a joint's movement or holds it in a fixed position.

WHAT IT IS
Lasting tissue tightening that restricts joint movement

BODY SYSTEM
Muscles, joints, skin, and nervous system

MAIN SYMPTOMS
Limited movement, stiffness, fixed posture, pain

WHAT CAUSES IT
Immobility, scarring, muscle imbalance, or inherited conditions

HOW IT IS DIAGNOSED
Physical examination, with imaging when needed

MAIN TREATMENT
Therapy, positioning, splinting, and sometimes surgery

CAN IT BE CURED?
Sometimes - early or surgically correctable cases

IS IT AN EMERGENCY?
Sometimes - if a limb becomes cold, pale, or numb

LONG-TERM OUTLOOK
Often manageable, but established movement loss may remain

Overview

A contracture deformity is a lasting loss of movement caused by tightening or shortening of tissues around a joint. These tissues may include muscles, tendons, ligaments, the joint capsule, or skin. A contracture can hold a joint in a bent, straight, or otherwise fixed position.

The word "deformity" describes the position of the affected body part. It is not a judgment about appearance.

Contractures most often affect the hands, elbows, shoulders, hips, knees, ankles, and feet. They can involve one joint or several. Some develop over weeks or months, while others are present at birth.

A contracture is different from temporary stiffness. A stiff joint may loosen after movement or

treatment. With a contracture, the joint cannot move through its usual range because the surrounding tissues have changed. Muscle tightness caused by abnormal nerve signals, called spasticity, may contribute but is not the same thing.

Contractures matter because they can interfere with walking, dressing, washing, eating, transferring between a bed and chair, or using mobility equipment. They may also make skin care and comfortable positioning more difficult.

Symptoms

The main sign is reduced movement at a joint. You may be unable to straighten or bend it fully, even when someone else gently tries to move it.

Other possible features include:

Symptoms depend on the joint involved. A knee or ankle contracture may change how you stand or walk. A hand contracture may make it difficult to open the fingers, grip objects, or put a hand into a glove. A shoulder contracture may limit reaching, dressing, or hair care.

Some contractures are painless. Pain does not reliably show how severe the movement restriction is.

- A joint held in a fixed or unusual position
- Tightness or resistance during movement
- Pain, aching, or muscle spasms
- Difficulty with everyday activities
- Pressure, rubbing, or skin irritation near the affected area

Causes and risk factors

A contracture develops when tissues remain shortened or are replaced by less flexible scar tissue. Several different conditions and situations can lead to this change.

Prolonged immobility is a common cause. A joint that stays in one position because of illness, injury, bed rest, a cast, or limited mobility may gradually lose movement. The risk is greater when movement is severely restricted or the joint remains bent for long periods.

Conditions affecting the brain, spinal cord, nerves, or muscles can also cause contractures. Examples include stroke, cerebral palsy, spinal cord injury, multiple sclerosis, muscular dystrophy, and other neuromuscular conditions. Weakness, paralysis, or spasticity can create

an ongoing imbalance between muscle groups.

Burns, wounds, infections, surgery, and other injuries may produce scar tissue that tightens across a joint. Severe joint disease can cause pain and inflammation that discourage movement, allowing stiffness to become fixed.

Some contractures have more specific causes. Dupuytren's contracture involves thickened tissue in the palm that can pull one or more fingers inward. Arthrogryposis refers to multiple joint contractures that are present at birth. These are not caused by poor positioning after birth.

Factors that may increase the chance of an acquired contracture include reduced mobility, loss of feeling, persistent swelling, poorly controlled pain, and difficulty changing position without help.

Diagnosis

Diagnosis usually begins with a physical examination. A healthcare professional will look at the joint's position and measure how far it can move. They may compare movement you can produce yourself with movement produced when the joint is gently moved for you.

This helps distinguish a fixed contracture from weakness, pain-related guarding, spasticity, or a problem inside the joint. The skin, muscles, nerves, circulation, and nearby joints may also be checked.

There is no single test that confirms every contracture. X-rays can show arthritis, bone changes, an old injury, or an abnormal joint position. Ultrasound or MRI may sometimes be used to examine tendons, muscles, or other soft tissues.

Further tests may be needed to identify the cause. These could include nerve or muscle tests, blood tests, or an assessment for a neurological or inherited condition. The choice of tests is based on your symptoms and medical history.

Treatment and management

Treatment aims to improve useful movement, comfort, positioning, skin protection, and the ability to manage daily activities. Complete restoration of movement is not always possible, especially when a contracture has been present for a long time.

A physiotherapist or occupational therapist may assess how the contracture affects walking, hand use, transfers, self-care, sleep, or equipment. Management may include guided

movement, positioning plans, strengthening of muscles that still work, and practical ways to complete tasks.

Stretching may be part of a broader program, but stretching alone does not reliably reverse an established contracture. Forceful stretching can cause pain or tissue injury. Any movement plan should match the joint, the underlying cause, and the condition of the skin and bones.

Splints, braces, or positioning supports may hold a joint in a more useful position or slow further tightening. Some people are treated with serial casting, in which a series of casts gradually changes the joint position. These methods require regular checks because excess pressure can damage skin or affect nerves and circulation.

If spasticity contributes to the problem, treatment may include medicines or injections intended to reduce abnormal muscle overactivity. These treatments address the spasticity rather than directly lengthening fixed scarred or shortened tissue.

Surgery may be considered when a contracture causes major pain, skin problems, or loss of function that has not improved enough with other measures. Depending on the cause, surgery may release or lengthen a tendon, remove tight scar tissue, release a joint capsule, or reposition a joint. Rehabilitation is usually needed afterward, and a contracture can return.

Pain relief, wound care, mobility equipment, and changes to seating or footwear may also be important. Treatment goals should focus on what matters to you, such as easier dressing, safer transfers, improved walking, or more comfortable positioning.

Complications

A contracture can place extra strain on nearby joints and change posture or walking. This may contribute to pain, falls, difficulty fitting shoes or braces, and reduced independence.

A fixed position can create areas of pressure where skin rubs against another body part, clothing, a splint, or a chair. Moisture may collect in tightly closed palms or skin folds, increasing the chance of skin breakdown or infection.

Severe contractures can make washing, nail care, toileting, and dressing difficult. They may also interfere with safe seating, wheelchair use, sleep, or caregiving.

Complications are more likely when a person has reduced sensation or cannot easily communicate discomfort. Regular skin checks are especially important in these situations.

Prevention

Not every contracture can be prevented. Contractures present at birth and those caused by some inherited or progressive conditions may occur despite appropriate care. Prevention efforts then focus on preserving useful movement, comfort, and function for as long as possible.

Some acquired contractures may be less likely to develop when movement and positioning are addressed early. After an injury, operation, burn, stroke, or serious illness, rehabilitation may include safe joint movement, changes of position, and properly fitted supports.

Pain, swelling, and skin wounds can make movement difficult and should be addressed rather than forcing a painful joint. Splints and braces need to fit correctly and be checked as the body changes.

If you have limited mobility, your care plan may include help with repositioning and active or assisted movement. These steps cannot guarantee prevention, particularly when nerve or muscle disease is progressing.

Living with it and what to expect

The course of a contracture is shaped by its cause, how long it has been present, and whether the underlying condition is stable or progressive. A recent contracture caused mainly by positioning may respond better than one involving longstanding scar tissue or major changes to a joint.

Some contractures remain stable for years. Others slowly worsen if movement decreases, spasticity increases, or an underlying neurological or muscle condition progresses. Treatment can still improve comfort, skin care, positioning, or daily function even when the joint does not return to its full range.

Regular follow-up may involve checking joint movement, pain, skin health, walking, seating, and the fit of splints or footwear. Children may need reassessment as they grow. Adults may need review after changes in mobility, weight, equipment, or health.

Many people adapt activities and continue with work, education, family life, and recreation. Adaptive tools, suitable clothing, mobility aids, and changes at home can reduce the practical effects of limited movement.

When to get medical help

Arrange a routine appointment if a joint is gradually losing movement, staying in one position, or interfering with everyday activities. Early assessment is also helpful if a splint no longer fits,

skin repeatedly rubs or breaks down, or pain is limiting movement.

Seek prompt medical advice for increasing redness, warmth, swelling, drainage, an open wound, or fever. These may suggest infection or significant skin damage rather than an uncomplicated contracture.

Get urgent or emergency help if:

Sudden loss of movement is not typical of a slowly developing contracture and needs assessment for another cause.

- A limb becomes suddenly cold, pale, blue, very swollen, or numb
- A cast or splint causes severe pain or loss of feeling
- Movement is lost suddenly after an injury
- New weakness or paralysis develops, especially with facial drooping or speech difficulty

Common questions

Can a contracture be reversed?

Sometimes. A recent, flexible contracture may improve with treatment of the cause, guided movement, positioning, or casting. A longstanding fixed contracture may not fully reverse without surgery, and complete correction is not always possible.

Is a contracture the same as arthritis?

No. Arthritis is a problem involving inflammation or damage within a joint. It can contribute to a contracture if pain and joint changes restrict movement, but contractures can also result from muscle imbalance, nerve conditions, immobility, or scarring.

Can I stretch a contracture at home?

Gentle movement may be included in a treatment plan, but forceful stretching can injure skin, muscles, joints, or weakened bones. It is safer to learn which movements are suitable for the affected joint and underlying condition.

Why does a contracture come back after treatment?

The tissues may tighten again if the underlying cause continues. Recurrence is more likely when there is ongoing spasticity, progressive weakness, repeated scarring, or difficulty maintaining the new joint position. Follow-up rehabilitation may help preserve the improvement.

Does every contracture need surgery?

No. Many are managed with rehabilitation, positioning, equipment, skin care, and treatment of

contributing problems. Surgery is usually considered when the expected improvement in comfort or function outweighs its risks and recovery demands.

Is a contracture permanent?

Not always, but established structural changes can be lasting. Even when normal movement cannot be restored, management may prevent further loss and make daily activities, positioning, or personal care easier.

Sources

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