CONDITION

Supranuclear ophthalmoplegia

Supranuclear ophthalmoplegia is impaired voluntary eye movement caused by disruption of the brain pathways that control coordinated gaze.

WHAT IT IS
Impaired voluntary eye movement from disrupted brain gaze pathways

BODY SYSTEM
Nervous system and eye movement

MAIN SYMPTOMS
Limited gaze, slowed eye movements, double vision, reading difficulty

WHAT CAUSES IT
Vascular, degenerative, inflammatory, traumatic, or structural brain disorders

HOW IT IS DIAGNOSED
Eye-movement examination, often brain MRI to identify the cause

MAIN TREATMENT
Cause-specific care, vision aids, and rehabilitation

CAN IT BE CURED?
Sometimes - a reversible underlying cause can be treated

IS IT AN EMERGENCY?
Sometimes - sudden onset may signal a stroke

LONG-TERM OUTLOOK
Stable, improving, or progressive according to the underlying cause

Overview

Supranuclear ophthalmoplegia is difficulty moving both eyes together in a particular direction because of a problem in the brain's gaze-control pathways. "Ophthalmoplegia" means weakness or loss of eye movement. "Supranuclear" means the problem is above the nerve-cell groups that directly control the eye muscles.

This is a condition or clinical sign , not one specific disease. It can result from a stroke, a progressive neurological disorder, inflammation, injury, or another problem affecting the brain.

The pattern differs from person to person. Some people cannot look up or down normally. Others have trouble looking to one side. Eye movements may also be unusually slow rather than completely absent.

Automatic or reflex eye movements may remain better than voluntary movements, especially early on. For example, the eyes may move when the head is turned during a clinical examination even though looking in the same direction on command is difficult. This distinction helps locate the problem within the nervous system.

Supranuclear ophthalmoplegia is not the same as progressive supranuclear palsy , often shortened to PSP. PSP is one disease that can cause supranuclear eye-movement problems, but there are many other causes.

Symptoms

The main symptom is difficulty directing both eyes together. The exact effect depends on which gaze pathway is involved.

Common patterns include:

Rapid eye movements used to shift attention from one object to another are called saccades . These movements may become slow or too small. Smooth eye movements used to follow a moving object may also be affected.

Problems looking downward can make stairs, kerbs, eating, and reading harder. Difficulty looking upward may affect activities such as reaching into cupboards or following objects above eye level. Limited side-to-side gaze can make it harder to scan traffic or move safely through crowded places.

Double vision is possible, but not everyone has it. Some people instead describe visual disorientation, difficulty focusing on a new target, or the sense that their eyes do not move quickly enough.

Other symptoms come from the underlying cause rather than the eye-movement condition itself. These may include poor balance, stiffness, weakness, numbness, speech changes, swallowing problems, tremor, headaches, or changes in thinking.

- Difficulty looking up, down, left, or right
- Slow, delayed, or reduced rapid eye movements
- Double vision or blurred vision during certain activities
- Trouble reading, using stairs, driving, or finding objects visually
- Turning or tilting the head to compensate for limited eye movement

Causes and risk factors

Supranuclear ophthalmoplegia develops when brain areas responsible for coordinated gaze are damaged or disrupted. These pathways run through several parts of the brain, including the cerebral hemispheres, midbrain, and pons.

Possible causes include:

Risk factors are mainly those of the underlying disorder. For example, high blood pressure, smoking, diabetes, and abnormal cholesterol can increase stroke risk. These factors do not directly cause every case of supranuclear ophthalmoplegia.

The condition itself is not usually described as inherited. However, a small number of underlying neurological or metabolic disorders can run in families.

- Stroke: A blocked or bleeding blood vessel can suddenly damage a gaze-control area
- Neurodegenerative disorders: Conditions such as progressive supranuclear palsy gradually damage nerve cells
- Inflammation or loss of nerve insulation: Multiple sclerosis and some inflammatory brain disorders can interrupt eye-movement signals
- Tumours or other structural problems: A growth, pressure change, or excess fluid around the brain may affect gaze pathways
- Head injury: Trauma can damage the brain regions or connections involved
- Infection, metabolic illness, or toxic exposure: These are less common causes

Diagnosis

Diagnosis begins with a detailed eye-movement and neurological examination. A clinician will ask when the problem began, whether it developed suddenly or gradually, and whether there are other symptoms.

During the examination, you may be asked to follow a target, look quickly between two points, or keep your head still while moving your eyes. The examiner checks whether both eyes are affected together and whether the limitation is horizontal, vertical, or in several directions.

A clinician may also assess reflex eye movements by carefully moving your head while watching your eyes. This should be done as part of a clinical examination, particularly if neck or balance problems are possible. Better reflex movement than voluntary movement supports a supranuclear cause, although this difference may become less clear in advanced disease.

Other checks may include vision, pupils, eyelids, eye alignment, balance, strength, sensation,

speech, and coordination. These help distinguish supranuclear ophthalmoplegia from eye-muscle disease, problems with individual eye-movement nerves, or disorders affecting the connection between brainstem nerve centres.

Brain imaging is often needed to look for the cause. Magnetic resonance imaging, or MRI, gives detailed images of the brain. In a possible emergency, a computed tomography, or CT, scan may be performed first because it is quicker and can detect bleeding or other urgent problems.

Blood tests, a lumbar puncture to test fluid around the brain and spinal cord, genetic testing, or other investigations may be considered when the history suggests inflammation, infection, or an inherited disorder. There is no single blood test that confirms all cases.

Treatment and management

Treatment is guided by the underlying cause, how much the eye movements affect daily life, and whether the condition is stable or changing.

An acute stroke requires immediate stroke assessment and treatment. Inflammatory disease may be treated with medicines that control inflammation or immune activity. A structural problem may require neurological or surgical assessment. When a progressive neurological disorder is responsible, treatment focuses on symptoms, function, and safety because the nerve-cell damage may not be reversible.

There is no single medicine that restores normal gaze in every case. Supportive options may include:

Prisms do not physically strengthen the eye muscles. They redirect light so that images are easier to combine. They work best when eye misalignment is reasonably consistent and may be less helpful when alignment changes with gaze direction.

Covering one eye can stop double vision, but it also reduces depth perception and the width of the visual field. An eye-care professional can help identify the least disruptive option.

Selected people with a stable eye-position problem may be considered for botulinum toxin injections or eye-muscle surgery. These approaches may improve alignment or head posture, but they do not repair the damaged brain pathway and are not suitable for every pattern.

- Prisms fitted to glasses to reduce double vision in certain gaze positions
- Covering or blurring one lens when persistent double vision cannot be aligned
- Occupational or vision rehabilitation to improve scanning strategies
- Physiotherapy for balance, mobility, and fall prevention

- Reading aids, better lighting, and changes to screen or page position

Complications

Limited eye movement can interfere with reading, work, driving, and moving around safely. Looking down poorly can increase the risk of tripping on steps or uneven ground. A compensating head position may lead to neck discomfort.

Persistent double vision can cause eye strain, headaches, nausea, or difficulty judging distances. These symptoms can make visually demanding tasks tiring even when standard eyesight remains sharp.

Complications may also come from the underlying neurological condition. Depending on the cause, these can include falls, weakness, swallowing difficulty, reduced independence, or further neurological changes.

Early practical support can reduce the impact. Adjusting the position of reading material, placing frequently used objects within the easiest field of gaze, and improving lighting may help with everyday tasks.

Prevention

Supranuclear ophthalmoplegia cannot always be prevented. Cases caused by neurodegeneration, inflammation, tumours, or inherited disorders may occur without a preventable trigger.

Reducing stroke risk may lower the chance of a vascular cause. This includes not smoking and working with healthcare professionals to manage blood pressure, diabetes, cholesterol, and heart conditions when present. These steps reduce risk but cannot guarantee prevention.

Protective headgear and seat belts reduce the risk of serious head injury. They do not prevent cases caused by other disorders.

Once eye-movement difficulty is present, home safety measures do not prevent the condition itself, but they may prevent falls and injuries.

Living with it and what to expect

The course over months and years is closely linked to the cause. A gaze problem caused by a stroke may improve as the brain recovers and adapts, often most noticeably during the first

weeks and months. Some limitation may remain.

Symptoms caused by inflammation may improve with treatment, although recurrence is possible in some disorders. If a tumour, pressure problem, or other structural cause can be treated, eye movement may improve or become stable. Recovery is not always complete.

When supranuclear ophthalmoplegia results from a progressive neurological disorder, eye movements may gradually become more limited. Other problems with balance, movement, speech, swallowing, or thinking may also develop. The speed and pattern of change are not the same for everyone.

Regular follow-up helps monitor eye alignment, mobility, reading ability, and symptoms from the underlying condition. Needs may change over time. A prism that once worked may need adjustment, or different rehabilitation strategies may become more useful.

Many people continue everyday activities by changing how they scan their surroundings, turning their head and body, and adapting the position of screens or reading material. Driving requires particular caution. Active double vision, reduced scanning, or slow eye movements may make driving unsafe even when visual sharpness meets legal standards.

When to get medical help

Call emergency services for eye-movement difficulty that begins suddenly, especially with:

These can be signs of a stroke, bleeding, or another urgent brain problem. Do not drive yourself for emergency assessment.

Prompt medical assessment is also important for new eye-movement difficulty after a head injury or when symptoms worsen quickly over hours or days.

Arrange routine follow-up if an established problem is gradually changing, double vision is interfering with daily activities, or current glasses and visual aids are no longer helping. New falls, swallowing trouble, increasing stiffness, or changes in speech should also be reported rather than waiting for the next planned appointment.

- Facial drooping, arm or leg weakness, or numbness
- Slurred speech, confusion, or trouble understanding words
- Sudden severe imbalance, collapse, or inability to walk
- A sudden severe headache or repeated vomiting
- Loss of vision, reduced consciousness, or seizure

Common questions

Is supranuclear ophthalmoplegia the same as progressive supranuclear palsy?

No. Supranuclear ophthalmoplegia describes a pattern of impaired eye movement. Progressive supranuclear palsy, or PSP, is a specific progressive brain disorder that commonly causes this pattern. Stroke and several other conditions can also cause it.

Why can my eyes move when my head moves but not when I try to look?

Voluntary gaze and reflex eye movements use partly different brain pathways. A supranuclear problem may interrupt the command to look in a direction while initially preserving the reflex that keeps vision steady during head movement.

Will the eye movement return to normal?

It may improve if the cause is reversible or if the brain recovers after an injury such as a stroke. Persistent damage can leave some limitation. Eye movements caused by a progressive neurological disorder may worsen over time.

Can ordinary glasses fix it?

Standard glasses can correct short-sightedness or long-sightedness but do not repair a brain gaze pathway. Prism lenses may reduce double vision in selected situations. Their usefulness depends on whether the eye misalignment is consistent.

Can I drive with supranuclear ophthalmoplegia?

It may be unsafe to drive if you have double vision, reduced side-to-side scanning, slow eye movements, or other neurological symptoms. Driving rules differ by location. A formal vision and driving assessment may be needed before driving or returning to driving.

Is supranuclear ophthalmoplegia inherited?

Usually not. It is a sign caused by another condition, and common causes such as stroke are not directly inherited. Some uncommon neurological or metabolic disorders that produce supranuclear eye-movement problems can have a genetic basis.

Sources

- Strupp M, Kremmyda O, Adamczyk C, and colleagues. "Central ocular motor disorders, including gaze palsy and nystagmus." Journal of Neurology . 2014;261 Supplement 2:S542-S558.

- Leigh RJ, Zee DS. The Neurology of Eye Movements . Fifth edition. Oxford University Press; 2015.
- Höglinger GU, Respondek G, Stamelou M, and colleagues. "Clinical diagnosis of progressive supranuclear palsy: The Movement Disorder Society criteria." Movement Disorders . 2017;32(6):853-864.
- National Institute of Neurological Disorders and Stroke. "Progressive Supranuclear Palsy." Neurological disorder information page.
- American Stroke Association. "Stroke Symptoms and Warning Signs." Patient stroke-recognition information.
- American College of Radiology. ACR Appropriateness Criteria: Orbits, Vision, and Visual Loss . Imaging guidance for visual and eye-movement presentations.